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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 20-F

(Mark One)

☐ **REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) or (g) OF THE SECURITIES EXCHANGE ACT OF 1934**

OR

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2018

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

OR

☐ **SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Date of event requiring this shell company report _____ ☒

For the transition period from _____ ☒ _____ to _____ ☒ _____

Commission file number 001-36891

CELLECTIS S.A.
(Exact name of Registrant as specified in its charter)

(Translation of Registrant's name into English)

France
(Jurisdiction of incorporation or organization)

Cellectis S.A.
8, rue de la Croix Jarry
75013 Paris, France
(Address of principal executive office)

Marie-Bleuenn Terrier
General Counsel
Cellectis S.A.
8, rue de la Croix Jarry
75013 Paris, France
Tel: +33 (0)1 81 69 16 00, Fax: +33 (0)1 81 69 16 06
(Name, Telephone, E-mail and/or Facsimile number and Address of Company Contact Person)

Securities registered or to be registered pursuant to Section 12(b) of the Act.

Title of each class	Name of each exchange on which registered
American Depositary Shares, each representing one ordinary share, nominal value €0.05 per share	**Nasdaq Global Market**
Ordinary shares, nominal value €0.05 per share*	**Nasdaq Global Market***

* Not for trading, but only in connection with the registration of the American Depositary Shares.

Securities registered or to be registered pursuant to Section 12(g) of the Act.

None

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act.

None

Indicate the number of outstanding shares of each of the issuer's class of capital or common stock as of the close of the period covered by the annual report.

Ordinary shares, nominal value €0.05 per share: 42,430,069 as of December 31, 2018

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

If this report is an annual or transition report, indicate by check mark, if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes ☐ No ☒

Note – Checking the box above will not relieve any registrant required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 from their obligations under those Sections.

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of "accelerated filer and large accelerated filer" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Emerging Growth Company	☐

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards† provided pursuant to Section 13(a) of the Exchange Act. ☐

† The term "new or revised financial accounting standard" refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP ☐	International Financial Reporting Standards as issued by the International Accounting Standards Board ☒	Other ☐

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow: Item 17 ☐ Item 18 ☐

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

(APPLICABLE ONLY TO ISSUERS INVOLVED IN BANKRUPTCY PROCEEDINGS DURING THE PAST FIVE YEARS)

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Sections 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court. ☐ Yes ☐ No

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INTRODUCTION

Unless otherwise indicated or the context otherwise requires, references in this Annual Report to, "Cellectis," the "Company," "we," "us" and "our" refer to Cellectis S.A. and its consolidated subsidiaries. References to "Calyxt" refer to our majority-owned subsidiary, Calyxt, Inc.

We own various trademark registrations and applications, and unregistered trademarks and service marks, including "Cellectis®", "TALEN®" and our corporate logos, and all such trademarks and service marks appearing in this Annual Report are the property of Cellectis. The trademark "Calyxt™" is owned by Calyxt. All other trade names, trademarks and service marks of other companies appearing in this Annual Report are the property of their respective holders. Solely for convenience, the trademarks and trade names in this Annual Report may be referred to without the ® and ™ symbols, but such references, or the failure of such symbols to appear, should not be construed as any indication that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend to use or display other companies' trademarks and trade names to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

Our audited consolidated financial statements have been prepared in accordance with International Financial Reporting Standards, or IFRS, as issued by the International Accounting Standards Board, or IASB. Our consolidated financial statements are presented in euros.

All references in this Annual Report to "$," "US$," "U.S.$," "U.S. dollars," "dollars" and "USD" mean U.S. dollars and all references to "€" and "euros," mean euros, unless otherwise noted. Throughout this Annual Report, references to ADSs mean ADSs or ordinary shares represented by ADSs, as the case may be.

Note Regarding Use of Non-GAAP Financial Measures

Cellectis S.A. presents Adjusted Net Income (Loss) attributable to shareholders of Cellectis in this Annual Report on Form 20-F. Adjusted Net Income (Loss) attributable to shareholders of Cellectis is not a measure calculated in accordance with IFRS. We have included in this Annual Report on Form 20-F a reconciliation of this figure to Net Income (Loss) attributable to shareholders of Cellectis, the most directly comparable financial measure calculated in accordance with IFRS. Because Adjusted Net Income (Loss) attributable to shareholders of Cellectis excludes Non-cash stock-based compensation expense—a non-cash expense, we believe that this financial measure, when considered together with our IFRS financial statements, can enhance an overall understanding of Cellectis' financial performance. Moreover, our management views the Company's operations, and manages its business, based, in part, on this financial measure. In particular, we believe that the elimination of Non-cash stock-based expenses from Net Income (Loss) attributable to shareholders of Cellectis can provide a useful measure for period-to-period comparisons of our core businesses. Our use of Adjusted Net Income (Loss) attributable to shareholders of Cellectis has limitations as an analytical tool, and you should not consider it in isolation or as a substitute for analysis of our financial results as reported under IFRS. Some of these limitations are: (a) other companies, including companies in our industries which have similar stock-based compensations, may address the impact of Non-cash stock-based compensation expense differently; and (b) other companies may report Adjusted Net Income (Loss) attributable to shareholders or similarly titled measures but calculate them differently, which reduces their usefulness as a comparative measure. Because of these and other limitations, you should consider Adjusted Net Income (Loss) attributable to shareholders of Cellectis alongside our other IFRS financial results, including Net Income (Loss) attributable to shareholders of Cellectis.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report contains "forward-looking statements" within the meaning of applicable federal securities laws, including the Private Securities Litigation Reform Act of 1995. All statements other than present and historical facts and conditions contained in this Annual Report, including statements regarding our future results of operations and financial position, business strategy, plans and our objectives for future operations, are forward-looking statements. These forward-looking statements are subject to numerous risks and uncertainties and are made in light of information currently available to us. Many important factors, in addition to the factors described in this Annual Report, may adversely affect such forward-looking statements. When used in this Annual Report, the words "anticipate," "believe," "can," "could," "estimate," "expect," "intend," "is

designed to," "may," "might," "plan," "potential," "predict," "objective," "should," or the negative of these and similar expressions identify forward-looking statements. Forward-looking statements include, but are not limited to, statements about:

- the initiation, timing, progress and results of our pre-clinical and clinical studies, and our research and development programs;
- the initiation, timing, progress and results of our agricultural biotechnology research and development programs;
- our ability to advance product candidates into, and successfully complete, clinical studies;
- Calyxt's ability to advance its plant products into, and successfully complete, field trials;
- the timing of regulatory filings and the likelihood of favorable regulatory outcomes and approvals;
- the regulatory treatment of our plant products;
- regulatory developments in the United States and foreign countries;
- the commercialization of our product candidates, if approved;
- the commercialization of Calyxt's plant products;
- the pricing and reimbursement of our product candidates, if approved;
- our ability to contract on commercially reasonable terms with CROs, third-party suppliers of biological raw materials and manufacturers;
- the implementation of our business model, strategic plans for our and Calyxt's business, product candidates and technology;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our product candidates and technology;
- the ability of third parties with whom we contract to successfully conduct, supervise and monitor clinical studies for our therapeutic product candidates or our plant products;
- estimates of our expenses, future revenues, capital requirements and our needs for additional financing;
- our and Calyxt's ability to obtain additional funding for our operations;
- the potential benefits of our strategic alliances and our ability to enter into future strategic arrangements;
- the ability and willingness of collaborators pursuant to our strategic alliances to actively pursue development activities under our collaboration agreements;
- our receipt of milestone or royalty payments pursuant to our strategic alliances with Servier and Allogene;
- our and Calyxt's ability to maintain and establish collaborations or obtain additional grant funding;
- the rate and degree of market acceptance of our product candidates and of Calyxt's plant products;
- our status as a passive foreign investment company for U.S. federal income tax purposes;
- our financial performance and Calyxt's financial performance;
- our and Calyxt's ability to attract and retain key scientific and management personnel;
- our expectations regarding the period during which we qualify as a foreign private issuer;
- developments relating to our competitors and our industry, including competing therapies; and
- other risks and uncertainties, including those listed under the caption "Risk Factors."

You should refer to the section of this Annual Report titled "Risk Factors" for a discussion of important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this Annual Report will prove to be accurate. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame or at all. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law. We qualify all of our forward-looking statements by these cautionary statements. This Annual Report contains market data and industry forecasts that were obtained from industry publications. These data and forecasts involve a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. While we believe the market position, market opportunity and market size information included in this Annual Report is generally reliable, such information is inherently imprecise.

Market Data

This Annual Report contains market data and industry forecasts that were obtained from various industry publications. In presenting this information, we have also made assumptions based on such data and other similar sources, and on our knowledge of, and our experience to date in, the biotechnology industry. Market data and industry forecasts involve a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. While we believe the market position, market opportunity and market size information included in this Annual Report is generally reliable, such information is inherently imprecise. Various risks, including those described in the section of this Annual Report entitled "Risk Factors," could cause results to differ materially from those expressed in the estimates made by us and independent parties.

Website Disclosure

We use our website (www.cellectis.com) and Calyxt's website (www.calyxt.com) and our respective corporate Twitter accounts (@cellectis and @Calyxt_Inc) as routine channels of distribution of company information, including press releases, analyst presentations, and supplemental financial information, as a means of disclosing material non-public information and for complying with our disclosure obligations under Regulation FD. Accordingly, investors should monitor these websites and corporate Twitter accounts in addition to following press releases, filings with the SEC, and public conference calls and webcasts. Additionally, we provide notifications of announcements as part of our website. Investors and others can receive notifications of new press releases posted on our website by signing up for email alerts.

None of the information provided on these websites, in our press releases or public conference calls and webcasts or through social media is incorporated into, or deemed to be a part of, this Annual Report on Form 20-F or in any other report or document we file with the SEC, and any references to such websites or corporate Twitter accounts are intended to be inactive textual references only.

PART I

ITEM 1. IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS

Not applicable.

ITEM 2. OFFER STATISTICS AND EXPECTED TIMETABLE

Not applicable.

ITEM 3. KEY INFORMATION

A. Selected Financial Data

The following selected statements of consolidated operations data for the years ended December 31, 2016, 2017 and 2018 and the selected statement of consolidated financial position data as of December 31, 2017 and 2018 have been derived from our audited consolidated financial statements included elsewhere in this Annual Report. The selected statements of consolidated operations data for the years ended December 31, 2014 and 2015 and the selected consolidated statement of financial position data as of December 31, 2014, 2015 and 2016 have been derived from our audited consolidated financial statements not included in this Annual Report. We applied IFRS 15 with effect from January 1, 2018 using the full retrospective method, therefore the financial statements as of and for the years ended December 31, 2016 and 2017 have been restated to reflect this adoption. the financial statements as of and for the years ended December 31, 2014 and 2015 have not been restated to reflect the adoption IFRS 15, Revenue from Contracts with Customers. Our audited consolidated financial statements have been prepared in accordance with International Financial Reporting Standards, or IFRS, as issued by the International Accounting Standards Board, or IASB.

The audited consolidated financial statements for the years, and as of, December 31, 2014, 2015, 2016, 2017 and 2018 are presented in U.S. dollars, which differs from the functional currency of Cellectis S.A., which is the Euro.

The following selected consolidated financial data for the periods and as of the dates indicated are qualified by reference to and should be read in conjunction with our consolidated financial statements and related notes beginning on page F-1 of this Annual Report, as well as the sections titled "Operating And Financial Review And Prospects" included elsewhere in this Annual Report.

Our historical results for any prior period do not necessarily indicate our results to be expected for any future period.

	For the years ended December 31,				
	2014	2015	2016	2017	2018
	$ in thousands, except share and per share data				
Revenues and other income	**35,151**	**62,565**	**56,444**	**33,715**	**21,432**
Operating expenses					
Royalty expenses	(4,033)	(2,746)	(1,777)	(2,620)	(2,739)
Research and development expenses	(19,144)	(58,154)	(78,458)	(79,227)	(76,567)
Selling, general and administrative expenses	(17,426)	(30,223)	(43,413)	(44,750)	(47,248)
Other operating income and expenses	(1,517)	(2,425)	(99)	232	31
Operating income (loss)	**(6,970)**	**(30,984)**	**(67,302)**	**(92,650)**	**(126,523)**
Loss from discontinued operations	(3,750)	—	—	—	—
Financial gain (loss)	**9,428**	**8,378**	**46**	**(11,032)**	**16,758**
Net income (loss)	**(1,292)**	**(22,606)**	**(67,255)**	**(103,683)**	**(88,333)**
Attributable to shareholders of Cellectis	27	(22,796)	(67,255)	(99,368)	(78,693)
Attributable to non-controlling interests	(1,318)	190	—	(4,315)	(9,640)
Earnings per share attributable to shareholders of Cellectis (1)					
Basic and diluted (2)	0.00	(0.67)	(1.91)	(2.78)	(1.93)
Number of shares used for computing					
Basic (1)	26,071,709	34,149,908	35,289,932	35,690,636	40,774,197
Diluted (1)	26,192,652	34,149,908	35,289,932	35,690,636	40,774,197
Other operating data					
Adjusted Net Income (Loss) attributable to shareholders of Cellectis (3)	755	10,606	(8,633)	(50,443)	(44,130)

(1) See Note 16 to our financial statements for further details on the calculation of basic and diluted loss per ordinary share.

(2) Potential ordinary shares resulting from the exercise of share warrants and employee warrants are antidilutive.
(3) Adjusted Net Income (Loss) attributable to shareholders of Cellectis is not a measure calculated in accordance with IFRS. We define Adjusted Net Income (Loss) attributable to shareholders of Cellectis as our Net Income (Loss) attributable to shareholders of Cellectis, adjusted to eliminate the impact of Non-cash stock-based compensation expense. See "Note Regarding Use of Non-GAAP Financial Measures" for important information. Please refer below for a reconciliation of Adjusted Net Income (Loss) attributable to shareholders of Cellectis to Net Income (Loss) attributable to shareholders of Cellectis, which is the most directly comparable financial measure calculated in accordance with IFRS.

Statement of Consolidated Financial Position Data

	As of December 31,				
	2014 (1)	2015 (1)	2016 (2)	2017 (2)	2018
	$ in thousands				
Current financial assets and Cash and cash equivalents	136,400	342,111	291,159	296,982	451,889
Total assets	167,077	371,314	331,432	332,882	500,840
Total shareholders' equity	72,272	287,002	272,985	283,985	450,272
Total non-current liabilities	3,912	547	590	3,443	3,699
Total current liabilities	90,894	83,765	57,857	45,453	46,869

(1) Financial statements as of and for the years ended December 31, 2014 and 2015 have not been restated to reflect the adoption IFRS 15, Revenue from Contracts with Customers.
(2) Financial statements as of and for the years ended December 31, 2016 and 2017 have been restated to reflect the adoption IFRS 15, Revenue from Contracts with Customers.

Reconciliation of Adjusted Net Income (Loss) attributable to shareholders of Cellectis to Net Income (Loss) attributable to shareholders of Cellectis

	For the years ended December 31,				
	2014	2015	2016	2017	2018
	$ in thousands				
Net Income (Loss) attributable to shareholders of Cellectis	**27**	**(22,796)**	**(67,255)**	**(99,368)**	**(78,693)**
Adjustment of non-cash stock-based compensation expense:					
Research and development expenses	299	20,563	33,207	23,832	18,057
Selling, general and administrative expenses	430	12,839	25,415	26,586	19,161
Total non-cash stock-based compensation expense:	728	33,402	58,622	50,418	37,218
Non-cash stock-based compensation expense attributable to non controlling interests	—	—	—	(1,493)	(2,655)
Adjusted Net Income (Loss) attributable to shareholders of Cellectis	**755**	**10,606**	**(8,633)**	**(50,443)**	**(44,130)**

B. Capitalization and Indebtedness

Not applicable.

C. Reasons for the Offer and Use of Proceeds

Not applicable.

D. Risk Factors

Our business and our industry are subject to significant risks. You should carefully consider all of the information set forth in this Annual Report, including the following risk factors. Our business, financial condition or results of operations could be materially adversely affected by any of these risks.

Risks Related to Our Business and Industry

We and Calyxt have limited operating histories, which makes it difficult to evaluate our current business and future prospects and may increase the risk of your investment.

We are a clinical-stage biopharmaceutical company and, as of December 31, 2018, we own 69.5% of Calyxt, Inc., a U.S. agricultural biotechnology company, each with a limited operating history. Investment in biopharmaceutical and agricultural biotechnology product development is a highly speculative endeavor. Biopharmaceutical and agricultural biotechnology product development entails substantial upfront capital expenditures and there is significant risk that any potential product candidate will fail to demonstrate adequate efficacy or an acceptable safety profile, to gain any required regulatory approvals or to become commercially viable. In our therapeutics business, we are focused on developing products using our gene-editing platform to develop genetically modified T-cells that express a CAR and are designed to target and kill cancer cells. While there have been significant advances in cell-based immunotherapy, our gene-editing platform and T-cell and CAR technologies are new and unproven. Several of the product candidates that we are developing or co-developing are in pre-clinical stages. We are sponsoring two ongoing clinical studies in the United States, for one of our product candidates, UCART123 – one targeting acute myeloid leukemia (AML) and the other targeting blastic plasmacytoid dendritic cell neoplasm (BPDCN). We have received approvals from the Medicines & Health products Regulatory Agency (MHRA) to commence a Phase I clinical study for UCART123 in the United Kingdom, and from the U.S. Food and Drug Administration (FDA) to start Phase I clinical trials for UCART22 and UCARTCS1, such approvals being subject to approval of the Institutional Review Boards of the investigational sites. In addition, UCART19, which we exclusively license to Les Laboratories Servier S.A.S., or Servier, is currently the subject of clinical development through two clinical studies being sponsored by Servier both targeting Acute Lymphoblastic Leukemia, and one clinical study being sponsored by Allogene Therapeutics, Inc., or Allogene, targeting Non-Hodgkin Lymphoma. We have not yet generated any revenue from biopharmaceutical product sales to date. In our agricultural biotechnology business, we are exploring the use of our gene-editing technologies to develop healthier food products for a growing population. Calyxt's plant products are in various stages of development. Although Calyxt has achieved commercialization of its High Oleic Soybean Oil and Meal in the first quarter of 2019, it has not yet generated significant revenues from sales of its plant products.

Our limited operating history may make it difficult to evaluate our current business and our future prospects. We have encountered, and will continue to encounter, risks and difficulties frequently experienced by growing companies in rapidly developing and changing industries, such as the biopharmaceutical and agricultural biotechnology industries, including challenges in forecasting accuracy, determining appropriate investments of our limited resources, gaining market acceptance of the products created using our gene-editing platform, managing a complex regulatory landscape and developing new product candidates. Our current operating model may require changes in order for us to scale our operations efficiently. You should consider our business and prospects in light of the risks and difficulties we face as an early-stage company focused on developing products in the fields of immunotherapy and agricultural biotechnology.

We have incurred significant losses since our inception, have no commercial biopharmaceutical products and anticipate that we will continue to incur significant losses for the foreseeable future.

We devote most of our financial resources to research and development relating to our CAR T-cell immunotherapy product candidates. We finance our current immuno-oncology operations primarily through strategic alliances with pharmaceutical companies, including Servier and Allogene (pursuant to assets transferred from Pfizer in April 2018), as well as through the sale of equity securities and, to a lesser extent, obtaining public funding in support of innovation, reimbursements of research tax credit claims, and royalties on our licensed technology. For the year ended December 31, 2018, we raised gross proceeds of $190.5 million in a follow-on equity offering and received $4.7 million in payments pursuant to our principal collaboration agreements, and Calyxt raised $60.9 million in gross proceeds, inclusive of $8.25 million from Cellectis's participation, in a follow-on offering. In the year ended December 31, 2018, our research and development expenses were $76.6 million including $18.1 million of non-cash stock based compensation expenses.

We currently have no commercial biopharmaceutical products. Notwithstanding the commencement of several clinical studies, it will be several years, if ever, before we obtain regulatory approval for, and are ready for commercialization of, a product candidate. Even if we or our collaborators successfully commence and complete clinical studies and obtain regulatory approval to market a product candidate, any future revenues will depend upon the size of any markets in which the product candidates are approved for sale as well as the market share captured by such product candidates, market acceptance of such product candidates and levels of reimbursement from third-party payors.

We expect to continue to incur significant expenses and operating losses for the foreseeable future. We expect our losses and our cash utilization to increase in the near term as we conduct our clinical studies, file IND and/or foreign equivalent filings for additional product candidates and conduct research and development for product candidates. In addition, we anticipate that such expenses will increase further and such increases may be substantial if and as we:

- continue to advance the research and development of our current and future immuno-oncology product candidates;
- continue, through Calyxt, to advance the research and development of current and future agricultural product candidates;
- initiate additional clinical studies for, or additional pre-clinical development of, our immuno-oncology product candidates;
- conduct and multiply, though Calyxt, additional field trials of our agricultural product candidates;
- further develop and refine the manufacturing process for our immuno-oncology product candidates;
- invest in our own manufacturing facilities in France and in the US;
- change or add additional manufacturers or suppliers of biological materials;
- seek regulatory and marketing approvals for our product candidates, if any, that successfully complete development;
- establish a sales, marketing and distribution infrastructure to commercialize any products for which we may obtain marketing approval;
- seek to identify and validate additional product candidates;
- acquire or in-license other product candidates, technologies, germplasm or other biological material;
- make milestone or other payments under any in-license agreements;
- maintain, protect and expand our intellectual property portfolio;
- secure manufacturing arrangements for commercial production;
- seek to attract and retain new and existing skilled personnel;
- create additional infrastructure to support our operations as a public company; and
- experience any delays or encounter issues with any of the above.

The net losses we incur may fluctuate significantly from year to year and quarter to quarter, such that a period-to-period comparison of our results of operations may not be a good indication of our future performance. In any particular period or periods, our operating result could be below the expectations of securities analysts or investors which could cause the price of our ADSs to decline.

We may need to raise additional funding. Additional funding may not be available on acceptable terms, or at all. Failure to obtain this necessary capital when needed may force us to delay, limit or terminate our product development efforts or other operations.

We are currently sponsoring five clinical studies. In addition, we are preparing to file additional IND and/or foreign equivalent filings with respect to new clinical studies for certain of our product candidates and/or extend the number of investigational sites, and we are advancing our product candidates to and through pre-clinical testing. The process of developing and manufacturing CAR T-cell product candidates and conducting clinical studies is expensive, lengthy and risky, and we expect our research and development expenses to increase substantially in connection with our ongoing activities. In addition, subject to obtaining regulatory approval of any biopharmaceutical product candidates, we expect to incur significant commercialization expenses.

As of December 31, 2018, we had cash and cash equivalents and current financial assets of approximately $451.9 million. We believe our cash and cash equivalents and our cash flow from operations (including payments we expect to receive pursuant to our collaboration agreements) and government funding of research programs will be sufficient to fund our operations through 2021. However, in order to complete the development process, manufacturing, development, building out our manufacturing capabilities and obtaining regulatory approval for and commercialize, if approved, any of our biopharmaceutical product candidates, we may require additional funding. Also, our operating plan, including our product development plans, may change as a result of many factors currently unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings, government or other third-party funding, marketing and distribution arrangements and other collaborations, strategic alliances and licensing arrangements, or a combination of these approaches. To commercialize our products, if approved, we will require significant working capital to operate our business and maintain our operations.

In addition, our ability to raise additional capital may be limited. To the extent that we raise additional capital through the sale of additional equity or convertible securities, current ownership interests may be diluted and the terms of these securities may include liquidation or other preferences that adversely affect stockholders' rights. Debt financing, if available, would result in increased fixed payment obligations and a portion of our operating cash flows, if any, being dedicated to the payment of principal and interest on such indebtedness. In addition, debt financing may involve agreements that include restrictive covenants that impose operating restrictions, such as restrictions on the incurrence of additional debt, the making of certain capital expenditures or the declaration of dividends. To the extent we raise additional funds through arrangements with collaborators or otherwise, we may be required to relinquish some of our technologies, product candidates or revenue streams, license our technologies or product candidates on unfavorable terms, or otherwise agree to terms unfavorable to us.

Any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our product candidates. In addition, we cannot guarantee that future financing will be available in sufficient amounts or on terms acceptable to us, if at all. Even if we believe we have sufficient funds for our current or future operating plans, we may seek additional capital if market conditions are favorable or in light of specific strategic considerations.

If we are unable to obtain funding on a timely basis, we may be required to significantly curtail, delay or discontinue one or more of our research or product candidate development programs or the commercialization of any product candidate or be unable to expand our operations or otherwise capitalize on our business opportunities, as desired, which could materially affect our business, operating results and prospects.

We are limited in our ability to raise additional share capital, which may make it difficult for us to raise capital to fund our operations.

Under French law, our share capital generally may be increased with the approval of a two-thirds majority vote of the shareholders present, represented by proxy, or voting by mail obtained at an extraordinary general shareholders' meeting following the recommendation of our board of directors. The shareholders may delegate to our board of directors either the authority (*délégation de compétence*) or the power (*délégation de pouvoir*) to carry out any increase in the share capital. Accordingly, our board of directors may be precluded from issuing additional share capital if the prior approval of the shareholders is not duly obtained.

Risks Related to the Discovery, Development and Commercialization of Our Therapeutic Product Candidates

Our therapeutic product candidate development programs are in the discovery, pre-clinical proof-of-concept or clinical phase and may be unsuccessful.

We are currently sponsoring five clinical studies and pursuant to an exclusive license, three clinical studies are being sponsored by Servier or its sublicensee, and several of our therapeutic product candidates are still in discovery or pre-clinical proof of concept stages of development and have only undergone limited testing in animals.

Even if certain of our product candidates progress through clinical studies, these product candidates may fail to show the desired safety and efficacy in clinical development despite demonstrating positive preliminary clinical data and/or results in animal studies. The results from animal studies are not necessarily predictive of results in current or future clinical studies. For example, while our animal studies of product candidates may result in evidence of tumor cell elimination, there can be no assurance that the success we achieve in such animal studies for these product candidates will result in success in any clinical studies.

Because many of our current product candidates are still in the early stages of development, with the majority of our product candidates in the discovery or pre-clinical proof-of-concept phase, there can be no assurance that our research and development

activities will result in product candidates we can advance through clinical development. Although we and our collaborators commenced various clinical studies on UCART candidate products, the results of such clinical studies are subject to a variety of factors and considerations and we cannot assure you that we or our collaborators will achieve the applicable targets in these studies. For our other product candidates, which remain in various stages of discovery or pre-clinical development, we have limited data.

Because of the early stage of development of our product candidates, we have not yet demonstrated the safety, specificity and clinical benefits of our product candidates in humans, and we cannot assure you that the results of any human trials will demonstrate the value and efficacy of our platform. Moreover, there are a number of regulatory requirements that we must satisfy before additional clinical studies may be commenced in the United States and the European Union, with respect to our product candidates. Satisfaction of these requirements will entail substantial time, effort and financial resources. We may never satisfy these requirements. Any time, effort and financial resources we expend on our other early-stage product candidate development programs may adversely affect our ability to continue development and commercialization of our more advanced product candidates and we may never commence additional clinical studies despite expending significant resources in pursuit of their development. Further, our clinical studies may not be successful and such product candidates may never be approved by the U.S. Food and Drug Administration, or FDA, the European Medicines Agency, or EMA, or any other regulatory agency.

Early data from compassionate use treatment and from clinical trials are not predictive of success in later clinical trials.

In December 2016, during a meeting with the National Institutes of Health's Office of Biotechnology Activities' Recombinant DNA Advisory Committee, or the RAC, Pfizer and Servier presented preliminary clinical data for UCART19, including data from UCART19 Clinical Studies and from three clinical uses of UCART19 on a compassionate basis. These three compassionate use patients have been treated under U.K. "specials" licenses from the Medicines & Healthcare products Regulatory Agency (MHRA) to administer the UCART19 product candidate to a patient on compassionate use base. Compassionate use refers to the use of an investigational drug outside of a clinical trial to treat a patient with a serious or immediately life-threatening disease or condition who has no comparable or satisfactory alternative treatment options. More recently, in December 2018, during the American Society of Hematology (ASH) Conference, Servier presented intermediate results from its current pediatric and adult clinical studies on UCART19 in the United Kingdom, the United States, Belgium and France. Results from the pediatric and adult UCART19 Clinical Studies, showing that 82% of patients (14/17) who received a lymphodepletion regimen (consisting of fludarabine, cyclophosphamide and alemtuzumab, an anti-CD52 monoclonal antibody) achieved a complete remission (CR) or complete remission with incomplete blood cell recovery (CRi) by day 28 or day 42, after infusion. Within the 14 responder patients, 71% of them showed a "minimum residual disease" (MRD) negative (MRD- stands for less than 1 leukemic cell among 10E4 normal cells) assessed by flow or qPCR. When considering all treated patients (lymphodepleted or not), 67% (14/21) of them did achieve CR/CRi. Regarding safety considerations, there was no serious adverse events (grade □3) for graft versus host disease (GvHD) and neurological events. Grade 3-4 toxicities did only regard events of cytokine release syndrome (14%, 3/21), prolonged cytopenia (29%, 6/21) and viral infections (24%, 5/21).

We cannot assure you that the administration of UCART19 to other patients will have results that are similar to those reported by Servier. Such results are preliminary in nature, do not bear statistical significance and should not be viewed as predictive of ultimate success. It is possible that such results will not continue or may not be repeated in other potential compassionate uses or in ongoing or future clinical trials on UCART19 or other UCART product candidates.

We have limited experience in conducting or managing clinical trials for potential therapeutic products.

We are currently sponsoring clinical studies at four sites and anticipate expanding existing clinical studies to additional sites and commencing additional clinical studies. We have limited experience in conducting or managing the clinical trials necessary to obtain regulatory approvals for any product candidate. We rely on a clinical research organization, or CRO, medical institutions and clinical investigators to conduct our clinical studies. Our reliance on third parties for clinical development activities reduces our control over these activities. Third-party contractors may not complete activities on schedule, or may not conduct clinical trials in accordance with regulatory requirements or our trial design. If these third parties do not successfully carry out their contractual duties or meet required performance standards or expected deadlines, we might be required to replace them or the data that they provide could be rejected by the FDA or comparable foreign regulatory bodies, all of which may result in a delay of the affected trial and additional program costs.

We may encounter substantial delays in our clinical trials or we may fail to demonstrate safety and efficacy to the satisfaction of applicable regulatory authorities.

Pre-clinical testing and clinical trials are long, expensive and unpredictable processes that can be subject to extensive delays. For example, in September 2017, a clinical hold was placed on our UCART123 clinical studies in acute myeloid leukemia (AML)

and in blastic plasmacytoid dendritic cell neoplasm (BPDCN) and remained in place until the FDA permitted these clinical studies to restart in November 2017 according to revised protocols, and in 2018, manufacturing events slowed down the advancement of our UCART123 clinical studies and the commencement of our UCART22 clinical study.

We cannot guarantee that any pre-clinical studies or clinical trials will be conducted as planned or completed on schedule, if at all. It may take several years to complete the pre-clinical testing and clinical development necessary to commercialize a product candidate, and delays or failure can occur at any stage. Interim results of clinical trials do not necessarily predict final results, and success in pre-clinical testing and early clinical trials does not ensure that later clinical trials will be successful. A number of companies in the pharmaceutical, biopharmaceutical and biotechnology industries have suffered significant setbacks in advanced clinical trials even after promising results in earlier trials, including a number of patient deaths in CAR-T trials conducted in the United States, and we cannot be certain that our product candidates will not face similar setbacks. In addition, the design of a clinical trial can determine whether its results will support approval of a product and flaws in the design of a clinical trial may not become apparent until the clinical trial is well advanced. An unfavorable outcome in one or more clinical trials would be a major setback for our product candidates and for us and may require us or our collaborators to delay, reduce or re-define the scope of, or eliminate one or more product candidate development programs, any of which could have a material adverse effect on our business, financial condition and prospects.

In connection with clinical testing and trials on product candidates we develop for ourselves or on behalf of our collaborators, we may face a number of risks, including:

- pre-clinical results may not be indicative of clinical results in humans;
- a product candidate may be ineffective, inferior to existing approved drugs or therapies or unacceptably toxic, or may have unacceptable side effects;
- patients may die or suffer other adverse effects for reasons that may or may not be related to the product candidate being tested;
- the results may not confirm the favorable results of earlier testing or trials; and
- the results may not meet the level of statistical significance required by the FDA and/or other applicable regulatory agencies to establish the safety and efficacy of our product candidates

In addition, a number of events, including any of the following, could delay the completion of our current and future clinical trials and negatively impact the ability to obtain regulatory approval for, and to market and sell, a particular product candidate:

- conditions imposed on us or our collaborators by the FDA or any foreign regulatory authority regarding the scope or design of clinical trials;
- delays in obtaining, or our inability to obtain, required approvals from institutional review boards, or IRBs, or other reviewing entities at clinical sites selected for participation in our clinical trials;
- insufficient supply or deficient quality of the product candidates or other materials necessary to conduct the clinical trials;
- delays in obtaining regulatory agency approval for the conduct of the clinical trials;
- lower-than-anticipated enrollment and retention rate of subjects in clinical trials for a variety of reasons, including size of patient population, sites selection, nature of trial protocol, the availability of approved effective treatments for the relevant disease and competition from other clinical trial programs for similar indications;
- serious and unexpected drug-related side effects experienced by patients in clinical trials (including clinical studies for similar side effects reported in third parties' product candidate); or
- failure of our or our collaborators' third-party contractors to meet their contractual obligations in a timely manner.

Data obtained from pre-clinical and clinical activities are subject to varying interpretations, which may delay, limit or prevent regulatory approval. In addition, we cannot assure you that, in the course of clinical trials, some drawbacks would not appear that reveal that it is not possible or practical to continue development efforts for the subject product candidates.

Clinical trials may also be delayed or terminated as a result of ambiguous or negative interim results. In addition, a clinical trial may be suspended or terminated by us or our collaborators, the FDA, the IRBs at the sites where the IRBs are overseeing a trial, or a data safety monitoring board, or DSMB, overseeing the clinical trial at issue, or other regulatory authorities due to a number of factors, including:

- failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols;

- inspection of the clinical trial operations or trial sites by the FDA or other regulatory authorities resulting in the imposition of a clinical hold;
- unfavorable interpretations by FDA or similar foreign regulatory authorities of data, where clinical study plans call for interim data analysis;
- FDA or similar foreign regulatory authorities determine the plan or protocol for the investigation is deficient in design to meet its stated objectives;
- lack of, or failure to, demonstrate efficacy;
- unforeseen safety issues; or
- lack of adequate funding to continue the clinical trial.

In addition, changes in regulatory requirements and guidance may occur and we or our collaborators may need to amend clinical trial protocols to reflect these changes. Amendments may require us or our collaborators to resubmit our clinical trial protocols to IRBs for reexamination, which may impact the cost, timing or successful completion of a clinical trial.

Even if a product candidate successfully completes clinical trials, those results are not necessarily predictive of results of additional trials that may be needed before regulatory approval may be obtained. Although there are a large number of drugs and biologics in development globally, only a small percentage obtain regulatory approval, even fewer are approved for commercialization, and only a small number achieve widespread physician and consumer acceptance.

If the results of our clinical trials are inconclusive or if there are safety concerns or adverse events associated with the product candidates we develop, we may:

- lose any competitive advantages that such product candidates may have;
- be delayed in obtaining marketing approval for the subject product candidates, if at all;
- obtain approval for indications or patient populations that are not as broad as initially intended or desired;
- obtain approval with labeling that includes significant use or distribution restrictions, contraindications or safety warnings;
- be subject to changes with the way the product is administered;
- be required to perform additional clinical trials or broaden current clinical trials to support approval or be subject to additional post-marketing testing requirements;
- have regulatory authorities withdraw their approval of the product or impose restrictions on its distribution in the form of a modified risk evaluation and mitigation strategy;
- need to modify or terminate contractual relationship with third parties with regard to the performance of said clinical trials;
- be sued;
- experience damage to our reputation; or
- not reach the milestones triggering payments from our collaborators.

Our product candidates are based on a novel technology, which makes it difficult to predict the time and cost of product candidate development and obtaining regulatory approval. Currently, only a very limited number of gene therapy products have been approved in the United States or Europe.

We have concentrated our research and development efforts on our CAR T-cell immunotherapy product development, including our gene-editing technologies, and our future success depends on the successful development of this therapeutic approach. We are in the early stages of developing our UCART product candidates' platform and there can be no assurance that any development problems we experience in the future related to our gene-editing technologies will not cause significant delays or unanticipated costs, or that such development problems can be overcome. We may also experience delays in developing a sustainable, reproducible and scalable manufacturing process or transferring that process to commercial partners, which may prevent us from completing our clinical studies or commercializing our products on a timely or profitable basis, if at all.

In addition, the clinical study requirements of the FDA, EMA and other regulatory agencies and the criteria these regulators use to determine the safety and efficacy of a product candidate are determined according to the type, complexity, novelty and intended use and market of the potential products. The regulatory approval process for novel product candidates such as ours can

be more complex and consequently more expensive and take longer than for other, better known or extensively studied pharmaceutical or other product candidates. In August 2017, Novartis AG obtained approval from the FDA to commercialize the first CAR T-cell therapy, for children and young adults with relapsed or refractory, or r/r, B-cell ALL, and has recently been granted FDA priority review for adults with r/r diffuse large B-cell lymphoma (DLBCL). In October 2017, Kite Pharma (acquired by Gilead) obtained approval from the FDA to commercialize the first CAR T-cell therapy for the treatment of adult patients with r/r large B-cell lymphoma. Approvals by the EMA and FDA for existing gene therapy products may not be indicative of what these regulators may require for approval of further gene therapy products. More generally, approvals by any regulatory agency may not be indicative of what any other regulatory agency may require for approval or what such regulatory agencies may require for approval in connection with new product candidates.

The regulatory landscape that will govern our product candidates is uncertain; regulations relating to more established gene therapy and cell therapy products are still developing, and changes in regulatory requirements could result in delays or discontinuation of development of our product candidates or unexpected costs in obtaining regulatory approval.

Because we are developing novel CAR T-cell immunotherapy product candidates that are unique biological entities, the regulatory requirements that we will be subject to are not entirely clear. Even with respect to more established products that fit into the categories of gene therapies or cell therapies, the regulatory landscape is still developing. For example, regulatory requirements governing gene therapy products and cell therapy products have changed frequently and may continue to change in the future. Moreover, there is substantial, and sometimes uncoordinated, overlap in those responsible for regulation of existing gene therapy products and cell therapy products. For example, in the United States, the FDA has established the Office of Tissues and Advanced Therapies (OTAT, formerly known as the Office of Cellular, Tissue and Gene Therapies, or OCTGT) within its Center for Biologics Evaluation and Research, or CBER, to consolidate the review of gene therapy and related products, and the Cellular, Tissue and Gene Therapies Advisory Committee to advise CBER on its review. Gene therapy clinical trials are also subject to review and oversight by an institutional biosafety committee, or IBC, a local institutional committee that reviews and oversees basic and clinical research conducted at the institution participating in the clinical trial. Gene therapy clinical studies conducted at institutions that receive funding for recombinant DNA research from the U.S. National Institutes of Health, or the NIH, are also subject to review by the NIH Office of Biotechnology Activities' Recombinant DNA Advisory Committee, or the RAC. Although the FDA decides whether individual gene therapy protocols may proceed, review process and determinations of other reviewing bodies can impede or delay the initiation of a clinical study, even if the FDA has reviewed the study and approved its initiation. Conversely, the FDA can place an IND application on clinical hold even if such other entities have provided a favorable review. Furthermore, each clinical trial must be reviewed and approved by an independent institutional review board, or IRB, at or servicing each institution at which a clinical trial will be conducted. In addition, adverse developments in clinical trials of gene therapy products conducted by others may cause the FDA or other regulatory bodies to change the requirements for approval of any of our product candidates.

Complex regulatory environments exist in other jurisdictions in which we might consider seeking regulatory approvals for our product candidates, further complicating the regulatory landscape. For example, in the EU a special committee called the Committee for Advanced Therapies (CAT) was established within the EMA in accordance with Regulation (EC) No 1394/2007 on advanced-therapy medicinal products (ATMPs) to assess the quality, safety and efficacy of ATMPs, and to follow scientific developments in the field. ATMPs include gene therapy products as well as somatic cell therapy products and tissue engineered products. In this regard, on May 28, 2014, the EMA issued a recommendation that Cellectis' UCART19 be considered a gene therapy product under Regulation (EC) No 1394/2007 on ATMPs. We believe this recommendation is likely to be applicable to our UCART product candidates; however, this recommendation is not definitive until such products obtain regulatory approval for commercialization.

These various regulatory review committees and advisory groups and new or revised guidelines that they promulgate from time to time may lengthen the regulatory review process, require us to perform additional studies, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of our product candidates or lead to significant post-approval limitations or restrictions. Because the regulatory landscape for our CAR T-cell immunotherapy product candidates is new, we may face even more cumbersome and complex regulations than those emerging for gene therapy products and cell therapy products. Furthermore, even if our product candidates obtain required regulatory approvals, such approvals may later be withdrawn as a result of changes in regulations or the interpretation of regulations by applicable regulatory agencies.

As we or our collaborators advance our product candidates, we and they will be required to consult with these regulatory and advisory groups and comply with all applicable guidelines, rules and regulations. Because the UCART19 Clinical Studies are being sponsored by Servier or Allogene, they are directly interacting with the relevant regulatory agencies and we are not able to direct such interactions. Some of the discussions among our commercial collaborators and relevant regulatory agencies could generate additional unexpected requirements from regulatory agencies that would apply to our wholly-controlled UCART product candidates, including UCART123, and could lead to potential delays or additional requirements. For example, as a result of such interactions, regulators may require that we implement additional studies or testing with respect to our product candidates or modify our clinical studies, including the UCART123 Clinical Studies.

If we fail to do so, we may be required to delay or discontinue development of our product candidates.

Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring a potential product to market could decrease our ability to generate sufficient product revenue to maintain our business.

The results of the United Kingdom's referendum on withdrawal from the European Union may have a negative effect on our business, results of operations and financial condition.

The United Kingdom's decision to leave the European Union, taken by national referendum on June 23, 2016, commonly referred to as Brexit, had created an uncertain political and economic environment in the United Kingdom and potentially across other European Union member states. On March 29, 2017, the United Kingdom's government invoked article 50 of the Treaty of the European Union, starting a negotiation period of up to two years. At the end of this two-year period, on March 29, 2019, the United Kingdom's membership in the European Union will end automatically, unless an extension of the negotiation period is unanimously agreed upon by the European Council. Negotiations between the United Kingdom and the European Union are ongoing to determine their future relations, including trade, financial and legal agreements.

The nature, timeline and political and economic effects of Brexit remain quite uncertain to this date. Depending on the outcome of the negotiations, a certain number of risks could materialize, including:

- a deterioration or stagnation of the United Kingdom's economic conditions,
- volatility in the exchange rate between the euro and the pound sterling, which may have a negative impact on our results,
- a rise in inflation in the United Kingdom,
- legal and regulatory uncertainty, in particular regarding the interaction between local and European regulations or regarding taxation,
- legal and regulatory uncertainty regarding the conduct of clinical trials and/or the approval of our product candidates in the United Kingdom, which may affect our ability to conduct clinical trials and obtain regulatory approvals in the United Kingdom. Any delay in the completion of our United Kingdom clinical trials or in obtaining any regulatory approvals in the United Kingdom could prevent us from commercializing our product candidates in the United Kingdom and/or the European Union,
- increased difficulties in finding financing opportunities in the United Kingdom or finding financing opportunities secured in whole or in part by assets located in the United Kingdom.

The occurrence of such events or risks could adversely affect our business, our prospects, our ability to achieve our objectives, generate revenue and achieve and sustain profitability.

Our gene-editing technology is relatively new, and if we are unable to use this technology in all of our intended applications, our revenue opportunities will be limited.

Even if the use of gene editing technologies increases, our technology involves a relatively new approach to gene editing, using sequence-specific DNA-cutting enzymes, or nucleases, to perform precise and stable modifications in the DNA of living-cells and organisms. Although we have generated nucleases for many specific gene sequences, we have not created nucleases for all gene sequences that we may seek to target, and we may not be able do so, which could limit the usefulness of our technology.

The expected value and utility of our nucleases is, in part, based on our belief that the targeted modification of genes or specific regulation of gene expression may enable us to develop a new therapeutic approach. There is only a limited understanding of the role of specific genes in these applications. Life sciences companies have only been able to successfully develop or commercialize a few products in this biopharmaceutical space based on results from genome research or the ability to regulate gene expression. We or our collaborators may not be able to use our technology to develop commercial products.

In addition, the industry is rapidly developing, and our competitors may introduce new technologies that render our technology obsolete or less attractive. New technology could emerge at any point in the development cycle of our product candidates. As competitors use or develop new technologies, we may be placed at a competitive disadvantage, and competitive pressures may force us to implement new technologies at a substantial cost. In addition, our competitors have greater financial, technical and personnel resources that allow them to enjoy technological advantages and may in the future allow them to implement new technologies before we can. We cannot be certain that we will be able to implement technologies on a timely basis or at a cost that is acceptable to us. If we are unable to maintain technological advancements consistent with industry standards, our operations and financial condition may be adversely affected.

We depend almost entirely on the successful development of our product candidates. We cannot be certain that we or our collaborators will be able to obtain regulatory approval for, or successfully commercialize, these products.

Our business depends primarily on the successful clinical development, regulatory approval and commercialization of our CAR T-cell immunotherapy product candidates. Notwithstanding our ongoing clinical studies, we may never be able to develop products that will be approved or commercialized. We are also studying in pre-clinical studies, on our own or through our collaborators, other product candidates based on gene-edited cells for immunotherapy.

Our therapeutic product candidates will require substantial additional clinical development, testing, and regulatory approval before we are permitted to commence their commercialization. The clinical trials of our product candidates are, and the manufacturing and marketing of our product candidates will be, subject to extensive and rigorous review and regulation by numerous government authorities in the United States and in other countries where we intend to test and, if approved, market any product candidate. Before obtaining regulatory approvals for the commercial sale of any product candidate, we must demonstrate, with substantial evidence gathered in well-controlled clinical trials, and, with respect to approval in the United States, to the satisfaction of the FDA or, with respect to approval in other countries, similar regulatory authorities in those countries, that the product candidate is safe and effective for use in each target indication. In the United States, we expect that the requisite regulatory submission to seek marketing approval for our gene therapy products will be a Biologic License Application, or BLA, and the competent regulatory authority is the FDA. In the EU, the requisite approval is a Marketing Authorization, or MA, which for products developed by the means of recombinant DNA technology, gene or cell therapy products as well as tissue engineered products, is issued through a centralized procedure involving the EMA. Satisfaction of these and other regulatory requirements is costly, time consuming, uncertain and subject to unanticipated delays. Despite our efforts, our product candidates may not:

- offer improvement over existing, comparable products;
- be proven safe and effective in clinical trials; or
- meet applicable regulatory standards.

This process can take many years and may include post-marketing studies and surveillance, which will require the expenditure of substantial resources beyond our existing cash on hand. Of the large number of drugs in development globally, only a small percentage successfully completes the regulatory approval process and even fewer are commercialized. Furthermore, we have not marketed, distributed or sold any products. Our success will, in addition to the factors discussed above, depend on the successful commercialization of the product candidates we develop on our own or on behalf of our collaborators, which may require:

- obtaining and maintain commercial manufacturing arrangements with third-party manufacturers;
- collaborating with pharmaceutical companies or contract sales organizations to market and sell any approved drug; or
- acceptance of any approved drug in the medical community and by patients and third-party payors.

Many of these factors are beyond our control. We do not expect any of the product candidates we develop on our own and those we develop on behalf of our collaborators to be commercially available for many years and some or all may never become commercially available. We may never generate revenues through the sale of products.

Accordingly, even if we are able to obtain the requisite financing to continue to fund our development and clinical programs, we cannot assure you that our product candidates will be successfully developed or commercialized.

We face substantial competition from companies, including biotechnology and pharmaceutical companies, many of which have considerably more resources and experience than we have, which may result in competitors discovering, developing, receiving approval for, or commercializing products before or more successfully than us.

The biotechnology and pharmaceutical industries are characterized by intense competition and rapid innovation, and many companies put significant resources toward developing novel and proprietary therapies for the treatment of cancer, which often incorporate novel technologies and valuable intellectual property. We compete with companies in the immunotherapy space, as well as companies developing novel targeted therapies for cancer. In addition, our product candidates, if approved, will compete with existing standards of care for the diseases that our product candidates target as well as new compounds, drugs or therapies, some of which may achieve better results than our product candidates. We anticipate that we will face intense and increasing competition from many different sources, including new and established biotechnology and pharmaceutical companies, academic research institutions, governmental agencies and public and private research institutions.

Our competitors include:

- Gene-editing space: CRISPR Therapeutics, Inc., Editas Medicine, Inc., Intellia Therapeutics, Inc., Precision BioSciences, Inc. and Sangamo BioSciences, Inc.
- Autologous and Allogeneic CAR T-cell space: Juno Therapeutics, Inc. (in collaboration with Editas Medicine Inc.), acquired by Celgene Corporation and acquired since by Bristol-Myers Squibb; Bluebird bio, Inc. (in collaboration with Celgene Corporation); Ziopharm Oncology Inc. (in collaboration with Intrexon Corporation); Kite Pharma Inc. (in collaboration with Amgen Inc. and with Sangamo Therapeutics Inc.), acquired by Gilead Sciences Inc.; Novartis AG (in collaboration with Intellia Inc.); Johnson & Johnson (in collaboration with Transposagen Biopharmaceuticals Inc.); Precision Biosiences (in collaboration with Shire Plc, asset acquired since by Servier), Regeneron Pharmaceuticals Inc. (in collaboration with Adicet Bio Inc); Fate Therapeutics Inc.; CRISPR Therapeutics Inc. (in collaboration with Bayer AG and Vertex Inc.).
- Cell-therapy space: Adaptimmune Ltd, Iovance Biotherapeutics, Unum Therapeutics, Inc., NantKwest, Inc., Celyad S.A., Atara Biotherapeutics, Inc., and Immunocore Ltd.

We also face competition from non-cell based treatments offered by companies such as Amgen Inc., AstraZeneca plc, Bristol-Myers Squibb Company, Incyte Corporation, Merck & Co., Inc., and F. Hoffman-La Roche AG. Immunotherapy is further being pursued by several biotech companies as well as by large-cap pharmaceutical companies. Many of our competitors, either alone or with their collaboration partners, have substantially greater financial, technical and other resources, such as larger research and development staff and/or greater expertise in research and development, manufacturing, pre-clinical testing and conducting clinical trials. In addition, smaller or early-stage companies may compete with us through collaborative arrangements with more established companies. Competition may increase further as a result of advances in the commercial applicability of technologies and greater availability of capital for investment in these enterprises. Mergers and acquisitions in the pharmaceutical, biotechnology and gene therapy industries may result in even more resources being concentrated among a smaller number of our competitors. Our competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

Competition may increase further as a result of advances in the commercial applicability of technologies and greater availability of capital for investment in these industries. Our competitors, either alone or with collaborators, may succeed in developing, acquiring or licensing on an exclusive basis drug or biologic products that are more effective, safer, more easily commercialized, or less costly than our product candidates or may develop proprietary technologies or secure patent protection that we may need for the development of our technologies and products.

Even if we obtain regulatory approval of our product candidates, we may not be the first to market and that may affect the price or demand for our product candidates. Additionally, the availability and price of our competitors' products could limit the demand and the price we are able to charge for our product candidates. We may not be able to implement our business plan if the acceptance of our product candidates is inhibited by price competition or the reluctance of physicians to switch from existing methods of treatment to our product candidates, or if physicians switch to other new drug or biologic products or choose to reserve our product candidates for use in limited circumstances. A competitor could obtain orphan product exclusivity from the FDA with respect to such competitor's product. If such competitor product is determined to be the same product as one of the product candidates we develop, that may prevent us or our collaborators from obtaining approval from the FDA for such product candidate for the same indication for seven years, except in limited circumstances.

The regulatory approval processes of the FDA and comparable foreign authorities are lengthy, time consuming and inherently unpredictable, and if we are ultimately unable to obtain regulatory approval for our product candidates, our business will be substantially harmed.

The time required to obtain approval by the FDA and comparable foreign authorities is inherently unpredictable but typically takes many years following the commencement of clinical trials and depends upon numerous factors, including the discretion of the regulatory authorities. In addition, approval policies, regulations, or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions. We have not obtained regulatory approval for the commercialization of any product candidate and it is possible that none of our existing product candidates or any product candidates we may seek to develop in the future will ever obtain such regulatory approval.

The FDA or other regulatory authority, as applicable, may delay, limit or deny approval of our product candidates for many reasons, including the following:

- the FDA or comparable foreign regulatory authorities may disagree with the number, design, size, conduct or implementation of our clinical trials or require that additional clinical trials be conducted;
- we may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that a product candidate is safe and effective for its proposed indication;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- we may be unable to demonstrate that a product candidate's clinical and other benefits outweigh its safety risks;
- the CROs or other third-party contractors that are retained to assist us in connection with the clinical trials of our product candidates may take or omit actions, breach applicable laws and requirements, that materially adversely impact the clinical trials;
- the FDA or comparable foreign regulatory authorities may disagree with our interpretation of data from manufacturing, pre-clinical studies or clinical trials;
- the FDA or comparable foreign regulatory authorities may not accept data generated at the sites involved in the clinical trials for our product candidates;
- the FDA or comparable foreign regulatory authorities may not approve the production process, testing, formulation, labeling or specifications of our product candidates;
- the data collected from clinical trials of our product candidates may not be sufficient to support the submission of a BLA or other submission or to obtain regulatory approval in the United States or elsewhere;
- if the marketing application, if and when submitted, is reviewed by an advisory committee, the FDA or comparable foreign regulatory authorities may have difficulties scheduling an advisory committee meeting in a timely manner or the advisory committee may recommend against approval of our application or may recommend that the competent regulatory authorities require, as a condition of approval, additional pre-clinical studies or clinical trials, limitations on approved labeling or distribution and use restrictions;
- the FDA or comparable foreign regulatory authorities may require development of a Risk Evaluation and Mitigation Strategy as a condition of approval or post-approval;
- the FDA or comparable foreign regulatory authorities may restrict the use of our products to a narrow population;
- the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies; or
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

This lengthy approval process as well as the unpredictability of future clinical trial results may result in our failing to obtain regulatory approval to market the product candidates we develop, which would significantly harm our business, results of operations and prospects. In addition, even if we or our collaborators were able to obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request, may not approve the price we intend to charge for our products, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve a drug candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. Any of the foregoing scenarios could materially harm the commercial prospects for the product candidates we develop.

We expect several of the product candidates we develop will initially be available as treatment for patients with advanced disease, or with a rare disease with no other treatment option, which could limit the size of the market for these product candidates.

We expect that, if approved, several of the product candidates we develop will initially receive regulatory approval as treatment for advanced or rare diseases. This could limit the initial size of the market for these product candidates, and we cannot predict when, if ever, such product candidates would receive regulatory approval for indications treating a more extensive patient population.

The manufacturing process for the product candidates we develop is highly complex. Any issues that arise in the manufacturing process could have an adverse effect on our business, financial position or prospects.

The product candidates we develop undergo a complex, highly-regulated manufacturing process that is subject to multiple risks. As a result of the complexities of this process, the cost to manufacture our CAR T-cell immunotherapy products is generally higher than traditional small molecule chemical compounds, and the manufacturing process requires very minimal batch-to-batch variability, which is expensive to ensure. Our manufacturing process is susceptible to product loss or failure due to issues associated with the collection of white blood cells from healthy third-party donors, manufacturing or supply of raw material or starting material, shipping such material to the manufacturing site, ensuring standardized production batch-to-batch in the context of mass production, freezing the manufactured product, shipping the final product globally, and infusing patients with the product. In addition, we may face manufacturing issues associated with interruptions in the manufacturing process, contamination, equipment or reagent failure, shortage of raw material or starting material and other procurement issues, changes in regulation, improper installation or operation of equipment, vendor or operator error, inconsistency in cell growth, and variability in product characteristics. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects, and other supply disruptions. If microbial, viral, or other contaminations are discovered in our product candidates or in the manufacturing facilities in which our product candidates are made, the manufacturing may be stopped or such manufacturing facilities may need to be closed, for an extended period of time to investigate and remedy the contamination. Further, as our product candidates are developed through pre-clinical to late stage clinical trials towards approval and commercialization, it is common that various aspects of the development program, such as manufacturing methods, are altered along the way in an effort to optimize processes and results or adapt to the regulatory agencies' requirements. Such changes carry the risk that they will not achieve these intended objectives, and any of these changes could cause our product candidates to perform differently and affect the results of planned clinical trials or other future clinical trials.

Currently, the product candidates we develop are manufactured using processes intended for pre-clinical and clinical stage production by third-party contract manufacturing organizations, or CMOs. Although we work with CMOs to ensure that commercially viable processes will be available for mass production, there are risks associated with scaling to the level required for advanced clinical trials or commercialization, including, among others, cost overruns, potential problems with process scale-up and/or scale-out, process reproducibility, stability issues, lot consistency, and timely availability of reagents or raw materials. We may ultimately be unable to reduce the cost of goods for the product candidates to levels that will allow for an attractive return on investment if and when those product candidates are commercialized.

We expect our manufacturing strategy for the product candidates we develop will continue to involve the use of one or more CMOs as well as our own manufacturing facility, which we intend to establish. However, we have no experience as a company in developing a manufacturing infrastructure that complies with all standards applicable to the manufacturing of a product to be used by or administered to patients, and may never be successful in developing such a manufacturing facility or capability. We may engage additional CMOs or establish multiple manufacturing facilities as we expand our commercial footprint to multiple geographies, which may lead to regulatory delays or prove costly. Even if we successfully develop our own manufacturing facility, our manufacturing capabilities could be affected by cost-overruns, unexpected delays, equipment failures, labor shortages, natural disasters, power failures, regulatory issues and numerous other factors that could prevent us from realizing the intended benefits of our manufacturing strategy and have a material adverse effect on our business.

In addition, the manufacturing process for any products that we may develop is subject to FDA and foreign regulatory authority approval processes for the jurisdictions in which we or our collaborators will seek marketing approval for commercialization, and we will need to contract with manufacturers who can meet all applicable FDA and foreign regulatory authority requirements on an ongoing basis. If the manufacturing process is changed during the course of product development, FDA or foreign regulatory authorities could require us to repeat some or all previously conducted trials or conduct additional bridging trials, which could delay or impede our ability to obtain marketing approval. If we or our CMOs are unable to reliably produce product candidates or products to specifications acceptable to the FDA or other regulatory authorities, such as the FDA's cGMP standards compliance, we may not obtain or maintain the approvals we need to further develop, conduct clinical trials for, and commercialize such products in the relevant territories. Even if we obtain regulatory approval for any of our product candidates, there is no assurance that either we or our CMOs will be able to manufacture the approved product according to specifications acceptable to the FDA or other regulatory authorities, to produce it in sufficient quantities to meet the requirements for the potential launch of the product, or to meet potential future demand or need. Any of these challenges could delay completion of clinical trials, require bridging clinical trials or the repetition of one or more clinical trials, increase clinical trial costs, delay approval of our product candidate, impair commercialization efforts, increase our cost of goods, and have an adverse effect on our business, financial condition, results of operations and growth prospects.

Negative public opinion and increased regulatory scrutiny of genetic research and therapies involving gene editing may damage public perception of our product candidates or adversely affect our ability to conduct our business or obtain regulatory approvals for our product candidates.

Our gene-editing technologies are relatively novel. Public perception may be influenced by claims that gene editing is unsafe, and products incorporating gene editing may not gain the acceptance of the public or the medical community. In particular, our success will depend upon physicians specializing in our targeted diseases prescribing our product candidates as treatments in lieu of, or in addition to, existing, more familiar, treatments for which greater clinical data may be available. Any increase in negative perceptions of gene editing may result in fewer physicians prescribing our treatments or may reduce the willingness of patients to utilize our treatments or participate in clinical trials for our product candidates. Increased negative public opinion or more restrictive government regulations in response thereto, would have a negative effect on our business or financial condition and may delay or impair the development and commercialization of our product candidates or demand for such product candidates. For example, in 2003, 20 subjects treated for X-linked severe combined immunodeficiency in two gene therapy studies using a murine gamma-retroviral vector, a viral delivery system, showed correction of the disease, but the studies were terminated after five subjects developed leukemia. Although none of our current product candidates utilize these gamma-retroviruses, our product candidates use a viral delivery system. Additionally, there have been patient deaths in recent CAR-T trials conducted in the United States by our competitors as well as in our UCART123 Clinical Studies, which have led to clinical trial holds. Adverse events in clinical studies for the product candidates we develop or those of our competitors, even if not ultimately attributable to our or their product candidates, respectively (such as the many adverse events that typically arise from the transplant process), and any resulting publicity could result in increased governmental regulation, unfavorable public perception, potential regulatory delays in the testing or approval of our product candidates, stronger labeling for those product candidates that are approved and a decrease in demand for any such product candidates.

We or our collaborators may find it difficult to enroll patients in clinical studies on the product candidates we develop, which could delay or prevent clinical studies of the product candidates.

Identifying and qualifying patients to participate in clinical studies of the product candidates we develop is critical to our success. The timing of these clinical studies will depend, in part, on the speed of recruitment of patients to participate in testing such product candidates as well as completion of required follow-up periods. We or our collaborators may not be able to identify, recruit and enroll a sufficient number of patients, or those with required or desired characteristics to achieve diversity in a study, to complete the clinical studies for our product candidates in a timely manner. If patients are unwilling to participate in such studies because of negative publicity from adverse events in the biotechnology or gene or cell therapy industries or for other reasons, the timeline for recruiting patients, conducting studies and obtaining regulatory approval of potential products may be delayed. These delays could result in increased costs, delays in advancing our product candidates, delays in testing the effectiveness of our technology or termination of the clinical studies altogether.

In addition, clinical trials for the product candidates we develop will compete with other clinical trials for product candidates that are in the same therapeutic areas as our product candidates, and this competition may reduce the number and types of patients available to us, because some patients who might have opted to enroll in our trials may instead opt to enroll in a trial being conducted by one of our competitors. Because the number of qualified clinical investigators is limited, we expect to conduct some of the clinical trials at the same clinical trial sites that some of our competitors use, which may reduce the number of patients who are available for our clinical trials at such clinical trial sites. Certain of our competitors may have greater success than us in enrolling patients as a result of a variety of factors. Moreover, because the product candidates we develop represent a departure from more commonly used methods for cancer treatment, potential patients and their doctors may be inclined to use conventional therapies, such as chemotherapy and stem cell transplants, rather than enroll patients in our future clinical trial or clinical trial of our collaborators.

Patient enrollment is affected by a variety of factors, including:

- severity of the disease under investigation;
- design of the clinical trial protocol;
- size and nature of the patient population;
- eligibility criteria for the trial in question;
- perceived risks and benefits of the product candidate under trial;
- proximity and availability of clinical trial sites for prospective patients;
- availability of competing therapies and clinical trials;
- clinicians' and patients' perceptions as to the potential advantages of the drug being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating;

- efforts to facilitate timely enrollment in clinical trials;
- patient referral practices of physicians; and
- our ability to monitor patients adequately during and after treatment.

Our competitors in the immuno-oncology space are developing products that similarly use CAR T-cells to seek out and destroy cancer cells. In addition to the factors identified above, patient enrollment in any clinical trials we may conduct may be adversely impacted by any negative outcomes our competitors may experience, including adverse side effects (including fatalities), clinical data showing inadequate efficacy or failures to obtain regulatory approval.

If we or our collaborators have difficulty enrolling a sufficient number of patients to conduct clinical studies as planned, we or our collaborators may need to delay, limit or terminate ongoing or planned clinical studies, any of which could have a material adverse effect on our business and financial condition. Even if we are able to enroll a sufficient number of patients in our clinical trials, delays in patient enrollment may result in increased costs or may affect the timing or outcome of the planned clinical trials, which could prevent completion of these trials and adversely affect our ability to advance the development of the product candidates we develop.

Our product candidates may fail safety studies in clinical trials or may cause undesirable side effects that could delay or prevent their regulatory approval, limit the commercial profile of an approved label, or result in significant negative consequences following marketing approval, if any.

Our gene-editing technologies may not be sufficiently specific for their target sites, or they may not target unique sites within the genome of interest, which may result in random DNA recombination events. For example, off-target cleavage may lead to the production of double-strand breaks that overwhelm the cell's repair machinery and, as a consequence, yield chromosomal rearrangements and/or cell death. Off-target cleavage events also may result in random integration of donor DNA. As a result, off-target cleavage in T-cells may lead to undesirable side effects for patients, and consequently could cause delays, interruptions or suspensions of clinical trials and delays or denial of regulatory approval by the FDA or other regulatory authorities. Because the products we develop have had only very limited clinical application, we do not yet have sufficient information to know whether any of our product candidates will cause undesirable side effects.

Any undesirable side effects could cause us, our collaborators or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other regulatory authorities. Further, if the product candidates we develop receive marketing approval and we or others identify undesirable side effects caused by the products or any other similar products after the approval, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw or limit their approval of the products;
- regulatory authorities may require the addition of labeling statements, such as a "boxed" warning or a contraindication;
- we may be required to create a medication guide outlining the risks of such side effects for distribution to patients;
- we may be required to perform additional post marketing safety studies or post marketing safety registries;
- we or our collaborators may be required to change the way the products are distributed or administered or conduct additional clinical trials;
- we or our collaborators may decide to remove the products from the marketplace;
- we could be sued and held liable for injury caused to individuals exposed to or taking our products or products developed with our technologies; and
- our reputation may suffer.

Any of these events could prevent the affected products from reaching the milestones triggering payment to Cellectis or achieving or maintaining market acceptance and could substantially increase the costs of commercializing such products and significantly impact the ability of such products to generate revenues.

If the product candidates we develop do not achieve projected development and commercialization in the announced or expected timeframes, the further development or commercialization of our product candidates may be delayed, and our business will be harmed.

We sometimes estimate, or may in the future estimate, for planning purposes, the timing of the accomplishment of various scientific, clinical, manufacturing, regulatory and other product development objectives. These milestones may include our expectations regarding the commencement or completion of scientific studies, clinical trials, the submission of regulatory filings, the receipt of marketing approval or commercialization objectives. The achievement of many of these milestones may be outside of our control. All of these milestones are based on a variety of assumptions including, assumptions regarding capital resources and constraints, progress of development activities, and the receipt of key regulatory approvals or actions, any of which may cause the timing of achievement of the milestones to vary considerably from our estimates.

If we or our collaborators fail to achieve announced milestones in the expected timeframes, the commercialization of the product candidates may be delayed, our credibility may be undermined, and our business and results of operations may be harmed.

Further development and commercialization of our product candidates will depend, in part, on strategic alliances with our collaborators. If our collaborators do not diligently pursue product development efforts, our progress may be delayed and our revenues may be deferred.

We expect to rely, to some extent, on our collaborators to provide funding in support of our own independent research and pre-clinical and clinical testing. Our technology is broad based, and we do not currently possess the financial resources necessary to fully develop and commercialize potential products that may result from our technologies or the resources or capabilities to complete the lengthy marketing approval processes that may be required for the products. Therefore, we plan to rely on strategic alliances to financially help us develop and commercialize our own biopharmaceutical products. As a result, our success depends, in part, on our ability to collect milestone and royalty payments from our collaborators. To the extent our collaborators do not aggressively pursue product candidates for which we are entitled to such payments or pursue such product candidates ineffectively, we will fail to realize these significant revenue streams, which could have an adverse effect on our business and future prospects. For example, since Servier has obtained exclusive rights on UCART19, it controls this product candidate and its future development (including the UCART19 Clinical Studies) and commercialization. We will receive royalties on sales of the product, but will have no control over such further development and commercialization.

If collaborators with whom we currently have alliances, such as Allogene and Servier, or future collaborators with whom we may engage, are unable or unwilling to advance our programs, or if they do not diligently pursue product development and product approval, this may slow our progress and defer or negatively impact our revenues. Such failures would have an adverse effect on our ability to collect key revenue streams and, for this reason, would adversely impact our business, financial position and prospects. Our collaborators may assign, sublicense or abandon product candidates or we may have disagreements with our collaborators, which would cause associated product development to slow or cease. There can be no assurance that our current strategic alliances will continue or be successful, and we may require significant time to secure new strategic alliances because we need to effectively market the benefits of our technology to these future alliance partners, which may direct the attention and resources of our research and development personnel and management away from our primary business operations. Further, each strategic alliance arrangement will involve the negotiation of terms that may be unique to each collaborator. These business development efforts may not result in a strategic alliance or may result in unfavorable arrangements.

The loss of existing or future collaboration agreements would not only delay or potentially terminate the possible development or commercialization of products we may derive from our technologies, but it may also delay or terminate our ability to test target candidates for specific genes. If any collaborator fails to conduct the collaborative activities successfully and in a timely manner, the pre-clinical or clinical development or commercialization of the affected target candidates or research programs would be delayed or could be terminated.

Under typical collaboration agreements, we would expect to receive revenue for the research and development of a CAR T-cell immunotherapy product based on achievement of specific milestones, as well as royalties based on a percentage of sales of the commercialized products. Achieving these milestones will depend, in part, on the efforts of our partner as well as, in most cases and for a limited period of time, our own. If we, or any alliance partner, fail to meet specific milestones, then the strategic alliance may be terminated, which could reduce our revenues.

Under our collaboration agreement with Allogene, Allogene will have the right to terminate the agreement at will upon 60 days' prior written notice, either in its entirety or on a target-by-target basis. Either party may terminate the agreement in its entirety upon written notice, if the other party commits a material breach that fundamentally frustrates the objectives or transactions contemplated by the agreement and such breach remains uncured for 90 days from the date such written notice is provided. Either party may terminate the agreement on a target-by-target basis upon written notice, if the other party commits a material breach that relates to such target and such breach remains uncured for 90 days from the date such written notice is

provided. The agreement may also be terminated upon written notice by Allogene at any time in the event that we become bankrupt or insolvent. Further, the agreement provides Allogene with a right to terminate any specific research project or research program under the agreement if we undergo a change of control.

Under our collaboration agreement with Servier, either party may terminate the agreement in its entirety in the event of the other party's material breach, which continues or remains uncured for 90 days after written notice is provided to the breaching party, or 30 days after written notice is provided with respect to a payment obligation breach. The parties may also terminate the agreement by mutual written consent. Servier has the right, at its sole discretion, to terminate the agreement in its entirety or with respect to specific products or product candidates, upon three months' prior written notice to us. Servier may also terminate the agreement at any time for product-related safety reasons. Either party may terminate the agreement in the event of the other party's bankruptcy or insolvency. Further, the agreement provides Servier with buy-out rights with respect to our interest in products and product candidates under the agreement if we undergo a change of control.

Even if we or our collaborators successfully complete clinical trials of our product candidates, those candidates may not be commercialized successfully for other reasons.

Even if we or our collaborators successfully complete clinical trials for one or more of the product candidates, those candidates may not be commercialized for other reasons, including:

- failing to receive regulatory approvals required to market them as drugs;
- being subject to proprietary rights held by others;
- failing to comply with GMP requirements;
- being difficult or expensive to manufacture on a commercial scale;
- having adverse side effects that make their use less desirable;
- failing to compete effectively with existing or new products or treatments commercialized by competitors; or
- failing to show long-term benefits sufficient to offset associated risks.

In addition, for any product candidates we develop through our strategic alliances, we will depend entirely upon the other party for marketing and sales of that product. These partners may not devote sufficient time or resources to the marketing and commercialization, or may determine not to pursue marketing and commercialization at all. Our business and results of operations will be negatively impacted by any failure of our collaborators to effectively market and commercialize an approved product.

Even if we obtain regulatory approval for a product candidate, our products will remain subject to ongoing regulatory requirements.

Even if we obtain regulatory approval in a jurisdiction for the product candidates we develop, they will be subject to ongoing regulatory requirements for manufacturing, labeling, packaging, storage, advertising, promotion, sampling, record-keeping, and submission of safety and other post-market information. Any regulatory approvals received for the product candidates may also be subject to limitations on the approved indicated uses for which the product may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including Phase 4 clinical trials, and surveillance to monitor the safety and efficacy of the product. For example, the holder of an approved BLA in the United States is obligated to monitor and report adverse events and any failure of a product to meet the specifications in the BLA. FDA guidance advises that patients treated with some types of gene therapy undergo follow-up observations for potential adverse events for as long as 15 years. Similarly, in the EU, pharmacovigilance obligations are applicable to all medicinal products. In addition to those, holders of a marketing authorization for gene or cell therapy products must detail, in their application, the measures they envisage to ensure follow-up of the efficacy and safety of these products. In cases of particular concern, marketing authorization holders for gene or cell therapy products in the EU may be required to design a risk management system with a view to identifying, preventing or minimizing risks, and may be obliged to carry out post-marketing studies. In the United States, the holder of an approved BLA must also submit new or supplemental applications and obtain FDA approval for certain changes to the approved product, product labeling or manufacturing process. Similar provisions apply in the EU. Advertising and promotional materials must comply with FDA rules and are subject to FDA review, in addition to other potentially applicable federal and state laws. Similarly, in the EU any promotion of medicinal products is highly regulated and, depending on the specific jurisdiction involved, may require prior vetting by the competent national regulatory authority.

In addition, product manufacturers and their facilities are subject to payment of user fees and continual review and periodic inspections by the FDA and other regulatory authorities for compliance with cGMP requirements and adherence to commitments made in the BLA or foreign marketing application. If we or a regulatory agency discovers previously unknown problems with a product such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is

manufactured or disagrees with the promotion, marketing or labeling of that product, a regulatory agency may impose restrictions relative to that product, the manufacturing facility or us, including requiring recall or withdrawal of the product from the market or suspension of manufacturing.

If we or our collaborators fail to comply with applicable regulatory requirements following approval of any of the product candidates we develop, national competent authorities may:

- issue a warning letter asserting that we are in violation of the law;
- seek an injunction or impose civil or criminal penalties or monetary fines;
- suspend or withdraw regulatory approval;
- suspend or terminate any ongoing clinical trials;
- refuse to approve a pending BLA or comparable foreign marketing application (or any supplements thereto) submitted by us or our collaborators;
- restrict the marketing, distribution or manufacturing of the product;
- seize or detain product or otherwise require the withdrawal or recall of product from the market;
- refuse to permit the import or export of products; or
- refuse to allow us to enter into supply contracts, including government contracts.

Any government investigation of alleged violations of law could require us to expend significant time and resources in response and could generate negative publicity. The occurrence of any event or penalty described above may inhibit ability to commercialize products and generate revenues. In addition, the FDA's policies, and policies of foreign regulatory agencies, may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we or our collaborators are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we or our collaborators are not able to maintain regulatory compliance, marketing approval that has been obtained may be lost and we may not achieve or sustain profitability, which would adversely affect our business, prospects, financial condition and results of operations.

We expect the product candidates we develop will be regulated as biological products, or biologics, and therefore they may be subject to competition sooner than anticipated.

The Biologics Price Competition and Innovation Act of 2009, or BPCIA, was enacted as part of the 2010 Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively, the ACA, to establish an abbreviated pathway for the approval of biosimilar and interchangeable biological products. The regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as "interchangeable" based on its similarity to an approved biologic. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the reference product was approved under a BLA. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation, and meaning are subject to uncertainty. While it is uncertain when such processes intended to implement BPCIA may be fully adopted by the FDA, any such processes could have a material adverse effect on the future commercial prospects for our biological products.

We believe that any of the product candidates we develop that is approved in the United States as a biological product under a BLA should qualify for the 12-year period of exclusivity. However, there is a risk that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider the subject product candidates to be reference products for competing products, potentially creating the opportunity for generic competition sooner than anticipated. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of the reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing.

Even if we or our collaborators obtain and maintain approval for product candidates in the United States or another jurisdiction, we or our collaborators may never obtain approval for the same product candidates in other jurisdictions, which would limit market opportunities and adversely affect our business.

Approval of a product candidate in the United States by the FDA or by the requisite regulatory agencies in any other jurisdiction does not ensure approval of such product candidate by regulatory authorities in other countries or jurisdictions, and approval by one foreign regulatory authority does not ensure approval by regulatory authorities in other foreign countries or by the

FDA. The approval process varies among countries and may limit our or our collaborators' ability to develop, manufacture, promote and sell our product candidates internationally. Failure to obtain marketing approval in international jurisdictions would prevent the product candidates from being marketed outside of the jurisdictions in which regulatory approvals have been received. In order to market and sell the product candidates in the EU and many other jurisdictions, we and our collaborators must obtain separate marketing approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and may involve additional pre-clinical studies or clinical trials both before and post approval. In many countries, a product candidate must be approved for reimbursement before it can be approved for sale in that country. In some cases, the intended price for the product is also subject to approval. Further, while regulatory approval of a product candidate in one country does not ensure approval in any other country, a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory approval process in others. If we or our collaborators fail to comply with the regulatory requirements in international markets and/or receive applicable marketing approvals, the target market will be reduced and the ability to realize the full market potential of the subject product candidates will be harmed and our business will be adversely affected.

Depending on the results of clinical trials and the process for obtaining regulatory approvals in other countries, we or our collaborators may decide to first seek regulatory approvals of a product candidate in countries other than the United States, or we or our collaborators may simultaneously seek regulatory approvals in the United States and other countries, in which case we or our collaborators will be subject to the regulatory requirements of health authorities in each country in which we seek approvals. Obtaining regulatory approvals from health authorities in countries outside the United States is likely to subject us or our collaborators to all of the risks associated with obtaining approval in the United States or the EU described herein.

We plan to seek orphan drug status for some or all of our product candidates, but we may be unable to obtain such designations or to maintain the benefits associated with orphan drug status, including market exclusivity, which may cause our revenue, if any, to be reduced.

We plan to seek orphan drug designation for some or all of our product candidates in specific orphan indications in which there is a medically plausible basis for the use of these products. Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, defined as a disease or condition with a patient population of fewer than 200,000 in the United States, or a patient population greater than 200,000 in the United States when there is no reasonable expectation that the cost of developing and making available the drug or biologic in the United States will be recovered from sales in the United States for that drug or biologic. Orphan drug designation must be requested before submitting a BLA. In the United States, orphan drug designation entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages, and user-fee waivers. After the FDA grants orphan drug designation, the generic identity of the drug and its potential orphan use are disclosed publicly by the FDA. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process. Although we intend to seek orphan product designation for some or all of our product candidates, we may never receive such designations.

If a product that has orphan drug designation subsequently receives the first FDA approval for a particular active ingredient for the disease for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications, including a BLA, to market the same biologic for the same indication for seven years, except in limited circumstances such as a showing of clinical superiority to the product with orphan product exclusivity or if FDA finds that the holder of the orphan drug exclusivity has not shown that it can assure the availability of sufficient quantities of the orphan drug to meet the needs of patients with the disease or condition for which the drug was designated. Even if we obtain orphan drug designation for a product candidate, we may not be the first to obtain marketing approval for any particular orphan indication due to the uncertainties associated with developing pharmaceutical products. Exclusive marketing rights in the United States may be limited if we seek approval for an indication broader than the orphan designated indication and may be lost if the FDA later determines that the request for designation was materially defective, the disease or condition exceeded the population threshold, or if the manufacturer is unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition. Further, even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs with different active moieties can be approved for the same condition. Even after an orphan drug is approved, the FDA can subsequently approve the same drug with the same active moiety for the same condition if the FDA concludes that the later drug is safer, more effective, or makes a major contribution to patient care. Furthermore, the FDA can waive orphan exclusivity if we are unable to manufacture sufficient supply of our product.

Similarly, in Europe, a medicinal product may receive orphan designation under Article 3 of Regulation (EC) 141/2000. This applies to products that are intended for a life-threatening or chronically debilitating condition and either (a) such condition affects no more than five in 10,000 persons in the EU when the application is made, or (b) the product, without the benefits derived from orphan status, would unlikely generate sufficient return in the EU to justify the necessary investment. Moreover, in order to obtain orphan designation in the EU it is necessary to demonstrate that there exists no satisfactory method of diagnosis, prevention or treatment of such condition authorized for marketing in the EU, or if such a method exists, the product will be of significant benefit to those affected by the condition.

In the EU, orphan medicinal products are eligible for financial incentives such as reduction of fees or fee waivers and applicants can benefit from specific regulatory assistance and scientific advice. Products receiving orphan designation in the EU can receive ten years of market exclusivity, during which time no similar medicinal product for the same indication may be placed on the market. An orphan product can also obtain an additional two years of market exclusivity in the EU for pediatric studies (Article 37, Regulation 1901/2006). However, the 10-year market exclusivity may be reduced to six years if, at the end of the fifth year, it is established that the product no longer meets the criteria for orphan designation—for example, if the product is sufficiently profitable not to justify maintenance of market exclusivity. Additionally, marketing authorization may be granted to a similar product for the same indication at any time if:

- the second applicant can establish that its product, although similar, is safer, more effective or otherwise clinically superior;
- the first applicant consents to a second orphan medicinal product application; or
- the first applicant cannot supply enough orphan medicinal product.

We may seek fast-track designation for some or all of our product candidates. There is no assurance that the FDA will grant such designation and, even if it does grant fast track designation to any of our product candidates, that designation may not actually lead to a faster development or regulatory review or approval process and it does not increase the likelihood that our product candidates will receive marketing approval in the United States.

We may seek fast-track designation and review for some or all of our other product candidates. If a drug is intended for the treatment of a serious or life-threatening condition or disease, the drug sponsor may apply for FDA fast track designation. The FDA has broad discretion whether or not to grant this designation. Thus, even if we believe a particular product candidate is eligible for this designation, we cannot assure that the FDA would decide to grant it. Moreover, even if we do receive fast track designation, we may not experience a faster development process, review or approval compared to conventional FDA procedures. In addition, the FDA may withdraw fast track designation if it believes that the designation is no longer supported by data from our clinical development program.

We may seek a regenerative advanced therapy (RAT) designation and/or a breakthrough therapy designation for our product candidates. Even if we achieve a RAT designation or a breakthrough designation from the FDA for the product candidates we develop, or, if applicable, by other national or international regulatory agencies, such designation may not lead to a faster development or regulatory review or approval process, and it does not increase the likelihood that our product candidates will receive marketing approval.

We may seek a RAT designation or a breakthrough therapy designation for our product candidates in the future.

A drug is eligible for RAT designation if, (i) the drug is a regenerative medicine therapy, which is defined as a cell therapy, therapeutic tissue engineering product, human cell and tissue product, or any combination product using such therapies or products, except for those regulated solely under Section 361 of the Public Health Service Act and part 1271 of Title 21, Code of Federal Regulations; (ii) the drug is intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition; and (iii) preliminary clinical evidence indicates that the drug has the potential to address unmet medical needs for such disease or condition.

A breakthrough therapy is defined as a product that is intended, alone or in combination with one or more other drugs, to treat a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the product may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints.

For product candidates that have been designated as a RAT or a breakthrough therapy, interaction and communication between the FDA and the sponsor of the trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. Designation as a RAT or breakthrough therapy is within the discretion of the FDA. Accordingly, even if we believe that our product candidates meet the criteria for designation as a RAT or a breakthrough therapy, the FDA may disagree and instead determine not to make such designation. In any event, the receipt of a RAT designation or a breakthrough therapy designation for a product candidate may not result in a faster development process, review or approval compared to products considered for approval under conventional FDA procedures and does not assure ultimate approval by the FDA. In addition, even if one or more of our product candidates qualify as RAT or a breakthrough therapy, the FDA may later decide that such product no longer meet the conditions for qualification.

Even if any of our product candidates are commercialized, they may not be accepted by physicians, patients, or the medical community in general, and may also become subject to market conditions that could harm our business.

Even if any of our product candidates receive marketing approval, the medical community may not accept such products as adequately safe and efficacious for their indicated use. Moreover, physicians may choose to restrict the use of the product, if, based on experience, clinical data, side-effect profiles and other factors, they are not convinced that the product is preferable to existing drugs or treatments. We cannot predict the degree of market acceptance of any product candidate that receives marketing approval, which will depend on a number of factors, including, but not limited to:

- the demonstration of the clinical efficacy and safety of the product;
- the approved labeling for the product and any required warnings;
- the advantages and disadvantages of the product compared to alternative treatments;
- our and any collaborator's ability to educate the medical community about the safety and effectiveness of the product;
- the coverage and reimbursement policies of government and commercial third-party payors pertaining to the product; and
- the market price of the product relative to competing treatments.

Product liability lawsuits could divert our resources, result in substantial liabilities and reduce the commercial potential of our product candidates.

The risk that we may be sued on product liability claims is inherent in the development and commercialization of biopharmaceutical products. Side effects of, or manufacturing defects in, products that we develop could result in the deterioration of a patient's condition, injury or even death. For example, our liability could be sought by patients participating in the clinical trials for our product candidates as a result of unexpected side effects resulting from the administration of these products. Once a product is approved for sale and commercialized, the likelihood of product liability lawsuits increases. Criminal or civil proceedings might be filed against us by patients, regulatory authorities, our collaborators, biopharmaceutical companies and any other third party using or marketing our products. These actions could include claims resulting from acts by our partners, licensees and subcontractors, over which we have little or no control. These lawsuits may divert our management from pursuing our business strategy and may be costly to defend. In addition, if we are held liable in any of these lawsuits, we may incur substantial liabilities and may be forced to limit or forgo further commercialization of the affected products.

In addition, regardless of merit or eventual outcome, product liability claims may result in: impairment of our business reputation; withdrawal of clinical trial participants; initiation of investigations by regulators; costs due to related litigation; distraction of management's attention from our primary business; substantial monetary awards to trial participants, patients or other claimants; loss of revenue; exhaustion of any available insurance and our capital resources; the inability by us and our collaborators to commercialize our product candidates; and decreased demand for our product candidates, if approved for commercial sale.

We maintain product liability insurance coverage for damages caused by our product candidates, including clinical trial insurance coverage, with coverage limits that we believe are customary for companies in our industry. This coverage may be insufficient to reimburse us for any expenses or losses we may suffer. In addition, in the future, we may not be able to obtain or maintain sufficient insurance coverage at an acceptable cost or to otherwise protect against potential product or other legal or administrative liability claims by us or our partners, licensees or subcontractors, which could prevent or inhibit the commercial production and sale of any of our product candidates that receive regulatory approval, which could adversely affect our business.

Coverage and reimbursement may be limited or unavailable in certain market segments for our product candidates, which could make it difficult for us to sell our product candidates profitably.

Successful sales of our product candidates, if approved, depend, in part, on the availability of adequate coverage and reimbursement from third-party payors.

Patients who are provided medical treatment for their conditions generally rely on third-party payors to reimburse all or part of the costs associated with their treatment. Adequate coverage and reimbursement from governmental healthcare programs, such as Medicare and Medicaid in the United States, and commercial payors are critical to new product acceptance.

Government authorities and third-party payors, such as private health insurers and health maintenance organizations, decide which drugs and treatments they will cover and the amount of reimbursement. Coverage and reimbursement by a third-party payor may depend upon a number of factors, including the third-party payor's determination that use of a product is:

- a covered benefit under its health plan;

- safe, effective and medically necessary;
- appropriate for the specific patient;
- cost-effective; and
- neither experimental nor investigational.

Policies for coverage and reimbursement for products vary among third-party payors. As a result, obtaining coverage and reimbursement approval of a product from a government or other third-party payor is a time-consuming and costly process that could require us or our collaborators to provide to each payor supporting scientific, clinical and cost-effectiveness data for the use of our products on a payor-by-payor basis, with no assurance that coverage and adequate reimbursement will be obtained. Even if we obtain coverage for a given product, the resulting reimbursement payment rates might not be adequate for us to achieve or sustain profitability or may require co-payments that patients find unacceptably high. Additionally, third-party payors may not cover, or provide adequate reimbursement for, long-term follow-up evaluations required following the use of our product candidates.

Patients are unlikely to use our product candidates unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our product candidates. Because our product candidates represent new approaches to the treatment of cancer and accordingly, may have a higher cost than conventional therapies and may require long-term follow up evaluations, the risk that coverage and reimbursement rates may be inadequate for us to achieve profitability may be elevated.

Government restrictions on pricing and reimbursement, as well as other healthcare payor cost-containment initiatives, may negatively impact our ability to generate revenues if we obtain regulatory approval for any of our product candidates.

Third-party payors, whether domestic or foreign, or governmental or commercial, are developing increasingly sophisticated methods of controlling healthcare costs. The continuing efforts of various governments, insurance companies, managed care organizations and other payors to contain or reduce healthcare costs may adversely affect one or more of the following:

- our ability or our collaborators' ability to set a price we believe is fair for our products, if approved;
- our ability or our collaborators' ability to obtain and maintain market acceptance by the medical community and patients;
- our ability to generate revenues and achieve profitability; and
- the availability of capital.

In both the United States and certain foreign jurisdictions, there have been a number of legislative and regulatory changes to the health care system that could impact our or our collaborators' ability to sell our products profitably. By way of example, in the United States, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act (collectively, the ACA) was enacted in March 2010. The ACA has been expected to have a significant impact on the provision of, and payment for, health care in the United States. The ACA was intended to broaden access to health insurance, reduce or constrain the growth of healthcare spending, enhance remedies against fraud and abuse, add new transparency requirements for the healthcare and health insurance industries, impose new taxes and fees on the health industry and impose additional health policy reforms.

Among the provisions of the ACA of importance to our potential product candidates are:

- an annual, nondeductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents, apportioned among these entities according to their market share in certain government healthcare programs;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program to 23.1% and 13.0% of the average manufacturer price for branded and generic drugs, respectively;
- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for a manufacturer's outpatient drugs to be covered under Medicare Part D;
- extension of a manufacturer's Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer's Medicaid rebate liability;

- expansion of the entities eligible for discounts under the Public Health Service pharmaceutical pricing program; and
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. These changes include aggregate reductions to Medicare payments to providers of 2% per fiscal year, which went into effect in April 2013 and will remain in effect through 2024 unless additional Congressional action is taken. In January 2013, the American Taxpayer Relief Act of 2012 was signed into law which, among other things, further reduced Medicare payments to several providers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. Further, in January 2017, President Trump signed an Executive Order directing federal agencies with authorities and responsibilities under the ACA to waive, defer, grant exemptions from, or delay the implementation of any provisions of the ACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturer of pharmaceutical products. Congress may also consider subsequent legislation to replace elements of the ACA that are repealed. As a result, the full impact of the ACA, any law repealing and/or replacing elements of it, and the political uncertainty surrounding any repeal or replacement legislation remains unclear.

This legislative uncertainty could harm our or our collaborators' ability to market any products and generate revenues. Cost containment measures that healthcare payors and providers are instituting and the effect of further healthcare reform could significantly reduce potential revenues from the sale of any of our product candidates approved in the future, and could cause an increase in our compliance, manufacturing, or other operating expenses.

In some countries, the proposed pricing for a biopharmaceutical product must be approved before it may be lawfully marketed. In addition, in certain foreign markets, the pricing of biopharmaceutical product is subject to government control and reimbursement may in some cases be unavailable. The requirements governing drug pricing vary widely from country to country. For example, the EU provides options for its Member States to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. An EU Member State may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. There can be no assurance that any country that has price controls or reimbursement limitations for biopharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our products. Historically, biopharmaceutical products launched in the EU do not follow price structures of the United States and generally tend to have significantly lower prices.

We believe that pricing pressures will continue and may increase, which may make it difficult for us to sell our potential products that may be approved in the future at a price acceptable to us or any of our future collaborators.

Our future profitability, if any, depends, in part, on our ability to penetrate global markets, where we would be subject to additional regulatory burdens and other risks and uncertainties.

Our future profitability, if any, will depend, in part, on our ability and the ability of our collaborators to commercialize the product candidates we develop in markets throughout the world. Commercialization of our product candidates in various markets could subject us to risks and uncertainties, including:

- obtaining, on a country-by-country basis, the applicable marketing authorization from the competent regulatory authority;
- the burden of complying with complex and changing regulatory, tax, accounting and legal requirements in each jurisdiction that we pursue;
- differing medical practices and customs affecting acceptance in the marketplace;
- import or export licensing requirements;
- country specific requirements related to the cells used as starting material for manufacturing
- longer accounts receivable collection times;
- longer lead times for shipping;
- language barriers for technical training, healthcare professionals and patients documents;
- reduced protection of intellectual property rights in some foreign countries;

- foreign currency exchange rate fluctuations;
- patients' ability to obtain reimbursement for products in various markets; and
- the interpretation of contractual provisions governed by foreign laws in the event of a contract dispute.

Sales of the products could also be adversely affected by the imposition of governmental controls, political and economic instability, trade restrictions and changes in tariffs.

We are subject to healthcare laws and regulations, which could expose us to the potential for criminal sanctions, civil penalties, exclusion from government healthcare programs, contractual damages, reputational harm and diminished profits and future earnings.

Healthcare providers, physicians and others will play a primary role in the recommendation and prescription of our products, if approved. Our arrangements with such persons and third-party payors must be structured in accordance with the broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we research, market, sell and distribute our products, if we obtain marketing approval. Restrictions under applicable federal, state and foreign healthcare laws and regulations include but are not limited to the following:

- The federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration (including any kickback, bribe or rebate), directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase or lease, order or recommendation of, any item, good, facility or service, for which payment may be made under federal healthcare programs such as Medicare and Medicaid.
- The federal civil and criminal false claims laws and civil monetary penalties laws, which impose criminal and civil penalties, including those from civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, claims for payment that are false or fraudulent or making a false statement to avoid, decrease, or conceal an obligation to pay money to the federal government.
- The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which created new federal criminal statutes that prohibit executing a scheme to defraud any healthcare benefit program or knowingly and willingly falsifying, concealing or covering up a material fact or making false statements relating to healthcare matters.
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, or HITECH, and its implementing regulations, which impose certain requirements on covered entities and their business associates, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information.
- The federal transparency requirements under the Physician Payments Sunshine Act, enacted as part of the ACA, that require applicable manufacturers of covered drugs, devices, biologics and medical supplies to track and annually report to CMS payments and other transfers of value provided to physicians and teaching hospitals and certain ownership and investment interests held by physicians or their immediate family members.
- Analogous laws and regulations in various U.S. states, such as state anti-kickback and false claims laws, which may apply to items or services reimbursed by any third-party payor, including commercial insurers, state marketing and/or transparency laws applicable to manufacturers that may be broader in scope than
- U.S. federal requirements, state laws that require biopharmaceutical companies to comply with the biopharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. government, and state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and may not have the same effect as HIPAA.
- Similar legislation is applicable in other countries such as EU Member States, including by way of example and without limitation: the UK's Bribery Act 2010 or the French Decree No 2013-414 on Transparency of Benefits Given by Companies Manufacturing or Marketing Health and Cosmetic Products for Human Use (*Décret n° 2013-414 du 21 mai 2013 relatif à la transparence des avantages accordés par les entreprises produisant ou commercialisant des produits à finalité sanitaire et cosmétique destinés à l'homme*).

Ensuring that our business arrangements with third parties comply with applicable healthcare laws and regulations could be costly. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations were found to be in violation of any of any laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines, disgorgement, individual imprisonment and exclusion from

government funded healthcare programs, such as Medicare and Medicaid, any of which could substantially disrupt our operations. If the physicians or other providers or entities with whom we expect to do business are found not to be in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs.

Risks Related to Our Reliance on Third Parties

We expect to continue to rely on third parties to conduct some or all aspects of our product manufacturing, quality control, protocol development, material supply, research and pre-clinical development, clinical testing and distribution, and these third parties may not perform satisfactorily.

We do not, and do not expect in the future to, independently conduct all aspects of our product manufacturing, quality control, protocol development, material supply, research and pre-clinical development and clinical testing as well as distribution and rely, and will continue to rely, on third parties for some of these activities. Under certain circumstances, these third parties may be entitled to terminate their engagements with us. If we need to enter into alternative arrangements, it could delay our product development activities.

In addition, in connection with our engagement of third parties, we control only certain aspects of their activities. Our reliance on these third parties for product manufacturing, quality control, protocol development, material supply, research and pre-clinical development and clinical testing and distribution activities reduces our control over these activities but does not relieve us of our responsibility to ensure compliance with all required regulations and study and trial protocols. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our studies in accordance with regulatory requirements or our stated study and trial plans and protocols, or if there are disagreements between us and these third parties, we may not be able to complete, or may be delayed in completing, the pre-clinical studies and clinical trials required to support future regulatory submissions and approval of the product candidates we develop. In some such cases we may need to locate an appropriate replacement third-party relationship, which may not be readily available or on acceptable terms, which would cause additional delay with respect to the approval of our product candidates and would thereby have a material adverse effect on our business, financial condition, results of operations and prospects.

In addition, reliance on third-party manufacturers, suppliers, research organizations and/or distributors entails risks to which we would not be subject if we conducted the above-mentioned activities ourselves, including:

- the inability to negotiate supply, manufacturing, research and/or distribution agreements with third parties under commercially reasonable terms or at all, because the number of potential suppliers, manufacturers, research organizations and distributors is limited and each must be approved by the FDA or comparable foreign regulatory authorities and would need to develop approved or validated processes for production, testing or distribution of material we use or of our products;
- that our third-party manufacturers, research organizations or distributors may have little or no experience with our or comparable products and may therefore require a significant amount of support from us in order to implement and maintain the infrastructure and processes required to manufacture, test or distribute our product candidates;
- reduced control over manufacturing and distribution activities and quality control processes and the possibility that our contract manufacturers, research organizations and distributors are not able to execute our manufacturing, testing or distribution procedures and other logistical support requirements appropriately;
- that our contract manufacturers may not perform as agreed or in compliance with applicable laws and requirements, or may not devote sufficient resources to our products or may not remain in the contract manufacturing business for the time required to supply investigational products for our clinical trials or to successfully produce, store and supply our products once approved;
- that we may not own, have equivalent necessary rights in, or access to the intellectual property rights to, or know how residing in any improvements or developments made by our third-party manufacturers or research organizations in the manufacturing process or testing of our products;
- breach, termination or non-renewal of our agreements by third-party manufacturers, suppliers, research organizations or distributors in a manner or at a time that is costly or damaging to us; and
- disruptions to the operations of our subcontractors, suppliers, research organizations or distributors caused by conditions unrelated to our business or operations, including the bankruptcy of any such third-party provider.

Any of these events could lead to manufacturing, supply and/or clinical study delays or failure to obtain regulatory approval, or impact our ability to successfully commercialize future products.

Significant regulation applies to the manufacturing of our products, and the manufacturing facilities on which we rely may not meet regulatory requirements or may have limited capacity.

All entities involved in the preparation of products for clinical studies or commercial sale, including our existing contract manufacturers for our product candidates, are subject to extensive regulations. For example, in the United States, components of a finished CAR T-cell immunotherapy product approved for commercial sale or used in clinical studies must be manufactured in accordance with the current Good Manufacturing Practices (cGMP) requirements. Similarly, all investigational medicinal products in the EU must be manufactured in compliance with Good Manufacturing Practices, or GMP. The FDA's cGMP regulations and comparable regulations in other jurisdictions govern manufacturing processes and procedures (including record keeping) and the implementation and operation of quality systems to control and assure the quality of investigational products and products approved for sale. Poor control of production processes can lead to the introduction of adventitious agents or other contaminants, or to inadvertent changes in the properties or stability of the product candidates we develop that may not be detectable in final product testing. In the United States, we or our contract manufacturers must supply all necessary documentation in support of a BLA on a timely basis and must adhere to the FDA's cGMP requirements enforced by the FDA through its facilities inspection program. Our facilities and quality systems and the facilities and quality systems of some or all of our third-party contractors must pass a pre-approval inspection for compliance with the applicable regulations as a condition of regulatory approval of our product candidates. In addition, the regulatory authorities may, at any time, inspect a manufacturing facility involved with the preparation and/or control of our product candidates, including starting and raw material, excipients, equipment and consumables, as well as the associated quality systems for compliance with the regulations applicable to the activities being conducted. If these facilities do not pass a pre-approval inspection, FDA approval of the products will not be granted.

Similarly, in the EU, Directive 2003/94/EC lays down the principles and guidelines of GMP in respect of medicinal products and investigational medicinal products and requires that products are consistently produced and controlled in accordance with the applicable quality standards. It also requires that medicinal products and investigational medicinal products that are imported from third countries are manufactured in accordance with standards at least equivalent to the GMP standards laid down in the EU. Directive 2003/94/EC, together with the detailed EU Guidelines on GMP, govern the quality management, personnel, premises, documentation, production operations, quality control, outsources activities, complaints and product recall and self-inspection. GMP inspections are performed by the competent authorities of the EU Member States, and are coordinated by the EMA in the case of medicinal products that are authorized through the EU centralized procedure.

If we or any of our third-party manufacturers, directly or indirectly (due to failure of their own sub-contractors or suppliers), fail to provide appropriate products or maintain regulatory compliance, the regulator can impose regulatory sanctions including, among other things, the imposition of a hold on clinical trials, the refusal to permit a clinical trial to commence, the refusal to use certain batches of product candidates intended to be used in the clinical trials, the refusal to approve a pending application for a new product, the revocation or non-renewal of a pre-existing approval, or the refusal to accept some non-clinical and/or clinical data generated with material for which that third-party was responsible. As a result, our business, financial condition and results of operations may be materially harmed.

In addition, if supply from one approved manufacturer or supplier is interrupted, there could be a significant disruption in commercial and/or clinical supply of our products. Identifying and engaging an alternative manufacturer or supplier that complies with applicable regulatory requirements could result in further delay. Applicable regulatory agencies may also require additional studies if a new manufacturer or supplier is relied upon in connection with commercial production. Switching manufacturers or suppliers may involve substantial costs and time and is likely to result in a delay in our desired clinical and commercial timelines. Although we have started construction of two of our own manufacturing facilities, we may never be successful in developing these facilities or our manufacturing capabilities. Even if we are successful, developing our own manufacturing capabilities may be costlier than we anticipate or may result in delays.

These factors could cause the delay of some non-clinical and clinical studies, regulatory submissions, required approvals or commercialization of our product candidates, cause us to incur higher costs and prevent us from commercializing our products successfully. Furthermore, if our suppliers fail to meet contractual requirements, and we are unable to secure one or more replacement suppliers capable of production at a substantially equivalent cost, our clinical studies may be delayed or we could lose potential revenue.

Access to raw materials, starting material and products necessary for the conduct of clinical trials and manufacturing of our product candidates is not guaranteed.

We are dependent on third parties for the supply of various of materials, including without limitation, biological materials—such as cells, cell culture media, cytokines, vectors, nucleic acids or antibodies—that are necessary to produce our product candidates. The supply of these materials could be reduced or interrupted at any time. In such case, we may not be able to find other acceptable suppliers or on acceptable terms. If key suppliers or manufacturers are lost or the supply of the materials is diminished or discontinued, we may not be able to develop, manufacture, and market our product candidates in a timely and

competitive manner. In addition, these materials are subject to stringent manufacturing process and rigorous testing. Delays in the completion and validation of facilities and manufacturing processes of these materials could adversely affect the ability to complete trials and commercialize our products candidates. In addition, our suppliers or manufacturers may, from time to time, change their internal manufacturing or testing processes and procedures. Such changes may require us to perform or have performed studies to demonstrate equivalence of the materials produced or tested under such new procedures. Such equivalence testing may impose significant delays in the development of our product candidates. Furthermore, our suppliers may face quality issues or findings from regulatory authorities' inspections that could lead to delays or interruption of the supply of our product candidates.

We or our collaborators rely on third parties to conduct, supervise and monitor our or their clinical studies, and if these third parties perform in an unsatisfactory manner, it may harm our business.

We or our collaborators rely on medical institutions, clinical investigators, contract research organizations, or CROs, contract laboratories, and collaborators to carry out or otherwise assist us in connection with our or their clinical trials and to perform data collection and analysis. While we will have agreements governing their activities, we will have limited influence over their actual performance and will control only certain aspects of such third parties' activities. Nevertheless, we will be responsible for ensuring that each of our clinical trials is conducted in accordance with the applicable protocol, legal, regulatory, ethical and scientific standards, and our reliance on the third party does not relieve us of our regulatory responsibilities.

We and our CROs are required to comply with the FDA's and other regulatory authorities' good clinical practices, or GCP, cGMP, good laboratory practices, or GLP, and other applicable requirements for conducting, recording and reporting the results of our pre-clinical studies and clinical trials to assure that the data and reported results are credible and accurate and that the rights, integrity and confidentiality of clinical trial participants are protected. Regulatory authorities around the world, including the FDA and European authorities, enforce these requirements through periodic inspections of study sponsors, CROs, principal investigators and clinical trial sites. If we, our CROs, our investigators or trial sites fail to comply with applicable GCP, GLP, GMP or other applicable regulatory requirements, the clinical data generated in our future clinical trials may be deemed unreliable and the FDA, EMA or other regulatory authorities around the world may require us to perform additional clinical trials before issuing any marketing authorizations for our product candidates. Upon inspection, the FDA or EMA may determine that our clinical trials did not comply with GCP, GLP and GMP requirements, which may render the data generated in those trials unreliable or otherwise not usable for the purpose of supporting the marketing authorization applications for our products. In addition, our future clinical trials will require a sufficient number of study subjects to evaluate the safety and efficacy of our product candidates. Accordingly, if, for example, our CROs fail to comply with these regulations or if trial sites fail to recruit a sufficient number of patients, we may be required to repeat such clinical trials, or anyway incur delays in the performance of such trials, which would delay the regulatory approval process for the approval of our product candidates.

Clinical trials conducted in reliance on third parties may be delayed, suspended, or terminated if:

- we are unable to negotiate agreements with third parties under reasonable terms;
- termination or non-renewal of agreements with third parties occurs in a manner or at a time that is costly or damaging to us;
- the third parties do not successfully carry out their contractual duties or fail to meet regulatory obligations or expected deadlines; or
- the quality or accuracy of the data obtained by third parties is compromised due to their failure to adhere to clinical protocols, regulatory or ethical requirements, or for other reasons.

Third party performance failures may increase our costs, delay our ability to obtain regulatory approval, and delay or prevent starting or completion of clinical trials and delay or prevent commercialization of our product candidates. While we believe that there are numerous alternative sources to provide these services, in the event that we seek such alternative sources, we may not be able to enter into replacement arrangements without incurring delays or additional costs.

We may enter into agreements with third parties to sell, distribute and/or market any of the products candidates we develop on our own and for which we obtain regulatory approval, which may affect the sales of our own products and our ability to generate revenues.

Given our early development stage, we have no experience in sales, marketing and distribution of biopharmaceutical products. However, if any of our product candidates obtain marketing approval, we intend to develop sales and marketing capacity, either alone or with partners, by contracting with, or licensing, them to market any of our own products. Outsourcing sales, distribution and marketing in this manner may subject us to a variety of risks, including:

- our inability to exercise direct control over sales, distribution and marketing activities and personnel;

- failure or inability of contracted sales personnel to obtain access to or persuade adequate numbers of physicians to prescribe our products;
- potential disputes with third parties concerning distribution, sales and marketing expenses, calculation of royalties, and sales and marketing strategies; and
- unforeseen costs and expenses associated with distribution, sales and marketing.

If we are unable to partner with a third party that has adequate sales, marketing, and distribution capabilities, we may have difficulty commercializing our product candidates, which would adversely affect our business, financial condition, and ability to generate product revenues.

Our reliance on third parties and our collaborations require us to share our trade secrets, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.

Because we rely on third parties for the advancement of our products platform, pre-clinical testing, quality control, clinical trials, and manufacturing activities, we must, at times, share trade secrets with them. The sharing of our trade secrets with certain collaborators and CMOs may arise from our collaborations with Servier and Allogene, any collaborations we may enter into in the future, as well as our agreements with our past, present or future CMOs. We seek to protect our proprietary technology in part by entering into confidentiality agreements and, if applicable, material transfer agreements, collaborative research agreements, consulting agreements or other similar agreements with our collaborators, subcontractors, advisors, employees and consultants prior to beginning research, services or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information, such as trade secrets. Despite the contractual provisions employed when working with third parties, the need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. Given that our proprietary position is based, in part, on our know-how and trade secrets, a competitor's discovery of our trade secrets or other unauthorized use or disclosure would impair our competitive position and may have a material adverse effect on our business. In addition, agreements with third parties typically restrict the ability of such third parties to publish data potentially relating to our trade secrets. Our academic collaborators typically have rights to publish data, provided that we are notified in advance and may delay publication for a specified time in order to secure our intellectual property rights arising from the strategic alliance. In other cases, publication rights are controlled exclusively by us, although in some cases we may share these rights with other parties. We also conduct joint research and product development that may require us to share trade secrets under the terms of our research and development partnerships or similar agreements. Our collaborators or CMOs may be acquired by competitors, which may increase the risk that these entities may breach their confidentiality obligations and share our confidential information with the acquirer. For example, in December 2018, Novartis announced its intention to acquire CellForCure, which currently serves as a CMO for us.

Despite our efforts to protect our trade secrets, our competitors may discover our trade secrets, either through breach of these agreements, independent development or publication of information including our trade secrets in cases where we do not have proprietary or otherwise protected rights at the time of publication. A competitor's discovery of our trade secrets would impair our competitive position and have an adverse impact on our business.

Risks Related to Calyxt, Our Plant Products Business

Calyxt faces significant competition and many of its competitors have substantially greater financial, technical and other resources than it does.

The market for agricultural biotechnology products is highly competitive, and Calyxt faces significant direct and indirect competition in several aspects of its business. Competition for improving plant genetics comes from conventional and advanced plant breeding techniques, as well as from the development of advanced biotechnology traits. Other potentially competitive sources of improvement in crop yields include improvements in crop protection chemicals, fertilizer formulations, farm mechanization, other biotechnology, and information management. Programs to improve genetics and crop protection chemicals are generally concentrated within a relatively small number of large companies, while non-genetic approaches are underway with a broader set of companies. Mergers and acquisitions in the plant science, specialty food ingredient and agricultural biotechnology, seed and chemical industries may result in even more resources being concentrated among a smaller number of Calyxt's competitors. Additionally, competition for providing more nutritious ingredients for food companies come from chemical-based ingredients, additives and substitutes, which are developed by various companies. The majority of these competitors have substantially greater financial, technical, marketing, sales, distribution and other resources than Calyxt does, such as larger research and development staff, more experienced marketing and manufacturing organizations and more well-established sales forces. As a result, Calyxt may be unable to compete successfully against its current or future competitors, which may result in price reductions, reduced margins and the inability to achieve market acceptance for its plant products. We expect Calyxt to continue to face significant competition in the markets in which Calyxt intends to commercialize its plant products.

Many of Calyxt competitors engage in ongoing research and development, and technological developments by Calyxt competitors could render its plant products less competitive or obsolete, resulting in reduced sales compared to our expectations. Calyxt ability to compete effectively and to achieve commercial success depends, in part, on Calyxt ability to: control manufacturing and marketing costs; effectively price and market Calyxt's plant products; successfully develop an effective marketing program and an efficient supply chain; develop new plant products with properties attractive to food manufacturers or farmers; and commercialize its plant products quickly without incurring major regulatory costs. Calyxt may not be successful in achieving these factors and any such failure may adversely affect its business, results of operations and financial condition.

From time to time, certain seed and chemical companies that are potential competitors of Calyxt may seek new traits or trait development technologies and may seek to license its technology. Calyxt has, in the past, entered into such licensing arrangements and may continue to enter into such arrangements in the future. Some of these companies may have significantly greater financial resources and may even compete with Calyxt's business. In determining whether to license traits and/or trait development technologies to a potential competitor, Calyxt evaluates the potential financial benefits to it in addition to the focus of such companies' trait pipelines and the likelihood that their plant product candidate programs could compete with Calyxt's own plant product candidate pipeline. Although we do not believe that any of Calyxt's existing licenses pose a competitive threat to Calyxt's business model or existing plant product candidate pipeline, in such circumstances, competitors could use its technologies to develop their own products that would compete with Calyxt's product candidates.

Calyxt also anticipates increased competition in the future as new companies enter the market and new technologies become available, particularly in the area of gene editing. Calyxt's technology may be rendered obsolete or uneconomical by technological advances or entirely different approaches developed by one or more of Calyxt's competitors, which will prevent or limit Calyxt's ability to generate revenue from the commercialization of Calyxt's plant products. At the same time, the expiration of patents covering existing plant products reduces the barriers to entry for competitors.

Calyxt relies on certain gene-editing technologies that may become obsolete in the future.

Calyxt relies on its proprietary gene editing technologies to develop its product candidates. If Calyxt's competitors are able to refine existing gene-editing technologies, or develop new gene-editing technologies that are superior to Calyxt's technologies, we and Calyxt may face reputational damage and a decline in the demand for Calyxt's products. Calyxt's technologies may be rendered obsolete or uneconomical by technological advances or entirely different approaches developed by one or more of Calyxt's competitors that are more effective or that enable them to develop and commercialize products more quickly or with lower expense than Calyxt is able to do. If for any reason Calyxt's technology becomes obsolete or uneconomical relative to its competitors' technologies, this would prevent or limit Calyxt's ability to generate revenues from the commercialization of Calyxt's products.

Calyxt's business activities are currently conducted at a limited number of locations, which makes Calyxt susceptible to damage or business disruptions caused by natural disasters or acts of vandalism.

Calyxt's current headquarters and research and development facilities, which include an office, labs, greenhouses, field testing acreage, and a demonstration test kitchen, are located in Roseville, Minnesota. Calyxt seed production takes place primarily in the United States and Argentina. Third party warehousing for seed storage, and Calyxt's limited number of processing partners (*e.g.* storage, transportation, crushers and refiners) are all located in the Upper Midwest region of the United States. Calyxt takes precautions to safeguard its facilities, including insurance, health and safety protocols, and off-site storage of critical research results and computer data. However, a natural disaster, such as a hurricane, drought, fire, flood, tornado, earthquake, or acts of vandalism, could cause substantial delays in Calyxt operations, damage or destroy Calyxt equipment, inventory or development projects, and cause Calyxt to incur additional expenses.

Loss of or damage to Calyxt's germplasm libraries or inability to access new germplasm would significantly slow Calyxt's product development efforts.

Calyxt has access to a collection of germplasm for its product candidates, in part through licensing agreements with leading institutions. Germplasm comprises genetic material covering the diversity of a crop, the attributes of which are inherited from generation to generation. Germplasm is a key strategic asset since it forms the basis of plant breeding programs. To the extent that Calyxt loses access to germplasm because of the termination or breach of its licensing agreements or as a result of insufficient quantities of germplasm or are unable to access new germplasm for testing, breeding and commercial use in relevant geographies, Calyxt's product development capabilities could be negatively impacted. In addition, loss of or damage to Calyxt's germplasm or Calyxt's inability to access new germplasm would significantly impair Calyxt's research and development activities.

Calyxt's plant product development efforts use complex integrated technology platforms and require substantial time and resources; these efforts may not be successful, or the rate of product improvement may be slower than expected.

Development of successful agricultural products using gene-editing technologies requires significant levels of investment in research and development, including laboratory, greenhouse and field testing, to demonstrate product effectiveness and can take several years or more. For the three years ended December 31, 2018, 2017 and 2016, we incurred $8.6 million, $6.1 million, and $4.1 million, respectively, on plant sciences research and development expenses. Calyxt intends to continue to invest in plant research and development, including additional and expanded field testing to validate Calyxt's product candidates in real world conditions. Calyxt's investment in plant sciences research and development may not result in significant product revenue over the next several years, if ever. Moreover, the successful application of gene-editing technologies can be unpredictable, and may prove to be unsuccessful when attempting to achieve desired traits in different crops and plants. For example, Calyxt's gene-editing techniques may prove to be unsuccessful very early on during the discovery phase of new crop development based on technology limitations. Alternatively, even though Calyxt successfully implemented gene edits during the discovery phase, that trait may not ultimately appear in crops during field testing or crops may also exhibit other undesirable traits that adversely affect their commercial value.

Development of new or improved agricultural products involves risks of failure inherent in the development of products based on innovative and complex technologies. These risks include the possibility that:

- Calyxt's plant products may not perform as expected in the field;
- Calyxt's plant products may not receive necessary regulatory permits and governmental clearances in the markets in which Calyxt intends to sell them;
- consumer preferences, which are unpredictable and can vary greatly, may change quickly, making Calyxt's plant products no longer desirable;
- Calyxt's competitors may develop new plant products that taste better or have other more appealing characteristics than Calyxt's products;
- Calyxt's plant products may be viewed as too expensive by food companies or farmers as compared to competitive products;
- Calyxt's plant products may be difficult to produce on a large scale or will not be economical to grow;
- intellectual property and other proprietary rights of third parties may prevent Calyxt, its research and development partners, or licensees from marketing and selling Calyxt's plant products;
- Calyxt may be unable to patent or otherwise obtain intellectual property protection for its discoveries in the necessary jurisdictions;
- Calyxt, or the food manufacturers that Calyxt sells its ingredients to, may be unable to fully develop or commercialize products containing Calyxt's plant products in a timely manner or at all; and
- third parties may develop superior or equivalent products.

The field of gene editing, particularly in the area of plants, is in its infancy. Negative developments in the field of gene editing, such as adverse side effects, could harm the reputation of the industry and negatively impact Calyxt's business.

Calyxt may direct its limited resources toward product candidates that prove to be less profitable or less successful than others that Calyxt did not pursue.

Calyxt has limited financial and managerial resources. As a result, Calyxt may forego or delay pursuit of opportunities with other product candidates that later prove to have greater commercial potential. Calyxt's resource allocation decisions may cause Calyxt to fail to capitalize on viable commercial products or profitable market opportunities. Calyxt spending on current and future research and development programs and product candidates may not yield any commercially viable products.

Any partnerships that Calyxt may enter into in the future may not be successful, which could adversely affect Calyxt's ability to develop and commercialize its plant product candidates.

Calyxt may seek research and development partnerships or joint venture arrangements with third parties for the development or commercialization of its product candidates depending on the merits of retaining commercialization rights for itself as compared to entering into partnerships or joint venture arrangements. Calyxt will face, to the extent that it decides to enter into partnerships or joint venture agreements, significant competition in seeking appropriate partners. Moreover, partnerships or joint venture arrangements are complex and time-consuming to negotiate, document, implement and maintain. Calyxt may not be successful in its efforts to establish and implement partnerships, joint ventures, or other alternative arrangements should it so chose to enter into such arrangements. The terms of any partnerships, joint ventures, or other arrangements that Calyxt may establish may not be favorable to Calyxt or to us.

Any future partnerships or joint ventures that Calyxt enters into may not be successful. The success of its partnerships or joint venture arrangements will depend heavily on the efforts and activities of Calyxt's partners. Partnerships and joint ventures are subject to numerous risks, which may include that:

- partners have significant discretion in determining the efforts and resources that they will apply to research and development partnerships or joint ventures;
- partners may not pursue development and commercialization of Calyxt's product candidates or may elect not to continue or renew development or commercialization programs based on trial results, changes in their strategic focus due to the acquisition of competitive products, availability of funding or other external factors, such as a business combination that diverts resources or creates competing priorities;
- partners may delay trials, provide insufficient funding for a trial program, stop a trial, abandon a product candidate, repeat or conduct new trials or require a new formulation of a product candidate for testing;
- partners could independently develop, or develop with third parties, products that compete directly or indirectly with Calyxt's products or product candidates;
- a partner with marketing, manufacturing and distribution rights to one or more products may not commit sufficient resources to or otherwise not perform satisfactorily in carrying out these activities;
- Calyxt could grant exclusive rights to its partners that would prevent Calyxt from collaborating with others;
- partners may not properly maintain or defend intellectual property rights or may use Calyxt's intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate Calyxt's intellectual property or proprietary information or expose Calyxt to potential liability;
- disputes may arise between Calyxt and a partner that causes the delay or termination of the research, development or commercialization of Calyxt's current or future products or that results in costly litigation or arbitration that diverts management attention and resources;
- partnerships may be terminated, and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable current or future products;
- partners may own or co-own intellectual property covering Calyxt's products that results from it partnering with them, and in such cases, Calyxt would not have the exclusive right to develop or commercialize such intellectual property; and
- a partner's sales and marketing activities or other operations may not be in compliance with applicable laws resulting in civil or criminal proceedings.

If ongoing or future field trials are unsuccessful, Calyxt may be unable to complete the development of product candidates on a timely basis or at all.

Calyxt relies on field trials to demonstrate the efficacy of the product candidates that it has developed and evaluated in greenhouse conditions. Field trials allow Calyxt to test the product candidates in the field as well as to increase seed production, and to measure performance across multiple geographies and conditions. The successful completion of field trials is critical to the success of Calyxt's product development efforts with respect to its product candidates. If Calyxt's ongoing or future field trials are unsuccessful or produce inconsistent results or unanticipated adverse effects on the agronomic performance of Calyxt's crops, or if the field trials do not produce reliable data, Calyxt's product development efforts could be delayed, subject to additional regulatory review or abandoned entirely. In addition, in order to support Calyxt's commercialization efforts, it is necessary to collect data across multiple growing seasons and from different geographies. Even in cases where initial field trials are successful, Calyxt cannot be certain that additional field trials conducted on a greater number of acres or in different geographies will also be successful. Many factors that are beyond Calyxt's control may adversely affect the success of these field trials, including unique geographic conditions, weather and climatic variations, disease or pests, or acts of protest or vandalism. Field trials, which may take up to 2–3 years, are costly, and any field trial failures that Calyxt may experience may not be covered by insurance and, therefore, could result in increased costs, which may negatively impact Calyxt's business and results of operations.

Calyxt relies on third parties to conduct, monitor, support, and oversee field trials and other research services for plant product candidates in development, and any performance issues by third parties, or Calyxt's inability to engage third parties on acceptable terms, may impact Calyxt's ability to successfully commercialize such product candidates.

Calyxt currently relies on third parties, such as growers, consultants, contractors and universities to conduct, monitor, support and oversee these field trials. In some cases, these field trials are conducted outside of the United States, making it difficult for Calyxt to monitor the daily activity of the work being conducted by the third parties that it engages. Although Calyxt provides its third-party contractors with protocols regarding the production and handling of its product candidates, Calyxt has limited control over the execution of field trials. Poor field trial execution or data collection, failure to follow required agronomic practices, protocols or regulatory requirements, or mishandling of product candidates by these third parties could impair the success of Calyxt's field trials. Any such failures may result in delays in the development of Calyxt's plant product candidates or the incurrence of additional costs. Even if Calyxt's third-party contractors adhere to its suggested protocols, field trials may fail to

succeed for a variety of other reasons, including weather, disease or pests, improper timing of planting Calyxt's seeds, or incorrect fertilizer use. Ultimately, Calyxt remains responsible for ensuring that each of its field trials is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards, and Calyxt's reliance on third parties does not relieve Calyxt of its responsibilities. Should such third parties fail to comply with these standards, Calyxt's ability to develop its product candidates could be adversely impacted.

Additionally, if Calyxt is unable to maintain or enter into agreements with third-party contractors on acceptable terms, or if engagement is terminated prematurely, Calyxt may be unable to conduct or complete its field trials in the manner Calyxt anticipates. If Calyxt's relationship with any of these third-party contractors is terminated, Calyxt may be unable to enter into arrangements with alternative contractors on commercially reasonable terms, or at all. Switching or adding third party contractors can involve substantial cost and require extensive management time and focus. In addition, there is a natural transition period when any new third party commences field trial work. As a result, delays may occur, which could materially impact Calyxt's ability to meet its desired development timelines.

Calyxt may lack the necessary expertise, personnel and resources to successfully commercialize its product candidates.

Other than Calyxt's High Oleic Soybean, which was commercialized in the first quarter of 2019, Calyxt's product candidates are still in development and there is no established market for them. Completion of product development for these other product candidates could be protracted and there is no certainty of success. Future products may not be ready for commercial launch for several years, if ever. If Calyxt is not able to commercialize its High Oleic Soybean product or other product candidates on a significant scale, then it may not be successful in building a sustainable or profitable business at Calyxt. Moreover, we expect Calyxt to price its plant products based on its assessment of the value that it believes they will provide to food manufacturers or farmers, rather than on the cost of production. If food manufacturers or farmers attribute a lower value to such products than Calyxt does, they may not be willing to pay the premium prices that Calyxt expects to charge. Pricing levels may also be negatively affected if Calyxt's plant products are unsuccessful in producing the yields or traits Calyxt expects. Food manufacturers or farmers may also be cautious in their adoption of new plant products and technologies, with conservative initial purchases and proof of product required prior to widespread deployment. It may take several growing seasons for food manufacturers or farmers to adopt Calyxt's plant products on a large scale.

To achieve commercial success of its product candidates, Calyxt will need to develop and build-out its own sales and marketing capabilities while we intend to outsource our supply capabilities to third parties. Factors that may affect Calyxt's ability to commercialize its product candidates on its own include recruiting and retaining adequate numbers of effective sales and marketing personnel, obtaining access to or persuading adequate numbers of food manufacturers or farmers to purchase and use its product candidates and other unforeseen costs associated with creating an independent sales and marketing organization. Developing and maintaining a sales and marketing organization requires significant investment, is time-consuming and could delay the launch of its product candidates. Calyxt may not be able to build or maintain an effective sales and marketing organization in North America or other key global markets. If Calyxt is unable to find suitable partners for the commercialization of its product candidates, it may have difficulties generating revenue from them.

The successful commercialization of Calyxt's plant products depends on Calyxt's ability to produce high-quality plants and seeds cost-effectively on a large scale and to accurately forecast demand for Calyxt's plant products and Calyxt may be unable to do so.

The production of commercial-scale quantities of seeds requires the multiplication of the plants or seeds through a succession of plantings and seed harvests. The cost-effective production of high-quality, high-volume quantities of any product candidates Calyxt successfully develops depends on Calyxt's ability to scale its production processes to produce plants and seeds in sufficient quantity to meet demand. For example, food ingredients such as soybean oil and wheat flour, will require optimized production and commercialization of the underlying plant and seed harvests. We cannot assure that Calyxt's existing or future seed production techniques will enable Calyxt to meet its large-scale production goals cost-effectively for the plant products in its pipeline. Even if Calyxt is successful in developing ways to increase yields and enhance quality, Calyxt may not be able to do so cost-effectively or on a timely basis, which could adversely affect Calyxt's ability to achieve profitability. If Calyxt is unable to maintain or enhance the quality of its plants and seeds as increase Calyxt production capacity, including through the expected use of third parties, Calyxt may experience reductions in food manufacturer or farmer demand, higher costs and increased inventory write-offs.

In addition, because of the length of time it takes to produce commercial quantities of marketable seeds, Calyxt will need to make seed production decisions well in advance of plant product sales. Calyxt's ability to accurately forecast demand can be adversely affected by a number of factors outside of Calyxt's control, including changes in market conditions, environmental factors, such as pests and diseases, and adverse weather conditions. A shortfall in the supply of Calyxt's products may reduce product revenue, damage our or Calyxt's reputation in the market and adversely affect relationships. Any product surplus Calyxt has on hand may negatively impact cash flows, reduce the quality of Calyxt's inventory and ultimately result in write-offs of

inventory. Additionally, we or Calyxt will take financial risk in Calyxt's plant product inventory given that Calyxt will have to keep the inventory marked to market on its balance sheet. Fluctuations in the spot price of Calyxt's crops in inventory could have negative impacts on its financial statements. Any failure on Calyxt part to produce sufficient inventory, or overproduction of a particular product, could harm its business, results of operations and financial condition. In addition, food manufacturers or farmers may cancel orders or request a decrease in quantity at any time prior to delivery of the plants or seeds, which may lead to a surplus of Calyxt plant products.

While Calyxt estimates that the potential size of Calyxt target markets for Calyxt plant products is significant, that estimate has not been independently verified and is based on certain assumptions that may not prove to be accurate. As a result, these estimates could differ materially from actual market sizes, which could result in decreased demand for Calyxt plant products and therefore adversely impact Calyxt future business prospects, results of operation and financial condition.

Calyxt will rely on contractual counterparties and they may fail to perform adequately.

Calyxt's commercial strategy depends on its ability to contract with counterparties that provide, and in the future may provide, a variety of services, including seed production companies, seed distributors, farmers, crushers, refiners, millers, transportation and logistics companies and lab equipment service providers. Calyxt relies on these third parties to provide services along its supply chain and in its research and development functions. Calyxt faces challenges in establishing relationships and contracts with these parties, which may jeopardize its ability to build a supply chain. While Calyxt has established relationships with several providers, Calyxt faces the possibility that counterparties may not fulfill the terms of agreements and will be required to enter into additional relationships to meet its business objectives. This may cause disruptions in Calyxt's supply chains, research efforts, commercialization efforts, and otherwise inhibit Calyxt's ability to bring its products to market at the times and in the quantities as planned. For example, if Calyxt's crushers and refiners fail to process Calyxt's crops at the times and at the quantities as agreed, Calyxt may be unable to meet the demands of food manufacturers who Calyxt has contracted with to purchase its products, leading to lower sales and potential reputational damage and contractual liabilities. While Calyxt may have certain indemnification rights in its contracts with such counterparties, there is no assurance that such indemnification rights will be sufficient to cover any damage to us that would result from a failure of such a counterparty in their contractual arrangements with Calyxt.

Interruptions in the production or transportation of Calyxt's seeds could adversely affect its operations and profitability.

In some cases, Calyxt may produce seed with respect to its product candidates and Calyxt will rely on contract seed producers for such seed production. Poor execution, failure to follow required agronomic practices, protocols or regulatory requirements, or mishandling of product candidates by these contract seed producers could adversely affect Calyxt's products. Any such failures may result in delays in Calyxt's ability to obtain seed for its seed production needs in a timely manner. Such delays could adversely affect Calyxt's ability to deliver seed to farmers to meet their planting window. Calyxt's dependency upon timely seed deliveries means that interruptions or stoppages in such deliveries, or delays or limitations with respect to seed production, could adversely affect Calyxt's operations until alternative arrangements could be made. Such a delay would adversely affect our and Calyxt's reputation and revenues. If Calyxt were unable to produce the necessary seed for an extended period of time for any reason, its business, customer relations, and operating results could suffer.

Calyxt may not be able to identify suitable seed producers to meet its production needs. If Calyxt does identify suitable seed producers, it may not be able to enter into cost effective agreements on acceptable terms. If any contract seed producers whom Calyxt engages fail to perform their obligations as expected or breach or terminate their agreements with Calyxt, or if Calyxt is unable to secure the services of such third parties when and as needed, it may lose opportunities with its supply chain.

The unintended presence of Calyxt's traits in other products or plants may negatively affect it.

Trace amounts of Calyxt's traits may unintentionally be found in the products of third parties, which may result in negative publicity and claims of liability brought by such third parties or others against us or Calyxt. Furthermore, in the event of an unintended dissemination of Calyxt's gene-edited germplasm into the environment, or the presence of unintended trace amounts of Calyxt's traits in conventional seed, or in the grain or products produced from conventional crops, we or Calyxt could be subject to claims by multiple parties, including environmental advocacy groups, as well as governmental actions such as mandated crop destruction, product recalls, or additional stewardship practices and environmental cleanup or monitoring.

Calyxt's crops are new, and if farmers and food processors are unable to work effectively with its crops, Calyxt's various relationships, Calyxt's reputation and its results of operations will be harmed.

Calyxt plans to provide farmers with information and protocols regarding the establishment, management, harvest, transportation and storage of Calyxt's crops. These crop management recommendations may include equipment selection, planting

and harvest timing, application of crop protection chemicals and storage systems and protocols. Calyxt's general or specific protocols may not apply in all circumstances, may be improperly implemented, may not be sufficient, or may be incorrect, leading to reduced yields, crop failures or other production problems or losses. If farmers that are producing crops for Calyxt's food ingredients experience these challenges, Calyxt may be unable to provide plant product ingredients to food manufacturers on a timely basis or at all. If Calyxt is unable to deliver plant products in a timely basis or at all, or if farmers that are purchasing Calyxt's seed experience challenges, or if Calyxt's food processors are unable to process Calyxt's crops effectively and efficiently, Calyxt may jeopardize Calyxt's relationships, reputation and ability to successfully market its plant products. Further, the use of Calyxt's seeds may require a change in current planting, rotation or agronomic practices, which may be difficult to implement or may discourage the use of Calyxt's plant products by agricultural producers.

There are various reasons why Calyxt's crops, once available, may not succeed, including weather, disease or pests, improper timing of planting Calyxt's seeds, or incorrect fertilizer or herbicide use. Statements by potential customers about negative experiences with Calyxt's plant products could harm Calyxt's reputation, and the decision by these parties not to proceed with large-scale seed purchases could harm Calyxt's business, revenue and the ability to achieve profitability.

The successful commercialization of Calyxt plant products may face challenges from public perceptions of gene-edited products and ethical, legal, environmental, health and social concerns.

The successful commercialization of Calyxt's product candidates depends, in part, on public acceptance of gene-edited agricultural products. Farmers, seed companies and end-product consumers may not understand the nature of Calyxt technologies or the scientific distinction between Calyxt's non-transgenic gene-edited products and transgenic products of competitors. As a result, these parties may transfer negative perceptions and attitudes regarding transgenic products to Calyxt's products and product candidates. A lack of understanding of Calyxt's technologies may also make consumers more susceptible to the influence of negative information provided by opponents of biotechnology. Some opponents of biotechnology actively seek to raise public concern about gene editing, whether transgenic or non-transgenic, by claiming that plant products developed using biotechnology are unsafe for consumption or their use, poses a risk of damage to the environment, or creates legal, social and ethical dilemmas. The commercial success of Calyxt's products may be adversely affected by such claims, even if unsubstantiated. In addition, extreme opponents of biotechnology have vandalized the fields of farmers planting biotech seeds and facilities used by biotechnology companies. Any such acts of vandalism targeting the fields of Calyxt's farmer customers, Calyxt field testing sites or Calyxt research, production or other facilities, could adversely affect Calyxt sales and costs.

Negative public perceptions about gene editing can also affect the regulatory environment in the jurisdictions in which Calyxt is targeting the sale of Calyxt's products and the commercialization of Calyxt's product candidates. Any increase in such negative perceptions or any restrictive government regulations in response thereto, could have a negative effect on Calyxt business and may delay or impair the sale of Calyxt products or the development or commercialization of Calyxt product candidates. Even in light of compliance with stringent existing regulatory protocols or following receipt of confirmation of non-regulated status in a jurisdiction, public pressure in that jurisdiction may lead to increased regulation of products produced using biotechnology, further legislation regarding novel trait development technologies, or administrative litigation concerning prior regulatory determinations, each of which could adversely affect Calyxt's ability to sell its product or commercialize its product candidates. In addition, labeling requirements in effect from time to time could heighten public concerns and make consumers less likely to purchase food products containing gene-edited ingredients.

Products that Calyxt develops, and food containing Calyxt's products may fail to meet standards established by third-party non-GMO verification organizations, which could reduce the value of Calyxt's products to customers.

Certain third-party organizations offer verification programs that seek to identify non-GMO products to consumers. These organizations verify the status of products (such as foods, beverages and vitamins) as non-GMO based on independently developed standards, and often authorize the display of specific markers or labels illustrating such status on the verified product's packaging. Although the verification programs seek to identify finished products as non-GMO verified, the processes that they employ typically examine the individual ingredients and precursors, rather than the finished products.

Standards established by such third-party organizations for the verification of non-GMO status may differ from applicable regulatory legal standards applied by regulators in the United States. As a result, notwithstanding a determination as to the non-regulated status of Calyxt's products pursuant to APHIS's regulatory procedures (or a similar determination in other jurisdictions), Calyxt's products, and third-party products that utilize Calyxt's gene-edited products as ingredients, may fail to meet more restrictive or non-scientific standards imposed by these independent verification organizations. For example, a third-party verification organization could determine that it will withhold its non-GMO verification from any product developed using any biotechnology whatsoever.

If third-party verification organizations were to determine that any of Calyxt's products, or third-party products that utilize Calyxt's products as ingredients, or gene-edited products generally, did not meet their non-GMO verification standards, and

certified non-GMO seals or labels were not available for such products, our or Calyxt's reputation could be harmed, these products may be unable to demand non-GMO premiums, which could reduce the value of Calyxt traits to farmer customers, and Calyxt's operating results could be adversely affected.

The commercial success of Calyxt consumer-centric plant products is reliant on the needs of food manufacturers and the recognition of shifting consumer preferences.

The commercial success of Calyxt consumer-centric plant products will depend in part on the success of the food manufacturer's products that Calyxt plant products are included in. Calyxt will not control the marketing, distribution, labeling or any other aspects of the sale and commercialization of the food manufacturers' food products in which Calyxt plant products are an ingredient. Consumer preferences may be a significant driver in the success of Calyxt's food manufacturer customers in their efforts to sell foods products including Calyxt's plant products. While current trends indicate that consumer preferences may be moving towards "healthier" options, we cannot predict whether such trends will continue or which types of food products will be demanded by consumers in the future. Additionally, as health and nutritional science continues to progress, consumer perception of what foods, nutrients and ingredients are considered "healthy" may shift. Calyxt and its food manufacturer customers may not be dynamic enough in responding to consumer trends and making products that will be demanded by consumers in the future. Failure by Calyxt food manufacturer customers to successfully recognize consumer trends and commercialize and sell their products which contain Calyxt ingredients could lower demand for Calyxt products and harm its business, results of operations and financial condition.

If Calyxt is sued for defective products and if such lawsuits were determined adversely, Calyxt could be subject to substantial damages, for which insurance coverage is not available.

Calyxt may be held liable if any product it develops, or any product that uses or incorporates any of Calyxt's technologies is found unsuitable during marketing, sale or consumption. For example, the detection of an unintended trait in a commercial seed variety or the crops and products produced may result in governmental actions such as mandated crop destruction, product recalls or environmental cleanup or monitoring. Concerns about seed quality could also lead to additional regulations being imposed on Calyxt's business, such as regulations related to testing procedures, mandatory governmental reviews of biotechnology advances, or additional regulations relating to the integrity of the food supply chain from the farm to the finished product.

The overall agricultural industry is susceptible to commodity price changes and Calyxt, along with its food manufacturing customers and farmer customers, are exposed to market risks from changes in commodity prices.

Changes in the prices of certain commodity products could result in higher overall cost along the agricultural supply chain, which may negatively affect Calyxt's ability to commercialize its products. Calyxt will be susceptible to changes in costs in the agricultural industry as a result of factors beyond its control, such as general economic conditions, seasonal fluctuations, weather conditions, demand, food safety concerns, product recalls and government regulations. As a result, Calyxt may not be able to anticipate or react to changing costs by adjusting its practices, which could cause its operating results to deteriorate. While Calyxt enters into supply agreements for grain and seed production with settlement values based on commodity market futures pricing, Calyxt does not engage in hedging or speculative financial transactions nor does it hold or issue financial instruments for trading purposes.

Adverse weather conditions, natural disasters, crop disease, pests and other natural conditions can impose significant costs and losses on Calyxt.

The ability to grow Calyxt's plant products is vulnerable to adverse weather conditions, including windstorms, floods, drought and temperature extremes, which are quite common but difficult to predict, the effects of which may be influenced and intensified by ongoing global climate change. Unfavorable growing conditions can reduce both crop size and crop quality. This risk is particularly acute with respect to regions or countries in which Calyxt plans to source a significant percentage of Calyxt's plant products. In extreme cases, entire harvests may be lost in some geographic areas. Such adverse conditions can increase costs, decrease revenues and lead to additional charges to earnings, which may have a material adverse effect on Calyxt's business, financial position and results of operations.

The ability to grow Calyxt's plant products is also vulnerable to crop disease and to pests, which may vary in severity and effect, depending on the stage of production at the time of infection or infestation, the type of treatment applied, climatic conditions and the risks associated with ongoing global climate change. The costs to control disease and other infestations vary depending on the severity of the damage and the extent of the plantings affected. Moreover, there can be no assurance that available technologies to control such infestations will continue to be effective. These infestations can also increase costs, decrease revenues and lead to additional charges to earnings, which may have a material adverse effect on Calyxt's business, financial position and results of operations.

Calyxt expects its business will be highly seasonal and subject to weather conditions and other factors beyond its control, which may cause Calyxt's sales and operating results to fluctuate significantly.

The sale of plant products is dependent upon planting and growing seasons, which vary from year to year, and are expected to result in both highly seasonal patterns and substantial fluctuations in quarterly sales and profitability. Furthermore, significant fluctuations in market prices for agricultural inputs and crops could also have an adverse effect on the value of Calyxt plant products. Weather conditions and natural disasters, such as heavy rains, hurricanes, hail, floods, tornadoes, freezing conditions, drought or fire, also affect decisions by food manufacturers or farmers about the types and amounts of seeds to plant and the timing of harvesting and planting such seeds, as well as adversely impact the agricultural industry as a whole in various regions. Disruptions that cause delays by food manufacturers or farmers in harvesting or planting can result in the movement of orders to a future quarter. Disruptions that cause delays by Calyxt farmers in harvesting could cause Calyxt to be delayed, or to fail entirely in delivering food ingredients to food manufacturers. Any of those delays or failures would negatively affect the quarter in which they occur and cause fluctuations in Calyxt operating results.

The regulatory environment in the United States for genetically engineered plant products is uncertain and evolving. Changes in the current application of these laws and regulations would have a significant adverse impact on Calyxt's ability to develop and commercialize Calyxt's plant products.

Changes in applicable regulatory requirements could result in a substantial increase in the time and costs associated with developing Calyxt plant products and negatively impact Calyxt's operating results. In the United States, the United States Department of Agriculture, or USDA, regulates, among other things, the introduction (including the importation, interstate movement, or release into the environment such as field testing) of organisms and products altered or produced through genetic engineering that are plant pests or that there is reason to believe are plant pests. Such organisms and products are considered "regulated articles." However, a petitioner may submit a request for a determination by the USDA of "nonregulated status" for a particular article. A petition for determination of nonregulated status must include detailed information, including relevant experimental data and publications, and a description of the genotypic differences between the potentially regulated article and the nonmodified recipient organism, among other things. Calyxt previously submitted a request for a determination of "nonregulated status" to the USDA for its potato product candidates, its high oleic and low linolenic soybean product candidates, its improved quality alfalfa product candidate and its powdery mildew-resistant wheat product candidate. The USDA confirmed in writing that each of these product candidates is not deemed to be a "regulated article" under the Plant Protection Act because it does not contain genetic material from plant pests. In the event any of Calyxt's product candidates are found to contain inserted genetic material or otherwise differ from the descriptions Calyxt has provided to the USDA, the USDA could determine that such agricultural product candidates are regulated articles, which would require Calyxt to comply with the permit and notification requirements of the Plant Protection Act. While we believe that the USDA's reasoning will continue to extend to other Calyxt's agricultural product candidates, we or Calyxt have not obtained a determination from the USDA that any of other Calyxt's agricultural product candidates are not "regulated articles" under these regulations. USDA's regulations also require that companies obtain a permit or file a notification before engaging in the introduction (including the importation, interstate movement, or release into the environment such as field testing) of "regulated articles."

We cannot predict whether advocacy groups will challenge existing regulations and USDA determinations or whether the USDA will alter the manner in which it interprets its own regulations or institutes new regulations, or otherwise modifies regulations in a way that will subject Calyxt's plant products to more burdensome standards, thereby substantially increasing the time and costs associated with developing Calyxt's plant product candidates. Moreover, we cannot provide any assurance that the USDA will apply this same analysis to any of Calyxt's other plant product candidates in development. Complying with USDA's plant pest regulations, including permitting requirements, is a costly, time-consuming process and could substantially delay or prevent the commercialization of Calyxt's plant products.

On December 20, 2018, the USDA announced the National Bioengineered Food Disclosure Standard (the "Standard"). The National Bioengineered Food Disclosure Law, passed by Congress in July 2016, directed USDA to establish this national mandatory standard for disclosing foods that may or may not be bioengineered. The implementation date is January 1, 2020 (January 1, 2021 for small food manufacturers), with mandatory compliance by January 1, 2022. The Standard requires food manufacturers, importers, and certain retailers to ensure bioengineered foods are appropriately disclosed. The impact of the standard remains to be seen; our preliminary analysis and understanding is that gene edited foods do not fall within the definition of bioengineered under the Standard.

Calyxt plant products may also be subject to extensive FDA food product regulations. Under sections 201(s) and 409 of the Federal Food, Drug, and Cosmetic Act, or FDCA, any substance that is reasonably expected to become a component of food

added to food is a food additive, and is therefore subject to FDA premarket review and approval, unless the substance is generally recognized, among qualified experts, as having been adequately shown to be safe under the conditions of its intended use (generally recognized as safe, or GRAS), or unless the use of the substance is otherwise excluded from the definition of a food additive. Any food that contains an unsafe food additive is considered adulterated under section 402(a)(2)(C) of the FDCA. The FDA may classify some or all of Calyxt agricultural product candidates as containing a food additive that is not GRAS or otherwise determine that Calyxt plant products contain significant compositional differences from existing plant products that require further review. Such classification would cause these agricultural product candidates to require pre-market approval, which could delay the commercialization of these plant products. In addition, the FDA is currently evaluating its approach to the regulation of gene-edited plants. For example, on January 18, 2017, the FDA announced a Request for Comments, or RFC, seeking public input to help inform its regulatory approach to human and animal foods derived from plants produced using gene editing. Among other things, the RFC asks for data and information in response to questions about the safety of foods from gene-edited plants, such as whether categories of gene-edited plants present food safety risks different from other plants produced through traditional plant breeding. If the FDA enacts new regulations or policies with respect to gene-edited plants, such policies could result in additional compliance costs and/or delay the commercialization of Calyxt's plant product candidates, which could negatively affect Calyxt's profitability. Any delay in the regulatory consultation process, or a determination that Calyxt plant products do not meet regulatory requirements, by the FDA could cause a delay in the commercialization of Calyxt plant products, which may lead to reduced acceptance by food manufacturers, farmers or the public and an increase in competitor products that may directly compete with Calyxt's products.

The regulatory environment outside the United States varies greatly from region to region and is less developed than in the United States.

The regulatory environment around gene editing in plants for food ingredients is greatly uncertain outside of the United States and varies greatly from jurisdiction to jurisdiction. Each jurisdiction may have its own regulatory framework regarding genetically modified foods, which may include restrictions and regulations on planting and growing genetically modified plants and in the consumption and labeling of genetically modified foods, and which may encapsulate Calyxt's plant products. To the extent regulatory frameworks outside of the United States are not receptive to Calyxt's gene-editing technologies, this may limit Calyxt's ability to expand into other global markets.

The two leading jurisdictions, the United States and the European Union, or the EU, do, and may continue to in the future, have distinctly different regulatory regimes with different rules and requirements. We cannot predict how the global regulatory landscape regarding gene editing in plants for food ingredients will evolve and may incur increased regulatory costs as regulations in the jurisdictions in which Calyxt operates change.

In the European Union (the ''EU''), genetically modified organisms ("GMOs") and genetically modified food and feed products can only be sold in the market once they have been properly authorized. The procedures for evaluation and authorization of GMOs and genetically modified food and feed products are established by Regulation (EC) 1829/2003 on genetically modified food and feed (''Regulation (EC) 1829/2003'') and Directive 2001/18/EC on the release of GMOs into the environment (''Directive 2001/18/EC''). An application for authorization must be submitted under Directive 2001/18/EC if a company seeks to release GMOs for experimental purposes (e.g., field tests) and/or to sell GMOs, as such or in products, in the market (e.g., cultivation, importation or processing). In turn, an application for authorization must be submitted under Regulation (EC) 1829/2003 if a company seeks to sell GMOs in the market for food and feed use and/or food and feed products containing or produced from GMOs. At the national level, EU member states have the ability to restrict or prohibit GMO cultivation in their territories by invoking grounds such as environmental or agricultural policy objectives, town and country-planning, land use, coexistence, socio-economic impacts or public policy.

In addition, Directive 2001/18/EC, Regulation (EC) 1829/2003 and Regulation (EC) 1830/2003 establish specific labeling and traceability requirements for GMOs and products that contain or are produced from GMOs. Finally, Directives 2002/53/EC and 2002/55/EC require genetically modified varieties to be authorized in accordance with Directive 2001/18/EC and/or Regulation (EC) 1829/2003, as applicable, before they can be included in a ''Common Catalogue of Varieties,'' which would permit the seeds of such genetically modified varieties to be marketed in the EU.

A recent ruling of the European Court of Justice (''ECJ'') in July 2018 concluded that organisms obtained by new mutagenesis plant breeding techniques involving the use of genetic engineering are GMOs and therefore fall, in principle, under Directive 2001/18/EC described above. The ECJ found further that varieties obtained by modern forms of mutagenesis are genetically modified varieties covered by Directive 2002/53/EC, and are therefore subject to the obligations of such directive. The ECJ clarified that only mutagenesis techniques which (a) have been used in a number of applications and (b) have a long safety record, can be exempted from these requirements, although EU member states remain free to subject even such exempted organisms to the obligations under Directive 2001/18/EC, or to other obligations.

Complying with such EU rules, as strictly interpreted by the ECJ, including the pre-market risk assessment and product authorization requirements, is extremely costly and time-consuming, and has no guarantee of success and could therefore substantially delay or totally prevent the commercialization of Calyxt's products in the EU should Calyxt wish to expand its sales there.

We cannot predict whether or when any jurisdiction will change its regulations with respect to Calyxt's products. Advocacy groups have engaged in publicity campaigns and filed lawsuits in various countries against companies and regulatory authorities, seeking to halt regulatory approval or clearance activities or influence public opinion against genetically engineered and/or gene-edited products. In addition, governmental reaction to negative publicity concerning Calyxt's products could result in greater regulation of genetic research and derivative products or regulatory costs that render Calyxt's products cost prohibitive,

The scale of the commodity food industry may make it difficult to monitor and control the distribution of Calyxt's products. As a result, Calyxt's products may be sold inadvertently within jurisdictions where they are not approved for distribution. Such sales may lead to regulatory challenges or lawsuits against us, which could result in significant expenses and management attention.

Adverse outcomes in future legal proceedings could subject Calyxt to substantial damages, adversely affect Calyxt results of operations, harm our or Calyxt reputation and result in governmental actions.

We or Calyxt may become party to legal proceedings, including matters involving personnel and employment issues, personal injury, product liability, environmental matters, intellectual property disputes and other proceedings. We or Calyxt may be held liable if Calyxt traits do not perform as anticipated by Calyxt customers, or if any product that Calyxt develop or any product that uses Calyxt technologies or incorporates any of Calyxt traits causes injury or is found otherwise unsuitable during marketing, sale or consumption. Courts could levy substantial damages against us in connection with claims for injuries allegedly caused by use of Calyxt products.

The detection of unintended traits in Calyxt seeds could result in governmental actions such as mandated crop destruction, product recalls or environmental cleanup or monitoring. Concerns about seed quality could also lead to additional regulations being imposed on Calyxt business, such as regulations related to testing procedures, mandatory governmental reviews of biotechnology advances, or the integrity of the food supply chain from the farm to the finished product.

Depending on their nature, certain future legal proceedings could result in substantial damages or payment awards that exceed Calyxt's insurance coverage. Calyxt will estimate its exposure to any future legal proceedings and establish provisions for the estimated liabilities where it is reasonably possible to estimate and where an adverse outcome is probable. Assessing and predicting the outcome of these matters will involve substantial uncertainties. Furthermore, even if the outcome is ultimately in Calyxt favor, Calyxt costs associated with such litigation may be material. Adverse outcomes in future legal proceedings or the costs and expenses associated therewith could damage our or Calyxt market reputation and have an adverse effect on our or Calyxt results of operations.

Government policies and regulations, particularly those affecting the agricultural sector and related industries, could adversely affect Calyxt operations and profitability.

Agricultural production and trade flows are subject to government policies and regulations. Governmental policies and approvals of technologies affecting the agricultural industry, such as taxes, tariffs, duties, subsidies, incentives and import and export restrictions on agricultural commodities and commodity products can influence the planting of certain crops, the location and size of crop production, and the volume and types of imports and exports. Future government policies in the United States or in other countries may discourage food manufacturers or farmers from using Calyxt's products or encourage the use of products more advantageous to Calyxt's competitors, which would put Calyxt at a commercial disadvantage and could negatively impact Calyxt's future revenues and results of operations.

Recent U.S. tax legislation could adversely affect Calyxt's business and financial condition

On December 22, 2017, U.S. tax reform legislation known as the Tax Cuts and Jobs Act (the "Act") was signed into law. The Act makes substantial changes to U.S. tax law, including a reduction in the corporate tax rate, a limitation on the use of new operating losses to offset future taxable income, the modification or repeal of certain business deductions and credits, and new rules designed to prevent erosion of the U.S. income tax base such as a new minimum tax, called the Base Erosion and Anti-abuse Tax, applicable to certain U.S. corporations that make certain payments to related foreign persons. We expect the Act to have significant effects on our U.S. subsidiaries, some of which may be adverse. The full extent of the impact remains uncertain at this time, and our current interpretations of, and assumptions regarding, the Act are subject to additional regulatory or administrative developments, including any regulations or other guidance promulgated by the U.S. Internal Revenue Service, or IRS, and other regulators. We can provide no assurance our current interpretations of, and assumptions regarding, the Act and any related regulations or guidance will not be reviewed or investigated by regulators in the future.

The overall agricultural industry is susceptible to commodity price changes and Calyxt, along with Calyxt food manufacturing customers and farmer customers, are exposed to market risks from changes in commodity prices.

Changes in the prices of certain commodity products could result in higher overall cost along the agricultural supply chain, which may negatively affect Calyxt's ability to commercialize Calyxt's products. Calyxt will be susceptible to changes in costs in the agricultural industry as a result of factors beyond Calyxt control, such as general economic conditions, seasonal fluctuations, weather conditions, demand, food safety concerns, product recalls and government regulations. As a result, Calyxt may not be able to anticipate or react to changing costs by adjusting its practices, which could cause Calyxt operating results to deteriorate. Calyxt does not engage in hedging or speculative financial transactions nor does Calyxt hold or issue financial instruments for trading purposes.

Calyxt may need to raise additional funding, which may not be available on acceptable terms or at all. Failure to obtain this necessary capital when needed may force Calyxt to delay, limit or terminate its product development efforts or other operations.

The process of developing and commercializing product candidates is lengthy, risky and expensive. Calyxt expects its research and development expenses to increase substantially as it continues to develop its existing product candidates and to identify new product candidates for development As a result, Calyxt's selling, general and administrative expense will also increase significantly.

In order to complete the development process, obtain, to the extent necessary, any regulatory approval for, and commercialize its products, Calyxt may require additional funding. Also, Calyxt's operating plan, including its product development plans, may change as a result of many currently unknown factors, and Calyxt may need to seek additional funds sooner than planned, through public or private equity or debt financings, government or other third-party funding, marketing and distribution arrangements and other strategic alliances and licensing arrangements, or a combination of these approaches. To commercialize its products, Calyxt will require significant working capital to operate its business and maintain its supply chain.

To the extent that Calyxt raises additional capital through the sale of additional equity or convertible securities, our ownership interest in Calyxt may be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect our rights, as a stockholder. Debt financing, if available, would result in increased fixed payment obligations and a portion of Calyxt's operating cash flows, if any, being dedicated to the payment of principal and interest on such indebtedness. In addition, debt financing may involve agreements that include restrictive covenants that impose operating restrictions, such as restrictions on the incurrence of additional debt, the making of certain capital expenditures or the declaration of dividends. To the extent Calyxt raises additional funds through arrangements with research and development partners or otherwise, Calyxt may be required to relinquish some of its technologies, product candidates or revenue streams, license its technologies or product candidates on unfavorable terms, or otherwise agree to terms unfavorable to it. Any additional fundraising efforts may divert Calyxt's management from their day-to-day activities, which may adversely affect Calyxt's ability to develop and commercialize its product candidates.

In addition, there can be no guarantee that future financing will be available in sufficient amounts or on terms acceptable to Calyxt, if at all. If Calyxt is unable to obtain funding on a timely basis, it may be required to significantly curtail, delay or discontinue one or more of its research or product candidate development programs or the commercialization of any product candidate or be unable to expand its operations or otherwise capitalize on its business opportunities, as desired, which could materially affect its business, operating results and prospects.

Risks Related to Intellectual Property

Our ability to compete may decline if we do not adequately protect our proprietary rights.

Our commercial success depends, in part, on obtaining and maintaining proprietary rights to our and our licensors' intellectual property estate, including with respect to our product candidates, as well as successfully defending these rights against third-party challenges. We will only be able to protect our product candidates from unauthorized use by third parties to the extent that valid and enforceable patents, or effectively protected trade secrets, cover them. Our ability to obtain patent protection for our product candidates is uncertain due to a number of factors, including:

- we or our licensors may not have been the first to invent the technology covered by our or their pending patent applications or issued patents;

- we cannot be certain that we or our licensors were the first to file patent applications covering our product candidates, including their compositions or methods of use, as patent applications in the United States and most other countries are confidential for a period of time after filing;
- others may independently develop identical, similar or alternative products or compositions or methods of use thereof;
- the disclosures in our or our licensors' patent applications may not be sufficient to meet the statutory requirements for patentability;
- any or all of our pending patent applications may not result in issued patents;
- we or our licensors may not seek or obtain patent protection in countries or jurisdictions that may eventually provide us a significant business opportunity;
- any patents issued to us or our licensors may not provide a basis for commercially viable products, may not provide any competitive advantages, or may be successfully challenged by third parties, which may result in our or our licensors' patent claims being narrowed, invalidated or held unenforceable;
- our compositions and methods may not be patentable;
- others may design around our or our licensors' patent claims to produce competitive products that fall outside of the scope of our or our licensors' patents; and
- others may identify prior art or other bases upon which to challenge and ultimately invalidate our or our licensors' patents or otherwise render them unenforceable.

Even if we own, obtain or in-license patents covering our product candidates or compositions, we may still be barred from making, using and selling our product candidates or technologies because of the patent rights or other intellectual property rights of others. Others may have filed, and in the future may file, patent applications covering compositions, products or methods that are similar or identical to ours, which could materially affect our ability to successfully develop and, if approved, commercialize our product candidates. In addition, because patent applications can take many years to issue, there may be currently pending applications unknown to us that may later result in issued patents that our product candidates or compositions may infringe. These patent applications may have priority over patent applications filed by us or our licensors.

Obtaining and maintaining a patent portfolio entails significant expense of resources. Part of such expense includes periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications due over the course of several stages of prosecuting patent applications, and over the lifetime of maintaining and enforcing issued patents. We or our licensors may or may not choose to pursue or maintain protection for particular intellectual property in our or our licensors portfolio. If we or our licensors choose to forgo patent protection or to allow a patent application or patent to lapse purposefully or inadvertently, our competitive position could suffer. In some cases, the prosecution and maintenance of our licensed patents is controlled by the applicable licensor. If such licensor fails to properly prosecute and maintain such patents, we could lose our rights to them, which could materially impair any competitive advantage afforded by such patents. Furthermore, we and our licensors employ reputable law firms and other professionals to help us comply with the various procedural, documentary, fee payment and other similar provisions we and they are subject to and, in many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. There are situations, however, in which failure to make certain payments or noncompliance with certain requirements in the patent prosecution and maintenance process can result in abandonment or lapse of a patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, our competitors might be able to enter the market, which would have a material adverse effect on our business.

Legal action that may be required to enforce our patent rights can be expensive and may involve the diversion of significant management time. In addition, these legal actions could be unsuccessful and could also result in the invalidation of our or our licensors' patents or a finding that they are unenforceable. We or our licensors may or may not choose to pursue litigation or other actions against those that have infringed on our or their patents, or have used them without authorization, due to the associated expense and time commitment of monitoring these activities. In some cases, the enforcement and defense of patents we in-license is controlled by the applicable licensor. If such licensor fails to actively enforce and defend such patents, any competitive advantage afforded by such patents could be materially impaired. In addition, some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we or our licensors can because of their greater financial resources and more mature and developed intellectual property portfolios. Accordingly, despite our efforts, we may not be able to prevent third parties from infringing upon or misappropriating or from successfully challenging our intellectual property rights. If we fail to protect or to enforce our intellectual property rights successfully, our competitive position could suffer, which could harm our results of operations.

Patents and patent applications involve highly complex legal and factual questions, which, if determined adversely to us, could negatively impact our competitive position.

The patent positions of biotechnology and biopharmaceutical companies and other actors in our fields of business can be highly uncertain and typically involve complex scientific, legal and factual analyses. In particular, the interpretation and breadth of claims allowed in some patents covering biological and biopharmaceutical compositions may be uncertain and difficult to determine, and are often affected materially by the facts and circumstances that pertain to the patented compositions and the related patent claims. The standards of the United States Patent and Trademark Office, or USPTO, and foreign patent offices are sometimes uncertain and could change in the future. Consequently, the issuance and scope of patents cannot be predicted with certainty. Patents, if issued, may be challenged, invalidated, narrowed or circumvented. U.S. patents and patent applications may also be subject to interference proceedings, and U.S. patents may be subject to reexamination proceedings, post-grant review, *inter partes* review, or other administrative proceedings in the USPTO. Foreign patents as well may be subject to opposition or comparable proceedings in the corresponding foreign patent offices. Challenges to our or our licensors' patents and patent applications, if successful, may result in the denial of our or our licensors' patent applications or the loss or reduction in their scope. In addition, such interference, reexamination, post-grant review, *inter partes* review, opposition proceedings and other administrative proceedings may be costly and involve the diversion of significant management time. Accordingly, rights under any of our or our licensors' patents may not provide us with sufficient protection against competitive products or processes and any loss, denial or reduction in scope of any such patents and patent applications may have a material adverse effect on our business.

Furthermore, even if not challenged, our or our licensors' patents and patent applications may not adequately protect our product candidates or technology or prevent others from designing their products or technology to avoid being covered by our or our licensors' patent claims. If the breadth or strength of protection provided by the patents we own or license with respect to our product candidates is threatened, it could dissuade companies from collaborating with us to develop, and could threaten our ability to successfully commercialize, our product candidates. Furthermore, for U.S. patent applications in which claims are entitled to a priority date before March 16, 2013, an interference proceeding can be provoked by a third party or instituted by the USPTO in order to determine who was the first to invent any of the subject matter covered by such patent claims.

In addition, changes in, or different interpretations of, patent laws in the United States and other countries may permit others to use our discoveries or to develop and commercialize our technology and products without providing any notice or compensation to us, or may limit the scope of patent protection that we or our licensors are able to obtain. The laws of some countries do not protect intellectual property rights to the same extent as U.S. laws and those countries may lack adequate rules and procedures for defending our intellectual property rights.

If we or our licensors fail to obtain and maintain patent protection and trade secret protection of our product candidates and technology, we could lose our competitive advantage and competition we face would increase, reducing any potential revenues and have a material adverse effect on our business.

The lives of our patents may not be sufficient to effectively protect our products and business.

Patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after its first effective filing date. Although various extensions may be available, the life of a patent, and the protection it affords, is limited. Our or our licensors' issued patents and pending patent applications will expire on dates ranging from 2019 to 2033, subject to any patent extensions that may be available for such patents. In addition, although upon issuance in the United States a patent's life can be increased based on certain delays caused by the USPTO, this increase can be reduced or eliminated based on certain delays caused by the patent applicant during patent prosecution. If we or our licensors do not have sufficient patent life to protect our products, our business and results of operations will be adversely affected.

Developments in patent law could have a negative impact on our business.

From time to time, the United States Supreme Court, or the Supreme Court, other federal courts, the United States Congress, the USPTO and similar foreign authorities may change the standards of patentability and any such changes could have a negative impact on our business.

The Leahy-Smith America Invents Act, or the America Invents Act, which was signed into law in 2011, includes a number of significant changes to U.S. patent law. These changes include a transition from a "first-to-invent" system to a "first-to-file" system, changes to the way issued patents are challenged, and changes to the way patent applications are disputed during the examination process. As a result of these changes, the patent law in the United States may favor larger and more established companies that have greater resources to devote to patent application filing and prosecution. The USPTO has developed new and untested regulations and procedures to govern the full implementation of the America Invents Act, and many of the substantive changes to patent law associated with the America Invents Act, and, in particular, the first-to-file provisions became effective on

March 16, 2013. Substantive changes to patent law associated with the America Invents Act may affect our ability to obtain patents, and if obtained, to enforce or defend them. Accordingly, it is not clear what, if any, impact the America Invents Act will have on the cost of prosecuting our or our licensors' patent applications and our ability and that of our licensors to obtain patents and to enforce or defend any patents that may issue from such patent applications, all of which could have a material adverse effect on our business.

In addition, recent Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. This combination of events has created uncertainty with respect to the validity and enforceability of patents, once obtained. Depending on future actions by the Supreme Court, the United States Congress, the federal courts, the USPTO and similar foreign authorities, the laws and regulations governing patents could change in unpredictable ways that could have a material adverse effect on our existing patent portfolio and our ability to protect and enforce our intellectual property in the future.

If we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.

In addition to patent protection, because we operate in the highly technical field of development of therapies, we rely in part on trade secret protection in order to protect our proprietary technology and processes. However, trade secrets are difficult to protect. Monitoring unauthorized uses and disclosures is difficult, and we do not know whether the steps we have taken to protect our proprietary technologies will be effective. We cannot guarantee that our trade secrets and other proprietary and confidential information will not be disclosed or that competitors will not otherwise gain access to our trade secrets. Despite these efforts, any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches.

Because we rely on third parties for the advancement of our products platform, pre-clinical testing, quality control, clinical trials, and manufacturing activities, we must, at times, share trade secrets with them, and our collaborations with Servier and Allogene, and any collaborations we may enter into in the future, may also lead to share certain of our trade secrets with our collaborators.

We seek to protect our proprietary technology in part by entering into confidentiality agreements and, if applicable, material transfer agreements, intellectual property assignment, collaborative research agreements, consulting agreements or other similar agreements with our employees, consultants, outside collaborators or sub-contractors sponsored researchers, and other advisors. These agreements generally require that the other party keep confidential and not disclose to third parties all confidential information developed by the party or made known to the party by us during the course of the party's relationship with us. These agreements also generally provide that inventions conceived by the party in the course of rendering services to us will be our exclusive property. However, these agreements may be breached or held unenforceable and may not effectively assign intellectual property rights to us.

In addition to contractual measures, we try to protect the confidential nature of our proprietary information using physical and technological security measures. Such measures may not provide adequate protection for our proprietary information. For example, our security measures may not prevent an employee, consultant or collaborator with authorized access from misappropriating our trade secrets and providing them to a competitor, and the recourse we have available against such misconduct may not provide an adequate remedy to protect our interests fully. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret can be difficult, expensive and time consuming, and the outcome is unpredictable. In addition, courts outside the United States may be less willing to protect trade secrets. Furthermore, our proprietary information may be independently developed by others in a manner that could prevent legal recourse by us. If any of our confidential or proprietary information, including our trade secrets, were to be disclosed or misappropriated, or if any such information was independently developed by a competitor, our competitive position could be harmed.

We will not seek to protect our intellectual property rights in all jurisdictions throughout the world and we may not be able to adequately enforce our intellectual property rights even in the jurisdictions where we seek protection.

Filing, prosecuting and defending patents on our product candidates in all countries and jurisdictions throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States could be less extensive than those in the United States, assuming that rights are obtained in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions.

Competitors may use our technologies in jurisdictions where we or our licensors do not pursue and obtain patent protection to develop their own products and further, may export otherwise infringing products to territories where we or our licensors have patent protection, but where the ability to enforce our or our licensors' patent rights is not as strong as in the United States. These products may compete with our products and our intellectual property rights and such rights may not be effective or sufficient to prevent such competition.

The laws of some foreign countries do not protect intellectual property rights to the same extent as the laws of the United States. Patent protection must be sought on a country-by-country basis, which is an expensive and time-consuming process with uncertain outcomes. Accordingly, we or our licensors may choose not to seek patent protection in certain countries, and we will not have the benefit of patent protection in such countries. In addition, the legal systems of some countries, particularly developing countries, do not favor the enforcement of patents and other intellectual property protection, especially those relating to biopharmaceuticals or biotechnologies. In addition, the requirements for patentability differ, in varying degrees, from country to country, and the laws of some foreign countries do not protect intellectual property rights, including trade secrets, to the same extent as federal and state laws of the United States. As a result, many companies have encountered significant problems in protecting and defending intellectual property rights in certain foreign jurisdictions. Such issues may make it difficult for us to stop the infringement, misappropriation or other violation of our intellectual property rights. For example, many foreign countries, including the EU countries, have compulsory licensing laws under which a patent owner must grant licenses to third parties. In addition, many countries limit the enforceability of patents against third parties, including government agencies or government contractors. In these countries, patents may provide limited or no benefit. In those countries, we and our licensors may have limited remedies if patents are infringed or if we or our licensors are compelled to grant a license to a third party, which could materially diminish the value of those patents. This could limit our potential revenue opportunities. Accordingly, our and our licensors' efforts to enforce intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we own or license. Similarly, if our trade secrets are disclosed in a foreign jurisdiction, competitors worldwide could have access to our proprietary information and we may be without satisfactory recourse. Such disclosure could have a material adverse effect on our business. Moreover, our ability to protect and enforce our intellectual property rights may be adversely affected by unforeseen changes in foreign intellectual property laws.

Furthermore, proceedings to enforce our and our licensors' patent rights and other intellectual property rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our or our licensors' patents at risk of being invalidated or interpreted narrowly, could put our or our licensors' patent applications at risk of not issuing and could provoke third parties to assert claims against us or our licensors. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded to us, if any, may not be commercially meaningful, while the damages and other remedies we may be ordered to pay such third parties may be significant. Accordingly, our or our licensors' efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

Third parties may assert rights to inventions we develop or otherwise regard as our own.

Third parties may in the future make claims challenging the inventorship or ownership of our or our licensors' intellectual property. We have written agreements with collaborators that provide for the ownership of intellectual property arising from our strategic alliances. These agreements provide that we must negotiate certain commercial rights with such collaborators with respect to joint inventions or inventions made by our collaborators that arise from the results of the strategic alliance. In some instances, there may not be adequate written provisions to address clearly the allocation of intellectual property rights that may arise from the respective alliance. If we cannot successfully negotiate sufficient ownership and commercial rights to the inventions that result from our use of a third-party collaborator's materials when required, or if disputes otherwise arise with respect to the intellectual property developed through the use of a collaborator's samples, we may be limited in our ability to capitalize on the full market potential of these inventions. In addition, we may face claims by third parties that our agreements with employees, contractors, or consultants obligating them to assign intellectual property to us are ineffective, or are in conflict with prior or competing contractual obligations of assignment, which could result in ownership disputes regarding intellectual property we have developed or will develop and could interfere with our ability to capture the full commercial value of such inventions. Litigation may be necessary to resolve an ownership dispute, and if we are not successful, we may be precluded from using certain intellectual property and associated products and technology, or may lose our rights in that intellectual property. Either outcome could have a material adverse effect on our business.

In addition, the research resulting in certain of our in-licensed patent rights and technology was funded in part by the United States government. As a result, the United States government has certain rights to such patent rights and technology, which include march-in rights. When new technologies are developed with government funding, the government generally obtains certain rights in any resulting patents, including a non-exclusive license authorizing the government to use the invention or to have others use the invention on its behalf. The government can exercise its march-in rights if it determines that action is necessary because we fail to achieve practical application of the government-funded technology, or because action is necessary to alleviate health or safety needs, to meet requirements of federal regulations, or to give preference to the United States industry. Any exercise by the government of any of the foregoing rights could have a material adverse effect on our business.

We may not identify relevant third-party patents or may incorrectly interpret the relevance, scope or expiration of a third-party patent which might adversely affect our ability to develop and market our products.

We cannot guarantee that any of our patent searches or analyses, including but not limited to the identification of relevant patents, the scope of patent claims or the expiration of relevant patents, are complete or thorough, nor can we be certain that we have identified each and every third party patent and pending application in the United States and abroad that is relevant to or necessary for the commercialization of our product candidates in any jurisdiction.

The scope of a patent claim is determined by an interpretation of the law, the written disclosure in a patent and the patent's prosecution history. Our interpretation of the relevance or the scope of a patent or a pending application may be incorrect, which may negatively impact our ability to market our products. We may incorrectly determine that our products are not covered by a third-party patent or may incorrectly predict whether a third party's pending application will issue with claims of relevant scope. Our determination of the expiration date of any patent in the United States or abroad that we consider relevant may be incorrect, which may negatively impact our ability to develop and market our product candidates. Our failure to identify and correctly interpret relevant patents may negatively impact our ability to develop and market our products.

Third parties may assert that our employees or consultants have wrongfully used or disclosed confidential information or misappropriated trade secrets.

We currently employ, and may in the future employ, individuals who were previously employed at universities or other biotechnology or biopharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees and consultants do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or otherwise used or disclosed intellectual property, including trade secrets or other proprietary information, of a former employer or other third parties. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

A dispute concerning the infringement or misappropriation of our proprietary rights or the proprietary rights of others could be time consuming and costly, and an unfavorable outcome could harm our business.

There is significant litigation in the biopharmaceutical industry regarding patent and other intellectual property rights. Although we are not currently subject to any material pending intellectual property litigation, and are not aware of any such threatened litigation, we may be exposed to future litigation by third parties based on claims that our product candidates, technologies or activities infringe the intellectual property rights of others. If our development activities are found to infringe any such patents, we may have to pay significant damages or seek licenses to such patents. A patentee could prevent us from using the patented drugs or compositions. We may need to resort to litigation to enforce a patent issued to us, to protect our trade secrets, or to determine the scope and validity of third-party proprietary rights.

From time to time, we may hire scientific personnel or consultants formerly employed by other companies involved in one or more areas similar to the activities conducted by us. Either we or these individuals may be subject to allegations of trade secret misappropriation or other similar claims as a result of prior affiliations. If we become involved in litigation, it could consume a substantial portion of our managerial and financial resources, regardless of whether we win or lose. We may not be able to afford the costs of litigation. Any adverse ruling or perception of an adverse ruling in defending ourselves against these claims could have a material adverse impact on our cash position. Any legal action against us or our collaborators could lead to:

- payment of damages, potentially including treble damages if we are found to have willfully infringed a party's patent rights;
- injunctive or other equitable relief that may effectively block our ability to further develop, commercialize, and sell products; or
- our or our collaborators' being required to obtain a license under third-party intellectual property, and such license may not be available on commercially acceptable terms, if at all, all of which could have a material adverse impact on our cash position and business and financial condition. As a result, we could be prevented from commercializing current or future product candidates.

Any infringement, misappropriation or other violation by us of intellectual property rights of others may prevent or delay our product development efforts and may prevent or increase the costs of our successfully commercializing our product candidates, if approved.

Our success will depend in part on our ability to operate without infringing, misappropriating or otherwise violating the intellectual property and proprietary rights of third parties. We cannot assure that our business operations, products, product candidates and methods and the business operations, products, product candidates and methods of our collaborators do not or will not infringe, misappropriate or otherwise violate the patents or other intellectual property rights of third parties.

The biotechnology and biopharmaceutical industry is characterized by extensive litigation regarding patents and other intellectual property rights. Other parties may allege that our products, product candidates or the use of our technologies infringe, misappropriate or otherwise violate patent claims or other intellectual property rights held by them or that we are employing their proprietary technology without authorization. Patent and other types of intellectual property litigation can involve complex factual and legal questions, and their outcome is uncertain. Any claim relating to intellectual property infringement that is successfully asserted against us may require us to pay substantial damages, including treble damages and attorneys' fees if we or our collaborators are found to be willfully infringing another party's patents, for past use of the asserted intellectual property and royalties and other consideration going forward if we are forced to take a license. Such a license may not be available on commercially reasonable terms, or at all. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors access to the same intellectual property rights or technologies licensed to us. In addition, if any such claim were successfully asserted against us and we could not obtain a license, we or our collaborators may be forced to stop or delay developing, manufacturing, selling or otherwise commercializing our products, product candidates or other infringing technology, or those we develop with our collaborators.

Even if we are successful in these proceedings, we may incur substantial costs and divert management time and attention pursuing these proceedings, which could have a material adverse effect on us. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities If we are unable to avoid infringing the patent rights of others, we may be required to seek a license, defend an infringement action or challenge the validity of the patents in court, or redesign our products. Patent litigation is costly and time consuming. We may not have sufficient resources to bring these actions to a successful conclusion. In addition, intellectual property litigation or claims could force us to do one or more of the following:

- cease developing, selling or otherwise commercializing our product candidates;
- pay substantial damages for past use of the asserted intellectual property;
- obtain a license from the holder of the asserted intellectual property, which license may not be available on reasonable terms, if at all; and
- in the case of trademark claims, redesign, or rename trademarks we may own, to avoid infringing the intellectual property rights of third parties, which may not be possible and, even if possible, could be costly and time-consuming.

Any of these risks coming to fruition could have a material adverse effect on our business, results of operations, financial condition and prospects.

Issued patents covering our product candidates could be found invalid or unenforceable if challenged in court.

If we or one of our licensing partners initiated legal proceedings against a third party to enforce a patent covering our product candidate, the defendant could counterclaim that the patent covering our product candidate is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Furthermore, third parties may petition courts for declarations of invalidity or unenforceability with respect to our patents or individual claims there. If successful, such claims could narrow the scope of protection afforded our product candidates and future products, if any. Grounds for a validity challenge include alleged failures to meet any of several statutory requirements, including lack of novelty, obviousness or non-enablement. Grounds for unenforceability assertions include allegations that someone connected with prosecution of the patent withheld relevant information from the USPTO, or made a misleading statement, during prosecution. Third parties may also raise similar claims before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include re-examination, post grant review and equivalent proceedings in foreign jurisdictions, e.g., opposition proceedings. Such proceedings could result in revocation or amendment of our patents in such a way that they no longer cover our product candidates or competitive products. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to validity, for example, we cannot be certain that there

is no invalidating prior art, of which we and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our product candidates. Such a loss of patent protection would have a material adverse impact on our business.

We may be unsuccessful in licensing or acquiring intellectual property that may be required to develop and commercialize our product candidates from third parties.

We have rights, through licenses from third parties and under patents that we own, to the intellectual property to develop our product candidates. Because our programs may involve additional product candidates that may require the use of intellectual property or proprietary rights held by third parties, the growth of our business will likely depend in part on our ability to acquire, in-license or use these intellectual property and proprietary rights. In addition, our product candidates may require specific formulations to work effectively and efficiently, and these rights may be held by others. We may be unable to acquire or in-license any third-party intellectual property or proprietary rights. Even if we are able to acquire or in-license such rights, we may be unable to do so on commercially reasonable terms. The licensing and acquisition of third-party intellectual property and proprietary rights is a competitive area, and a number of more established companies are also pursuing strategies to license or acquire third-party intellectual property and proprietary rights that we may consider attractive or necessary. These established companies may have a competitive advantage over us due to their size and greater capital resources and development and commercialization capabilities.

For example, we sometimes collaborate with academic institutions to accelerate our research or development under written agreements with these institutions. Typically, these institutions provide us with an option to negotiate a license to any of the institution's rights in technology resulting from the strategic alliance. Regardless of such option, we may be unable to negotiate a license within the specified time frame or under terms that are acceptable to us, and the institution may license such intellectual property rights to third parties, potentially blocking our ability to pursue our development and commercialization plans.

In addition, companies that perceive us to be a competitor may be unwilling to assign or license to us intellectual property and proprietary rights. We also may be unable to license or acquire third-party intellectual property and proprietary rights on terms that would allow us to make an appropriate return on our investment or at all. If we are unable to successfully acquire or in-license rights to required third-party intellectual property and proprietary rights or maintain the existing intellectual property and proprietary rights we have, we may have to cease development of the relevant program, product or product candidate, which could have a material adverse effect on our business.

If we fail to comply with our obligations in the agreements under which we license intellectual property rights from third parties or otherwise experience disruptions to our business relationships with our licensors, we could lose license rights that are important to our business.

We are a party to a number of intellectual property license agreements that are important to our business and expect to enter into additional license agreements in the future. Our existing license agreements impose, and we expect that future license agreements will impose, various diligence, milestone payment, royalty and other obligations on us. If we fail to comply with our obligations under these agreements, or we are subject to a bankruptcy, our licensors may have the right to terminate the license, in which event we would not be able to market products or product candidates covered by the license.

In addition, disputes may arise regarding the payment of the royalties or other consideration due to licensors in connection with our exploitation of the rights we license from them. Licensors may contest the basis of payments we retained and claim that we are obligated to make payments under a broader basis. In addition to the costs of any litigation we may face as a result, any legal action against us could increase our payment obligations under the respective agreement and require us to pay interest and potentially damages to such licensors.

In some cases, patent prosecution of our licensed technology is controlled solely by the licensor. If such licensor fails to obtain and maintain patent or other protection for the proprietary intellectual property we license from such licensor, we could lose our rights to such intellectual property or the exclusivity of such rights, and our competitors could market competing products using such intellectual property. In addition, these patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. In that event, we may be required to expend significant time and resources to develop or license replacement technology. If we are unable to do so, we may be unable to develop or commercialize the affected products and product candidates, which could harm our business significantly. In other cases, we control the prosecution of patents resulting from licensed technology. In the event we breach any of our obligations related to such prosecution, we may incur significant liability to our licensing partners. We may also require the cooperation of our licensors to enforce any licensed patent rights, and such cooperation may not be provided. Moreover, we have obligations under these license agreements, and any failure to satisfy those obligations could give our licensor the right to terminate the agreement. Termination of a necessary license agreement could have a material adverse impact on our business.

Under each of the material exclusive licenses granted to us, the licensor controls the prosecution of patents covered by the license. Under our collaboration agreement with Allogene, we and Allogene each generally control the prosecution of our respective owned patents, and Allogene has the first right to elect to control the prosecution of certain jointly-developed intellectual property. Under our collaboration agreement with Servier, we and Servier each generally control the prosecution of our respective owned patents, and we generally control the prosecution of joint patents, unless Servier exercises its option under the agreement to obtain an exclusive license to further develop, manufacture and commercialize a product candidate, in which case Servier will control prosecution of the joint patents. In addition, Servier currently controls prosecution of those patent rights covering solely UCART19. Licensing of intellectual property is of critical importance to our business and involves complex legal, business and scientific issues and is complicated by the rapid pace of scientific discovery in our industry. Disputes may arise regarding intellectual property subject to a licensing agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- the basis of royalties and other consideration due to our licensors;
- the extent to which our products, product candidates, technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- the sublicensing of patent and other rights under our collaborative development relationships;
- our diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners; and
- the priority of invention of patented technology.

If disputes over intellectual property that we have licensed from third parties prevent or impair our ability to maintain our current licensing arrangements on acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates.

Risks Related to Our Organization, Structure and Operation

We will need to develop and expand our company, and we may encounter difficulties in managing this development and expansion, which could disrupt our operations.

As of December 31, 2018, we had 161 full-time employees (including Calyxt, Inc.) and we expect to increase our number of employees and the scope and location of our operations. To manage our anticipated development and expansion, including the development and the commercialization of our product candidates, we must continue to implement and improve our managerial, operational and financial systems, expand our facilities and continue to recruit and train additional qualified personnel. Also, our management may need to divert a disproportionate amount of its attention away from its day-to-day activities and devote a substantial amount of time to managing these development activities. Due to our limited resources, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. This may result in weaknesses in our infrastructure, give rise to operational mistakes, loss of business opportunities, loss of employees and reduced productivity among remaining employees. The physical expansion of our operations may lead to significant costs and may divert financial resources from other projects, such as the development of our product candidates. If our management is unable to effectively manage our expected development and expansion, our expenses may increase more than expected, our ability to generate or increase our revenue could be reduced and we may not be able to implement our business strategy. Our future financial performance and our ability to commercialize our product candidates, if approved, and compete effectively will depend, in part, on our ability to effectively manage the future development and expansion of our company.

We depend on key management personnel and attracting and retaining other qualified personnel, and our business could be harmed if we lose key management personnel or cannot attract and retain other qualified personnel.

Our success depends to a significant degree upon the technical skills and continued service of certain members of our management team, including Dr. André Choulika, our co-founder and Chief Executive Officer; Dr. David Sourdive, our co-founder and Executive Vice President, Technical Operations; and Eric Dutang, our Chief Financial Officer. The loss of the services of these key executive officers could have a material adverse effect on us. Our success also will depend upon our ability to attract and retain additional qualified management, regulatory, medical, technical, and sales and marketing executives and personnel. The failure to attract, integrate, motivate, and retain additional skilled and qualified personnel could have a material adverse effect on our business.

We compete for such personnel against numerous companies, including larger, more established companies with significantly greater financial resources than we possess. In addition, failure to succeed in our product candidates' development may make it more challenging to recruit and retain qualified personnel. There can be no assurance that we will be successful in attracting or retaining such personnel and the failure to do so could have a material adverse effect on our business, financial condition, and results of operations.

In order to induce valuable employees to remain at Cellectis, we have provided over the last years free shares and stock options to purchase ordinary shares that vest over time. The value to employees of free shares and stock options that vest over time may be significantly affected by movements in the price of our ordinary shares that are beyond our control, and may at any time be insufficient to counteract more lucrative offers from other companies.

Despite our efforts to retain valuable employees, members of our management, scientific and development teams may terminate their employment with us. The loss of the services of any of our key executive officers or other officers or senior employees within a short timeframe, and our inability to find suitable replacements could potentially harm our business, prospects, financial condition or results of operations. We do maintain "key man" insurance policies on the lives of our co-founders. Our success also depends on our ability to continue to attract, retain and motivate highly skilled junior, mid-level, and senior managers as well as junior, mid-level, and senior scientific and medical personnel.

The requirements of being a U.S. public company require significant resources and management attention and affect our ability to attract and retain executive management and qualified board members.

As a U.S. public company, we incur significant legal, accounting, and other expenses. We are subject to the Exchange Act, including the reporting requirements thereunder, the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the Nasdaq listing requirements and other applicable securities rules and regulations. Compliance with these rules and regulations results in substantial legal and financial compliance costs and makes some activities more difficult, time-consuming or costly and increases demand on our systems and resources. These costs and other impacts would increase if we ceased to qualify as a foreign private issuer, in which case we would be required to comply with the enhanced reporting and governance requirements applicable to U.S. domestic reporting companies.

In addition, our subsidiary Calyxt is a U.S. public company, and is also subject to the Exchange Act, including the reporting requirements thereunder, the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the Nasdaq listing requirements and other applicable securities rules and regulations. Having a U.S. public company subsidiary has impacted the disclosure of our financial information and has increased our legal and financial compliance costs.

Further, being a U.S. public company and a French public company has impacted the disclosure of information and required compliance with two sets of applicable rules. From time to time, this may result in uncertainty regarding compliance matters and has resulted in higher costs necessitated by legal analysis of dual legal regimes, ongoing revisions to disclosure and adherence to heightened governance practices. As a result of the enhanced disclosure requirements of the U.S. securities laws, business and financial information that we report is broadly disseminated and highly visible to investors, which we believe may increase the likelihood of threatened or actual litigation, including by competitors and other third parties, which could, even if unsuccessful, divert financial resources and the attention of our management from our operations.

We must maintain effective internal control over financial reporting, and if we are unable to do so, the accuracy and timeliness of our financial reporting may be adversely affected, which could have a material adverse effect on our business, investor confidence and market price.

We must maintain effective internal control over financial reporting in order to accurately and timely report our results of operations and financial condition. In addition, as a public company, the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, requires, among other things, that we assess the effectiveness of our disclosure controls and procedures and the effectiveness of our internal control over financial reporting at the end of each fiscal year. Pursuant to Section 404 of the Sarbanes-Oxley Act, we are required to furnish a report by our management on our internal control over financial reporting, and we are required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. The rules governing the standards that must be met for our management to assess our internal control over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act are complex and require significant documentation, testing and possible remediation. These stringent standards require that our audit and finance committee be advised and regularly updated on management's review of internal control over financial reporting.

Our compliance with applicable provisions of Section 404 requires that we incur substantial accounting expense and expend significant management attention and time on compliance-related issues as we implement additional corporate governance practices and comply with reporting requirements.

If we fail to staff our accounting and finance function adequately or maintain internal control over financial reporting adequate to meet the requirements of the Sarbanes-Oxley Act, our business and reputation may be harmed. Moreover, if we are not able to comply with the applicable requirements of Section 404 in a timely manner, we may be subject to sanctions or

investigations by regulatory authorities, including the SEC and Nasdaq. Furthermore, if we are unable to conclude that our internal control over financial reporting is effective or if our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, we could lose investor confidence in the accuracy and completeness of our financial reports, the market price of our stock could decline, and we could be subject to sanctions or investigations by the SEC, Nasdaq or other regulatory authorities. Failure to implement or maintain effective internal control systems required of public companies could also restrict our access to the capital markets. The occurrence of any of the foregoing would also require additional financial and management resources.

Our failure to maintain certain tax benefits applicable to French technology companies may adversely affect our results of operations.

As a French technology company, we have benefited from certain tax advantages, including, for example, the French research tax credit (*Crédit d'Impôt Recherche*), or CIR. The CIR is a French tax credit aimed at stimulating research and development. The CIR can be offset against French corporate income tax due and the portion in excess (if any) may be refunded at the end of a three fiscal-year period (or, sooner, for smaller companies such as ours). The Research tax credit receivables as of December 31, 2018 include the accrual for a French research tax credit related to 2017 for $8.0 million and to 2018 for $7.8 million. The CIR is calculated based on our claimed amount of eligible research and development expenditures in France. The French tax authority with the assistance of the Research and Technology Ministry may audit each research and development program in respect of which a CIR benefit has been claimed and assess whether such program qualifies in their view for the CIR benefit, in accordance with the French tax code (*code général des impôts*) and the relevant official guidelines.

During December 2018, the French Tax Authority has initiated an audit related to the 2014, 2015, 2016 and 2017 French research tax credits. We do not believe that a provision should be recorded at this stage of this audit. As a result of such audit, the reimbursement of the French research tax credit related to 2017 is currently pending. The French tax authorities may challenge our eligibility to, or our calculation of certain tax reductions and/or deductions in respect of our research and development activities and, should the French tax authorities be successful, we may be liable for additional corporate income tax, and penalties and interest related thereto, or we may not obtain the refunds for which we have applied, which could have a significant impact on our results of operations and future cash flows. Furthermore, if the French Parliament decides to eliminate, modify, or reduce the scope of the CIR benefit, which it could decide to do at any time, our results of operations could be adversely affected.

We may be exposed to significant foreign exchange risk, which may adversely affect our financial condition, results of operations and cash flows.

We incur portions of our expenses and may in the future derive revenues in currencies other than the euro, in particular, the U.S. dollar. As a result, we are exposed to foreign currency exchange risk as our results of operations and cash flows are subject to fluctuations in foreign currency exchange rates. While we are engaged in hedging transactions to minimize the impact of uncertainty in future exchange rates on cash flows, we may not hedge all of our foreign currency exchange rate risk. In addition, hedging transactions carry their own risks and costs, including the possibility of a default by the counterpart to the hedge transaction. We cannot predict the impact of foreign currency fluctuations, and foreign currency fluctuations in the future may adversely affect our financial condition, results of operations and cash flows.

We may use hazardous chemicals and biological materials in our business. Any claims relating to improper handling, storage or disposal of these materials could be time consuming and costly.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment, manufacture and disposal of hazardous materials and wastes. Our research and development processes may involve the controlled use of hazardous materials, including chemicals and biological materials. We cannot eliminate the risk of accidental contamination or discharge and any resultant injury from these materials. We may be sued for any injury or contamination that results from our use or the use by third parties of these materials, and our liability may exceed any insurance coverage and our total assets. Federal, state, local or foreign laws and regulations govern the use, manufacture, storage, handling and disposal of these hazardous materials and specified waste products, as well as the discharge of pollutants into the environment and human health and safety matters. Compliance with environmental laws and regulations may be expensive and may impair our research and development efforts. If we fail to comply with these requirements, we could incur delays, substantial costs, including civil or criminal fines and penalties, clean-up costs or capital expenditures for control equipment or operational changes necessary to achieve and maintain compliance. In addition, we cannot predict the impact on our business of new or amended environmental laws or regulations or any changes in the way existing and future laws and regulations are interpreted and enforced. These current or future laws and regulations may impair our research, development or production efforts.

Our internal computer systems, or those of our third-party contractors or consultants, may fail or suffer security breaches, which could result in a material disruption of our product development programs or loss of personal data.

Despite the implementation of security measures, our internal computer systems and those of our third-party contractors and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. While we do not believe that we have experienced any such system failure, accident, or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in significant damages including without limitation in a material disruption of our programs. For example, the loss of clinical trial data for our product candidates could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach results in a loss of or damage to our data or applications or other data or applications relating to our technology or product candidates, or inappropriate disclosure of confidential or proprietary information, we could incur liabilities and the further development of our product candidates could be delayed.

Data privacy regulations could adversely affect our business, results of operations and financial condition.

The European Regulation 2016/679, known as the General Data Protection Regulation (GDPR), as well as EU Member State implementing legislations, apply to the collection and processing of personal data, including health-related information, by companies located in the EU and processing personal information of individuals located in the EU. These laws impose strict obligations on the ability to process personal data, including health-related information, in particular in relation to their collection, use, disclosure and transfer. These include several requirements relating to (i) obtaining, in some situations, the consent of the individuals to whom the personal data relates, (ii) the information provided to the individuals about how their personal information is used, (iii) ensuring the security and confidentiality of the personal data, (iv) the obligation to notify personal data breaches to regulatory authorities and, as applicable, to communicate such breaches to affected individuals, (v) extensive internal privacy governance obligations, and (vi) obligations to honor rights of individuals in relation to their personal data (for example, the right to access, correct and delete their data). The GDPR also imposes restrictions on the transfer of personal data to countries outside of the European Economic Area (EEA). The GDPR has increased our responsibility and liability in relation to personal data that we process, and we may be required to put in place additional potential mechanisms to ensure compliance with the new EU data protection rules. Also, some uncertainty remains around the legal and regulatory environment for these evolving privacy and data protection laws and regulations. We may become the subject of investigations and/or claims in respect of privacy matters and unfavorable outcomes in any of such matters could preclude the commercialization of products, harm our reputation, negatively affect the profitability of our products and subject us to substantial fines.

We may acquire businesses or products, or form strategic alliances, in the future, and we may not realize the benefits of such acquisitions.

Our current strategy does not involve plans to acquire companies or technologies facilitating or enabling us to access to new medicines, new technologies, new research projects, or new geographical areas, or enabling us to express synergies with our existing operations. However, if such acquisitions were to become necessary or attractive in the future, we may not be able to identify appropriate targets or make acquisitions under satisfactory conditions, in particular, satisfactory price conditions. In addition, we may be unable to obtain the financing for these acquisitions under favorable conditions, and could be led to finance these acquisitions using cash that could be allocated to other purposes in the context of existing operations. If we acquire businesses with promising markets or technologies, we may not be able to realize the benefit of acquiring such businesses if we are unable to successfully integrate them with our existing operations and company culture. We may encounter numerous difficulties in developing, manufacturing and marketing any new products resulting from a strategic alliance or acquisition that delay or prevent us from realizing their expected benefits or enhancing our business. We cannot assure you that, following any such acquisition, we will achieve the expected synergies to justify the transaction, which could have a material adverse effect on our business, financial conditions, earnings and prospects.

Risks Related to Ownership of Our Ordinary Shares and ADSs

Although not free from doubt, we do not believe we were a "passive foreign investment company," or PFIC, for U.S. federal income tax purposes for the 2018 taxable year. However, we cannot assure you that we will not be classified as a PFIC for 2019 or any future taxable year, which may result in adverse U.S. federal income tax consequences to U.S. holders (as defined in the section titled "Taxation—Material U.S. Federal Income Tax Considerations" in this Annual Report).

A non-U.S. corporation will be considered a PFIC for any taxable year if either (1) at least 75% of its gross income for such year is passive income or (2) at least 50% of the value of its assets (based on an average of the quarterly values of the assets during such year) is attributable to assets that produce or are held for the production of passive income. Although the matter is not free from doubt, we do not believe that we were a PFIC for U.S. federal income tax purposes for the 2018 taxable year. No assurances may be given at this time as to our PFIC status for the current or future taxable years. The determination of PFIC status is fact-specific, and a separate determination must be made each taxable year as to whether we are a PFIC (after the close of each such taxable year). It is possible that we could be classified as a PFIC for 2019 or future taxable years due to changes in the

composition of our assets or income, as well as changes to our market capitalization. The market value of our assets may be determined in large part by reference to the market price of our stock, which has fluctuated and is likely to continue to fluctuate, substantially. If we are a PFIC for any taxable year during which a U.S. holder holds ADSs, the U.S. holder may be subject to adverse tax consequences, including (1) the treatment of all or a portion of any gain on disposition of the ADSs as ordinary income, (2) the application of an interest charge with respect to such gain and certain dividends and (3) compliance with certain reporting requirements. Each U.S. holder is strongly urged to consult its tax advisor regarding these issues and any available elections to mitigate such tax consequences. See the section titled "Taxation—Material U.S. Federal Income Tax Considerations" in this Annual Report.

The market price for our ADSs may be volatile or may decline regardless of our operating performance.

The trading price of the ADSs has fluctuated, and is likely to continue to fluctuate, substantially. The trading price of our ADSs depends on a number of factors, including those described in this "Risk Factors" section, many of which are beyond our control and may not be related to our operating performance.

Since the ADSs were sold in our initial public offering in March 2015 at a price of $41.50 per share, the price per ADS has ranged as low as $15.34 and as high as $50.00 through March 11, 2019. The market price of the ADSs may fluctuate significant in response to numerous factors, many of which are beyond our control, including:

- actual or anticipated fluctuations in our financial condition and operating results;
- our failure to develop and commercialize our product candidates;
- adverse results of delays in our or any of our competitors' pre-clinical studies or clinical trials;
- actual or anticipated changes in our growth rate relative to our competitors;
- competition from existing products or new products that may emerge;
- announcements by us, our collaborators or our competitors of significant acquisitions, strategic partnerships, joint ventures, strategic alliances, or capital commitments;
- adverse regulatory decisions, including failure to receive regulatory approval for any of our product candidates;
- the termination of a strategic alliance or the inability to establish additional strategic alliances;
- unanticipated serious safety concerns related to the use of any of our product candidates;
- failure to meet or exceed financial estimates and projections of the investment community or that we provide to the public;
- issuance of new or updated research or reports by securities analysts;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- inconsistent trading volume levels of our ADSs;
- price and volume fluctuations in trading of our ordinary shares on the Euronext Growth market of the Euronext in Paris;
- additions or departures of key management or scientific personnel;
- disputes or other developments related to proprietary rights, including patents, litigation matters, and our ability to obtain patent protection for our technologies;
- our inability to obtain reimbursement by commercial third-party payors and government payors and any announcements relating to coverage policies or reimbursement levels;
- announcement or expectation of additional debt or equity financing efforts;
- sales of our ordinary shares or ADSs by us, our insiders or our other shareholders; and
- general economic and market conditions.

These and other market and industry factors may cause the market price and demand for our ADSs to fluctuate substantially, regardless of our actual operating performance, which may limit or prevent holders from readily selling their ADSs and may otherwise negatively affect the liquidity of our capital shares. In addition, the stock market in general, and biopharmaceutical companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies.

Share ownership is concentrated in the hands of our principal shareholders and management, who will continue to be able to exercise a direct or indirect controlling influence on us.

Our executive officers, directors, current 5% or greater shareholders and affiliated entities beneficially own approximately 35.96% of our ordinary shares outstanding (including those underlying our ADSs) as of December 31, 2018. As a result, these shareholders, acting together, have significant influence over all matters that require approval by our shareholders, including the election of directors and approval of significant corporate transactions. Corporate action might be taken even if other shareholders oppose them. This concentration of ownership might also have the effect of delaying or preventing a change of control of our company that other shareholders may view as beneficial.

If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, the price of our ADSs and trading volume could decline.

The trading market for our ADSs depends in part on the research and reports that securities or industry analysts publish about us or our business. If few or no securities or industry analysts cover us, the trading price for our ADSs would be negatively impacted. If one or more of the analysts who covers us downgrades our ADSs or publishes incorrect or unfavorable research about our business, the price of our ADSs would likely decline. If one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, or downgrades our ADSs, could also cause the price of our ADSs or trading volume to decline.

We do not currently intend to pay dividends on our securities. In addition, French law may limit the amount of dividends we are able to distribute.

We have never declared or paid any cash dividends on our share capital and do not currently intend to do so for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. Therefore, holders of our ordinary shares and ADSs are not likely to receive any dividends for the foreseeable future and any increase in value will depend solely upon any future appreciation. Consequently, holders of our equity securities may need to sell all or part of their holdings after price appreciation, which may never occur, as the only way to realize any future gains.

Further, under French law, the determination of whether we have been sufficiently profitable to pay dividends is made on the basis of our statutory financial statements prepared and presented in accordance with standards applicable in France. Please see the section of this Annual Report titled “Memorandum and Articles of Association” for further details on the limitations on our ability to declare and pay dividends. Therefore, we may be more restricted in our ability to declare dividends than companies not based in France.

In addition, exchange rate fluctuations may affect the amount of euros that we are able to distribute, and the amount in U.S. dollars that our shareholders receive upon the payment of cash dividends or other distributions we declare and pay in euros, if any. These factors could harm the value of our equity securities, and, in turn, the U.S. dollar proceeds that holders receive from the sale of ADSs.

Future sales of ordinary shares or ADSs by existing shareholders could depress the market price of the ADSs.

We believe that additional capital may be needed in the future to continue our planned operations, including conducting our planned clinical trials, manufacturing and commercialization efforts, expanded research and development activities and costs associated with operating as a public company.

Moreover, as of February 28, 2019, approximately 8,597,614 of our outstanding ordinary shares (excluding those underlying ADSs) are held by directors, executive officers and other affiliates and continue to be subject to resale limitations under Rule 144 under the Securities Act. If our existing shareholders sell, or indicate an intent to sell, substantial amounts of ordinary shares or ADSs in the public market, the trading price of our ordinary shares and/or ADSs could decline significantly. In addition, the sale of these securities could impair our ability to raise capital through the sale of additional securities.

Risks Relating to Investing in a Foreign Private Issuer or French Company

Our By-laws and French corporate law contain provisions that may delay or discourage a takeover attempt.

Provisions contained in our By-laws and the corporate laws of France, the country in which we are incorporated, could make it more difficult for a third party to acquire us, even if doing so might be beneficial to our shareholders. In addition, provisions of

French law and our By-laws impose various procedural and other requirements, which could make it more difficult for shareholders to effect certain corporate actions. These provisions include the following:

- a merger (i.e., in a French law context, stock-for-stock exchange after which our company would be dissolved without being liquidated into the acquiring entity and our shareholders would become shareholders of the acquiring entity) of our company into a company incorporated in the European Union would require the approval of our board of directors as well as a two-thirds majority of the votes held by the shareholders present, represented by proxy or voting by mail at the relevant meeting;
- a merger of our company into a company incorporated outside of the European Union would require the unanimous approval of our shareholders;
- under French law, a cash merger is treated as a share purchase and would require the consent of each participating shareholder;
- our shareholders have granted and may grant in the future our board of directors broad authorizations to increase our share capital or to issue additional ordinary shares or other securities (for example, warrants) to our shareholders, the public or qualified investors, including as a possible defense following the launching of a tender offer for our shares;
- our shareholders have preferential subscription rights proportional to their shareholding in our company on the issuance by us of any additional shares or securities giving the right, immediately or in the future, to new shares for cash or a set-off of cash debts, which rights may only be waived by the extraordinary general meeting (by a two-thirds majority vote) of our shareholders or on an individual basis by each shareholder;
- our board of directors has the right to appoint directors to fill a vacancy created by the resignation or death of a director, subject to the approval by the shareholders of such appointment at the next shareholders' meeting, which prevents shareholders from having the sole right to fill vacancies on our board of directors;
- our board of directors can only be convened by its chairman or our managing director, if any, or, when no board meeting has been held for more than two consecutive months, by directors representing at least one-third of the total number of directors;
- our board of directors meetings can only be regularly held if at least half of the directors attend either physically or by way of videoconference or teleconference enabling the directors' identification and ensuring their effective participation in the board of directors' decisions;
- our shares take the form of bearer securities or registered securities, if applicable legislation so permits, according to the shareholder's choice. Issued shares are registered in individual accounts opened by us or any authorized intermediary (depending on the form of such shares), in the name of each shareholder and kept according to the terms and conditions laid down by the legal and regulatory provisions;
- under French law, a non-French resident as well as any French entity controlled by non-French residents may have to file a declaration for statistical purposes with the Bank of France (*Banque de France*) following the date of certain foreign investments in us. Additional, certain investments in a French company relating to certain strategic industries by individuals or entities not residents in a member State of the European Union are subject to the prior authorization of the French Ministry of Economy; see the section of this Annual Report titled "Ownership of Shares and ADSs by Non-French Persons";
- approval of at least a majority of the votes held by shareholders present, represented by a proxy, or voting by mail at the relevant ordinary shareholders' general meeting is required to remove directors with or without cause;
- advance notice is required for nominations to the board of directors or for proposing matters to be acted upon at a shareholders' meeting, except that a vote to remove and replace a director can be proposed at any shareholders' meeting without notice;
- in the event where certain ownership thresholds would be crossed, a number of disclosures should be made by the relevant shareholder in addition to other certain obligations; see the section of this Annual Report titled "Declaration of Crossing of Ownership Thresholds";
- transfers of shares shall comply with applicable insider trading rules; and
- pursuant to French law, the sections of the By-laws relating to the number of directors and election and removal of a director from office may only be modified by a resolution adopted by a two-thirds majority vote of our shareholders present, represented by a proxy or voting by mail at the meeting.

Holders of our ADSs do not directly hold our ordinary shares.

As an ADS holder, you are not treated as one of our shareholders and you do not have ordinary shareholder rights. French law governs shareholder rights. The depositary, Citibank, N.A., is the holder of the ordinary shares underlying your ADSs. As a holder of ADSs, you have ADS holder rights. The deposit agreement among us, the depositary and you, as an ADS holder, and all other persons directly and indirectly holding ADSs, sets out ADS holder rights, as well as the rights and obligations of the depositary.

Holders of our ADSs may not be able to exercise their right to vote the ordinary shares underlying such ADSs.

Holders of ADSs may exercise voting rights with respect to the ordinary shares represented by the ADSs only in accordance with the provisions of the deposit agreement and not as a direct shareholder. The deposit agreement provides that, upon receipt of notice of any meeting of holders of our ordinary shares, the depositary will fix a record date for the determination of ADS holders who shall be entitled to give instructions for the exercise of voting rights. Upon timely receipt of notice from us, if we so request, the depositary shall distribute to the holders as of the record date (1) the notice of the meeting or solicitation of consent or proxy sent by us and (2) a statement as to the manner in which instructions may be given by the holders.

Holders of ADSs may instruct the depositary of the ADSs to vote the ordinary shares underlying such ADSs. Otherwise, holders of our ADSs will not be able to exercise their right to vote, unless they withdraw the ordinary shares underlying such ADSs. However, holders of our ADSs may not know about the meeting far enough in advance to withdraw those ordinary shares. If we ask for instructions, the depositary, upon timely notice from us, will notify holders of our ADSs of the upcoming vote and arrange to deliver our voting materials to such holders. We cannot guarantee that holders of our ADSs will receive the voting materials in time to ensure that they can instruct the depositary to vote such ordinary shares or to withdraw such ordinary shares so as to vote them directly. If the depositary does not receive timely voting instructions from holders of our ADSs, it may give a proxy to a person designated by us to vote the ordinary shares underlying such ADSs in accordance with the recommendation of our board of directors. In addition, the depositary and its agents are not responsible for failing to carry out voting instructions or for the manner of carrying out voting instructions. This means that holders of our ADSs may not be able to exercise their right to vote, and there may be nothing such holders can do if the ordinary shares underlying such ADSs are not voted as requested.

The right of holders of our ADSs to participate in any future preferential subscription rights or to elect to receive dividends in shares may be limited, which may cause dilution to holders of ADSs.

According to French law, if we issue additional shares or securities for cash giving right, immediately or in the future, to new shares, current shareholders will have preferential subscription rights for these securities proportionally to their shareholding in our company unless they waive those rights at an extraordinary meeting of our shareholders (by a two-thirds majority vote) or individually by each shareholder. However, our ADS holders in the United States will not be entitled to exercise or sell such rights unless we register the rights and the securities to which the rights relate under the Securities Act or an exemption from the registration requirements is available. In addition, the deposit agreement for our ADSs provides that the depositary will not make rights available to holders of our ADSs unless the distribution to ADS holders of both the rights and any related securities are either registered under the Securities Act or exempted from registration under the Securities Act. Further, if we offer holders of our ordinary shares the option to receive dividends in either cash or shares, under the deposit agreement the depositary may require satisfactory assurances from us that extending the offer to holders of ADSs does not require registration of any securities under the Securities Act before making the option available to holders of ADSs. We are under no obligation to file a registration statement with respect to any such rights or securities or to endeavor to cause such a registration statement to be declared effective. Moreover, we may not be able to establish an exemption from registration under the Securities Act. Accordingly, ADS holders may be unable to participate in our rights offerings or to elect to receive dividends in shares and may experience dilution in their holdings. In addition, if the depositary is unable to sell rights that are not exercised or not distributed or if the sale is not lawful or reasonably practicable, it will allow the rights to lapse, in which case holders of our ADSs will receive no value for these rights.

Holders of our ADSs may be subject to limitations on the transfer of such ADSs and the withdrawal of the underlying ordinary shares.

ADSs, which may be evidenced by American Depositary Receipts, or ADRs, are transferable on the books of the depositary. However, the depositary may close its books at any time or from time to time when it deems expedient in connection with the performance of its duties. The depositary may refuse to deliver, transfer or register transfers of ADSs generally when our books or the books of the depositary are closed, or at any time if we or the depositary think it is advisable to do so because of any requirement of law, government or governmental body, or under any provision of the deposit agreement, or for any other reason subject to an ADS holders' right to cancel such ADSs and withdraw the underlying ordinary shares. Temporary delays in the cancellation of such ADSs and withdrawal of the underlying ordinary shares may arise because the depositary has closed its transfer books or we have closed our transfer books, the transfer of ordinary shares is blocked to permit voting at a shareholders' meeting or we are paying a dividend on our ordinary shares. In addition, holders of our ADSs may not be able to cancel such

ADSs and withdraw the underlying ordinary shares when such holders owe money for fees, taxes and similar charges and when it is necessary to prohibit withdrawals in order to comply with any laws or governmental regulations that apply to ADSs or to the withdrawal of ordinary shares or other deposited securities.

As a foreign private issuer, we are exempt from a number of rules under the U.S. securities laws and are permitted to file less information with the SEC than a U.S. company. This may limit the information available to holders of ADSs.

We are a "foreign private issuer," as defined in the SEC's rules and regulations and, consequently, we are not subject to all of the disclosure requirements applicable to public companies organized within the United States. For example, we are exempt from certain rules under the Exchange Act that regulate disclosure obligations and procedural requirements related to the solicitation of proxies, consents or authorizations applicable to a security registered under the Exchange Act, including the U.S. proxy rules under Section 14 of the Exchange Act. In addition, our officers and directors are exempt from the reporting and "short-swing" profit recovery provisions of Section 16 of the Exchange Act and related rules with respect to their purchases and sales of our securities. Moreover, while we currently make annual and quarterly filings with the SEC, we are not required to file periodic reports and financial statements with the SEC as frequently or as promptly as U.S. domestic public companies and are not required to file quarterly reports on Form 10-Q or current reports on Form 8-K under the Exchange Act. Accordingly, there may be less publicly available information concerning our company than there would be if we were a U.S. domestic issuer.

As a foreign private issuer, we follow certain home country practices in relation to corporate governance matters that differ significantly from Nasdaq corporate governance standards. These practices may afford less protection to shareholders than they would enjoy if we complied fully with Nasdaq's corporate governance standards.

As a foreign private issuer listed on the Nasdaq Global Market, we are subject to corporate governance standards. However, Nasdaq's rules permit a foreign private issuer like us to follow the corporate governance practices of its home country. Certain corporate governance practices in France, which is our home country, may differ significantly from corporate governance standards of the Nasdaq. For example, neither the corporate laws of France nor our By-laws require a majority of our directors to be independent and our independent directors are not required to hold regularly scheduled meetings at which only independent directors are present. In addition, home country practice in France does not require us to maintain a nominating and corporate governance committee or to maintain a compensation committee composed entirely of independent directors. Currently, we follow home country practice in certain key respects. Therefore, our shareholders may be afforded less protection than they otherwise would have under corporate governance listing standards applicable to U.S. domestic issuers. A discussion of our corporate governance practices is set forth in the section titled "Management—Corporate Governance Practices."

We may lose our foreign private issuer status in the future, which could result in significant additional cost and expense.

While we currently qualify as a foreign private issuer, the determination of foreign private issuer status is made annually on the last business day of our most recently completed second fiscal quarter and, accordingly, the next determination will be made with respect to us on June 30, 2019.

In the future, we would lose our foreign private issuer status if we to fail to meet the requirements necessary to maintain our foreign private issuer status as of the relevant determination date. For example, if more than 50% of our securities are held by U.S. residents and more than 50% of our executive officers or members of our board of directors are residents or citizens of the United States, we could lose our foreign private issuer status.

The regulatory and compliance costs to us under U.S. securities laws as a U.S. domestic public company would be significantly more than costs we currently incur as a foreign private issuer. If we lost our foreign private issuer status, we would be required to file periodic reports on Form 10-Q and current reports on Form 8-K, to file periodic reports and registration statements on U.S. domestic issuer forms with the SEC, which are more detailed and extensive in certain respects than the forms available to a foreign private issuer. We would be required under current SEC rules to prepare our financial statements in accordance with U.S. GAAP, rather than IFRS, in U.S. dollars rather than euros. Such conversion of our financial statements to U.S. GAAP would involve significant time and cost. In addition, we would lose our ability to rely upon exemptions from certain corporate governance requirements of the Nasdaq that are available to foreign private issuers, such as the ones described above, and we would be required to modify certain of our policies to comply with corporate governance practices associated with U.S. domestic issuers. Moreover, we would lose our ability to rely upon exemptions from procedural requirements related to the solicitation of proxies.

It may be difficult to enforce civil liabilities against our company and directors and senior management and the experts named in this Annual Report.

Certain members of our board of directors and senior management and those of our subsidiaries, are non-residents of the United States, and all or a substantial portion of our assets and the assets of such persons are located outside the United States. As a result, it may not be possible to serve process on such persons or us in the United States or to enforce judgments obtained in U.S. courts against them or us based on civil liability provisions of the securities laws of the United States. Additionally, it may be difficult to assert U.S. securities law claims in actions originally instituted outside of the United States. Foreign courts may refuse to hear a U.S. securities law claim because foreign courts may not be the most appropriate forums in which to bring such a claim.

Even if a foreign court agrees to hear a claim, it may determine that the law of the jurisdiction in which the foreign court resides, and not U.S. law, is applicable to the claim. Further, if U.S. law is found to be applicable, the content of applicable U.S. law must be proved as a fact, which can be a time-consuming and costly process, and certain matters of procedure would still be governed by the law of the jurisdiction in which the foreign court resides. In particular, there is some doubt as to whether French courts would recognize and enforce certain civil liabilities under U.S. securities laws in original actions or judgments of U.S. courts based upon these civil liability provisions. In addition, awards of punitive damages in actions brought in the United States or elsewhere may be unenforceable in France. An award for monetary damages under the U.S. securities laws would be considered punitive if it does not seek to compensate the claimant for loss or damage suffered but is intended to punish the defendant. French law provides that a shareholder, or a group of shareholders, may initiate a legal action to seek indemnification from the directors of a corporation in the corporation's interest if it fails to bring such legal action itself. If so, any damages awarded by the court are paid to the corporation and any legal fees relating to such action are borne by the relevant shareholder or the group of shareholders.

The enforceability of any judgment in France will depend on the particular facts of the case as well as the laws and treaties in effect at the time. The United States and France do not currently have a treaty providing for recognition and enforcement of judgments (other than arbitration awards) in civil and commercial matters.

Provisions in our collaboration agreement with Servier may prevent or delay a change in control.

Our collaboration agreement with Servier provides that if any third party begins to control us, directly or indirectly, by any means, or in the event that we engage in a change of control transaction, including, but not limited to, the sale of all or substantially all of our assets or all or substantially all of our assets that are material to the performance of our obligations under the collaboration agreement, then Servier has the right to buy-out our interest in the pre-candidate products, product candidates, and products as described under the collaboration agreement. We refer to this right to acquire such interest as the buy-out. In the event we fail to agree with Servier on the amount of payment for our interest in the pre-candidate products, product candidates or products within twenty days following Servier's provision of a buy-out notice, then the buy-out payment would be determined by-third party valuators.

The buy-out may have the effect of delaying or preventing a change in control transaction involving us, or may reduce the number of companies interested in acquiring us. If Servier were to exercise the buy-out, it would gain exclusive development and marketing rights to the pre-candidate products, product candidates and products developed under the collaboration agreement. Were this to happen, our successor would not receive milestone payments or royalty payments on net sales of any of the products sold to Servier in connection with the buy-out. These provisions could have the effect of delaying or preventing a change in control transaction involving Cellectis, or could reduce the number of companies interested in acquiring us.

The rights of shareholders in companies subject to French corporate law differ in material respects from the rights of shareholders of corporations incorporated in the United States.

We are a French company with limited liability. Our corporate affairs are governed by our By-laws and by the laws governing companies incorporated in France. The rights of shareholders and the responsibilities of members of our board of directors are in many ways different from the rights and obligations of shareholders in companies governed by the laws of U.S. jurisdictions. For example, in the performance of its duties, our board of directors is required by French law to consider the interests of our company, its shareholders, its employees and other stakeholders, rather than solely our shareholders and/or creditors. It is possible that some of these parties will have interests that are different from, or in addition to, the interests of our shareholders. See the sections of this Annual Report titled "Memorandum and Articles of Association" and "Corporate Governance."

ITEM 4. INFORMATION ON THE COMPANY

A. History and Development of the Company

Our legal and commercial name is Cellectis S.A. We were incorporated as a *société anonyme*, or S.A., under the laws of the French Republic on January 4, 2000 for a period of 99 years. We are registered at the Paris Registre du Commerce et des Sociétés under the number 428 859 052. Our principal executive offices are located at 8, rue de la Croix Jarry, 75013 Paris, France, and our telephone number is +33 1 81 69 16 00. Our agent for service of process in the United States is Cellectis, Inc. located at 430 East 29th Street, New York, New York 10016. We also maintain a website at www.cellectis.com. The reference to our website is an inactive textual reference only and the information contained in, or that can be accessed through, our website is not a part of this Annual Report.

The acquisition of intangible assets, property, plant and equipment for the years ended December 31, 2016, 2017 and 2018 together amounted to $14.6 million, $2.6 million and $4.9 million, respectively. These expenditures primarily consisted of the acquisitions of industrial and laboratory equipment and fittings required to conduct our research programs, the improvements of Calyxt's and Cellectis' sites and the first investments to start the construction of our new manufacturing facilities in Paris and in the United States. We expect our capital expenditures to increase in absolute terms in the near term as we continue to advance our research and development programs and grow our operations. We anticipate our capital expenditure in 2019 to be financed from our cash and cash equivalents on hand. Primarily, these capital expenditures will be made both in France and in the United States, where our research and development facilities are currently located.

On January 21, 2015, we signed a lease for an administrative and research facility in New York, New York to enhance our presence in the United States. This facility, which includes large state-of-the-art research laboratories, opened on April 8, 2015, and essentially supports our innovation activities. In March 2016, we entered into a lease for a 26,928 square-foot space in Montvale, New Jersey, which we intend to discontinue before its scheduled expiration in September 2026.

In March 2016, Calyxt acquired 10-acres in 2 parcels in Roseville, Minnesota, and a headhouse and a greenhouse were built and they have been in operations since September 2016. In the third quarter of 2017, Calyxt entered into a sale and lease-back agreement related to these land and buildings. See Item 4D for further information.

In March 2019, we entered into a lease agreement for a 82,000 square foot commercial-scale manufacturing facility, called the IMPACT site, which stands for "Innovative Manufacturing Plant for Allogeneic Cellular Therapies". The IMPACT facility is located in Raleigh, North Carolina. The new manufacturing facility is being designed to provide GMP manufacturing for clinical supply and commercial product upon potential regulatory approval. The facility is planned to be operational by 2021.

For information on the SEC's website and our website, please refer to "Item 10.H. *Documents on Display*".

B. Business Overview

We are a clinical stage biotechnological company, employing our core proprietary technologies to develop best-in-class products in the field of immuno-oncology. Our product candidates, based on gene-edited T-cells that express chimeric antigen receptors, or CARs, seek to harness the power of the immune system to target and eradicate cancer cells. We believe that CAR-based immunotherapy is one of the most promising areas of cancer research, representing a new paradigm for cancer treatment. We are designing next-generation immunotherapies that are based on gene-edited CAR T-cells. Our gene-editing technologies allow us to create allogeneic CAR T-cells, meaning they are derived from healthy donors rather than the patients themselves. We believe that the production of allogeneic CAR T-cells will allow us to develop cost-effective, off-the-shelf products that are capable of being cryopreserved, stored and distributed worldwide. Our gene-editing expertise also enables us to develop product candidates that feature additional safety and efficacy attributes, including control properties designed to prevent them from attacking healthy tissues, to enable them to tolerate standard oncology treatments, and to equip them to resist mechanisms that inhibit immune-system activity. In addition to our focus on immuno-oncology, we are exploring the use of our gene-editing technologies in other therapeutic applications, as well as to develop healthier food products for a growing population.

Cancer is the second-leading cause of death in the United States and accounts for approximately one in four deaths. Immuno-oncology seeks to harness the power of the body's immune system to target and kill cancer. A key to this effort is a type of white blood cell known as the T-cell, which plays an important role in identifying and killing cancer cells. Unfortunately, cancer cells often develop mechanisms to evade the immune system. CARs, which are engineered receptors that can be expressed on the surface of T-cells, provide the T-cells with a specific targeting mechanism, thereby enhancing its ability to seek, identify, interact with and destroy tumor cells bearing a selected antigen. Research and development of CAR T-cell immunotherapies currently focuses on two approaches: autologous and allogeneic therapies. Autologous CAR T-cell immunotherapies modify a patient's own T-cells to target specific antigens that are located on cancer cells. This type of therapy requires an individualized immunotherapy product for each patient and is currently being tested in clinical trials by several academic institutions, as well as biotechnology and pharmaceutical companies. In contrast, an allogeneic CAR T-cell immunotherapy is an approach by which a cancer patient is infused with a mass-produced, off-the-shelf immunotherapy product derived from a healthy T-cell donor. Our initial focus is on developing allogeneic treatments, and we believe that we are the leading company pursuing this approach.

Limitations of Current Autologous Treatments and Key Benefits of our UCART approach

Many of the CAR T-cell immunotherapy treatments currently under development are created through an autologous approach in which the patient's own T-cells are engineered to fight cancer cells. Part of our scientific basis for pursuing allogeneic approaches rests in the recognized limitations of autologous approaches, including:

- Autologous treatments must be specifically manufactured for each patient and the resulting engineered cells may have different properties due to significant patient-to-patient variability in the quality of the T-cell;
- Autologous treatments can bear high costs due to the necessity of producing a bespoke treatment for each patient and the effort consumed in modifying and growing each patient's T-cells (by way of example in the United States, the list price of Kymriah® for pediatric use is $475,000, and the list price of Yescarta® and Kymriah® for adult use is $373,000); and

- At this time, autologous treatments cannot be mass produced, may involve significant delay in production time if the number of patients exceeds the number of productions that can be made in parallel, and require patients be treated at select advanced facilities.

Although some autologous approaches to CAR T-cell have recently demonstrated encouraging clinical data, we believe our CAR-T approach and manufacturing process has the potential to provide the following benefits:

- *Market access*. Enable products to be shipped globally, thereby reducing deployment obstacles and providing accessibility to a broad patient population;
- *Cost-effectiveness and Scalable Manufacturing*. Streamlined manufacturing process has the potential to reduce costs, with approximatively hundreds of doses per batch;
- *Novel Features*. Develop products with specific safety and control properties, through a CAR linked to a suicide switch;
- *Engraftment.* Avoid graft-versus-host disease (GvHD) through the inactivation of the T-cell receptor (TCR).
- *Persistence*. Manage rejection and persistence of the UCART product candidate, through notably the option to inactivate CD52 and beta2-microglobulin (ß2M) genes respectively;

A key enabler of the allogeneic approach is our gene editing technology, relying on a particular class of proteins derived from transcription activator-like effectors fused to the nuclease domain of a type II restriction endonuclease (TALEN). Gene editing is a type of genetic engineering in which DNA is inserted, deleted, repaired or replaced from a precise location in the genome. The most fundamental challenge of gene editing is the need to specifically and efficiently target a precise DNA sequence within a gene. Our proprietary nuclease-based gene-editing technologies, combined with almost 20 years of genome engineering experience, allow us to edit any gene with highly precise insertion, deletion, repair and replacement of DNA sequences. Our nucleases, including TALEN, act like DNA scissors to edit genes at precise target sites and allow us to design allogeneic CAR T-cells. Our patented PulseAgile electroporation technology allows us to efficiently deliver our clinical grade nucleases into human cells while preserving cell viability, making it particularly well-suited for a large-scale manufacturing process. We believe these technologies will enable our clinical-grade drug therapeutic products to be manufactured, cryopreserved, stored, distributed broadly and infused into patients in an off-the-shelf approach.

Our candidate products

We are developing product candidates internally and through strategic alliances with Allogene Therapeutics, Inc. ("Allogene") and Les Laboratoires Servier ("Servier"). We believe that our alliances with Allogene and Servier have validated our technology platform, our strong expertise in the allogeneic CAR T-cells field and the strength of our intellectual property portfolio. Our strategic alliances include potential milestone payments to us of up to $3.9 billion and royalties on future sales.

Under the Allogene License Agreement (see below), Allogene has exclusive rights to pursue development and commercialization of products for a total of fifteen targets of their choice, which have been selected, including BCMA (ALLO-715), FLT3 (ALLO-819), CD70, and DLL3.

In 2016, Servier commenced two Phase I clinical studies for UCART19, one in adult Acute Lymphoblastic Leukemia (ALL), the CALM study, and one in pediatric ALL, the PALL study. The CALM study is commenced in the United Kingdom, the United States, and France, and the PALL study is commenced in the United Kingdom, Belgium and France. We refer in this Annual Report to the CALM and the PALL studies, collectively, as the UCART19 Clinical Studies. In November 2015, when we exclusively licensed the rights to UCART19 to Servier, Servier also announced that it had granted Pfizer (subsequently transferred to Allogene) the exclusive rights for the development and the commercialization of UCART19 in the United States. Consequently, Servier's CALM study in the United States is conducted in collaboration with Allogene. In December 2018, Servier presented pooled intermediate results from the UCART19 Clinical Studies during the American Society for Hematology (ASH) annual conference. After UCART19 infusion, 82% (14/17) of patients who received a lymphodepletion regimen (consisting of fludarabine, cyclophosphamide and alemtuzumab, an anti-CD52 monoclonal antibody) achieved a complete remission, or "CR", or complete remission with incomplete blood cell recovery (or "Cri") by day 28 or day 42 after infusion. Within responder patients, 71% (10/14) of them were 'minimum residual disease' (MRD) negative (MRD- stands for less than 1 leukemic cell among 10E4 normal cells) assessed by flow or qPCR. When considering all treated patients, 67% (14/21) of them did achieve CR/CRi. Regarding safety considerations, there was no serious adverse events (grade □3) for graft versus host disease (GvHD) and neurological events. Grade 3-4 toxicities did only regard events of cytokine release syndrome (14%, 3/21), prolonged cytopenia (29%, 6/21) and viral infections (24%, 5/21). In January 2019, Allogene announced, in collaboration with Servier, that the Food and Drug Administration (FDA) approved the Investigational New Drug (IND) for Phase 1 clinical study for ALLO-501, corresponding to UCART19 which we exclusively licensed to Servier and which was sublicensed to Allogene by Servier in US, in relapsed/refractory Non-Hodgkin Lymphoma (NHL, the "ALPHA Study").

With respect to UCART123, we obtained the unanimous approval of the National Institute of Health's Recombinant DNA Advisory Committee (RAC) on December 14, 2016 to start two proposed studies in the United States. In December 2016, we submitted an IND application for UCART123 with respect to two proposed Phase I studies to be conducted, one in Acute Myeloid Leukemia (AML) and one in Blastic Plasmacytoid Dendritic Cell Neoplasm (BPDCN). In February 2017, the FDA approved the IND and the first patients were enrolled during 2017. Due to a death in the BPDCN study, the FDA placed a clinical hold on both trials in September 2017 which was lifted by the FDA in November 2017, based on revised protocols. The Phase I clinical study in AML is performed by Weill Cornell and MD Anderson Cancer Center, and the Phase I clinical study in BPDCN is performed by MD Anderson Cancer Center. We refer in this Annual Report to the AML and the BPDCN studies, collectively, as the UCART123 Clinical Studies.

With respect to UCART22, in April 2018, we submitted an IND application with respect to a proposed Phase I study to be conducted in ALL. In May 2018, the FDA approved the IND, and we expect to enroll the first patient in this study in 2019. We refer in this Annual Report to this study as the UCART22 Clinical Study.

With respect to UCARTCS1, on December 28, 2018, we submitted an IND application with respect to a proposed Phase I study to be conducted in Multiple Myeloma (MM). On January 25, 2019, the FDA approved the IND, and the trial is expected to start in 2019. We refer in this Annual Report to this study as the UCARTCS1 Clinical Study.

Additionally, we are pursuing proprietary pre-clinical programs (for other UCART product candidates, including in solid tumors). Our objective is to file, directly or indirectly, one IND application (or foreign equivalent) per year from our maturing product candidate portfolio.

Until July 2017, we fully owned Calyxt, Inc. Calyxt is focused on using TALEN gene editing technology to provide healthier food ingredients to consumers. As of December 31, 2018, Cellectis owns approximately 69.5% of Calyxt's common stock. In connection with Calyxt's initial public offering, we and Calyxt entered into certain agreements that related to our relationship with Calyxt prior to the IPO or that provide a framework for our ongoing relationship with Calyxt.

Our Strategy

Our strategy is to leverage the transformative potential of our unique gene-editing technologies and expertise through our cell therapy platform.

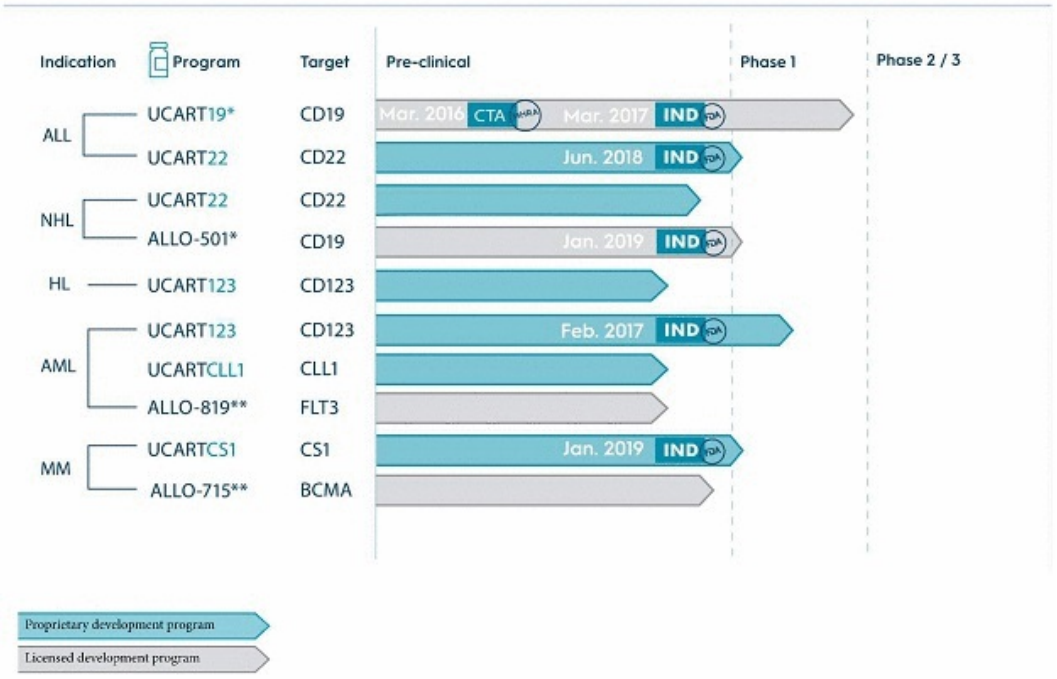
The key elements of our strategy are to:

- **Advance our self-owned allogeneic UCART portfolio** of product candidates up to the Biologics License Application (BLA) and commercialize them;
- **Build a self-owned manufacturing capacity** to produce commercial-grade UCART products for clinical use, as well as nucleic acids and vectors as starting material of the UCART product candidates;
- **Structure a commercial launch plan** for our wholly-owned product candidates;
- Prepare our next innovative project through **an hematopoietic stem cells (HSC) platform**;
- **Utilize our gene-editing platform to develop and commercialize plant products, through our 69.5% (as of December 31, 2018) ownership in Calyxt, for the multibillion dollar agricultural-biotechnology market**. Calyxt is applying our gene-editing technologies to create healthy food ingredients. By selecting and inactivating target genes in selected crops, we believe Calyxt can produce unique variants with consumer benefits. Calyxt is developing a pipeline of traits for soybeans, wheat, and alfalfa, and intends to conduct further development programs to build upon this current pipeline.

UCART Pipeline

We are developing a series of product candidates for advanced hematologic cancers. Our lead immuno-oncology product candidates, which we refer to as Universal CAR T-cells (UCARTs), are allogeneic CAR T-cells engineered to be used as an "off-the-shelf" treatment for any patient with a particular cancer type. Each UCART product candidate is designed to target a selected antigen expressed on tumor cells and bears specific engineered attributes, such as inhibition of alloreactivity and compatibility with specific medical regimens that cancer patients may undergo. UCART is the first therapeutic product line that we are developing with our gene-editing platform to address unmet medical needs in oncology. We are focusing our initial internal pipeline in the hematologic cancer space, targeting diseases with high unmet needs such as ALL, AML, NHL, MM and other types of cancers.

In December 2016, we filed an IND for our lead product candidate, UCART123 in AML and in BPDCN, and in February 2017, we received FDA approval to initiate UCART123 clinical studies. With respect to UCART22, in April 2018, we submitted an IND application with respect to a proposed Phase I study to be conducted in ALL, and in May 2018, the FDA approved the IND. Although we have not yet commenced the UCART22 clinical study, the trial is expected to start in 2019. On December 28, 2018, we submitted an IND application with respect to a proposed Phase I study to be conducted for UCARTCS1 in MM. On January 25, 2019, the FDA approved the IND, and the trial is expected to start in 2019. All of our other product candidates are currently in the pre-clinical phase, and the following chart highlights our key product candidates:



* under Servier License Agreement
** under Allogene License Agreement

Targeted Indications

Acute Lymphoblastic Leukemia (ALL)

ALL is a heterogeneous hematologic disease characterized by the proliferation of immature lymphoid cells in the bone marrow, peripheral blood, and other organs. The proliferation and accumulation of blast cells in the marrow results in suppression of hematopoiesis and, thereafter, anemia, thrombocytopenia, and neutropenia. Extramedullary accumulations of lymphoblasts may occur in various sites, especially the meninges, gonads, thymus, liver, spleen, or lymph nodes. Data from the Surveillance, Epidemiology, and End Results (SEER) database have shown an age-adjusted incidence rate of ALL in the United States of 1.7 per 100000 individuals per year, with approximately 5960 new cases and 1,470 deaths estimated in 2018. The median age at diagnosis for ALL is 15 years with 55.4% of patients diagnosed at younger than 20 years of age. In contrast, 28% of cases are diagnosed at 45 years or older and only 12.3% of patients are diagnosed at 65 years or older. ALL represents 75% to 80% of acute leukemia among children, making it the most common form of childhood leukemia; by contrast, ALL represents approximately 20% of all leukemia among adults. The cure rates and survival outcomes for patients with ALL have improved dramatically over the past several decades, primarily among children. Improvements are largely owed to advances in the understanding of the molecular genetics and pathogenesis of the disease, the incorporation of risk-adapted therapy, and the advent of new targeted agents. Despite great progress in the development of curative therapies, ALL remains a leading cause of pediatric cancer-related mortality for patients presenting with a relapsed or refractory disease. New therapies are needed to overcome chemotherapy resistance and reduce non-specific treatment associated side effects.

Acute Myeloid Leukemia (AML)

AML is a form of cancer that is characterized by infiltration of the bone marrow, blood, and other tissues by proliferative, clonal, abnormally and/or poorly differentiated cells of the hematopoietic system called blast cells. These cells interfere with normal

hematopoiesis, thus contributing to the bone marrow failure which is the most common underlying cause of death. AML is the most common type of acute leukemia in adults with an age-adjusted incidence rate in the United States of 4.3 per 100000 individuals per year, with approximately 19,520 new cases and 10,670 deaths estimated in 2018. Although it can occur in children and adults, AML is primarily a disease of the elderly. The median age at onset is 68 years and only 16.2% of patients are younger than 45 years of age at diagnosis. While complete response rates can be as high as 80% in patients undergoing initial induction cytotoxic chemotherapy, the majority of AML patients will ultimately be diagnosed with relapsed or refractory disease with a poor prognosis. The outcome in older patients who are unable to receive intensive chemotherapy without unacceptable side effects remains dismal, with a median survival of only 5 to 10 months. CD123 is highly expressed on AML leukemic stem cells and blast cells, as well as in other hematologic malignancies, and constitutes an attractive target for AML.

Multiple Myeloma (MM)

MM is a clonal plasma cell malignant neoplasm that is characterized by the proliferation of a single clone of plasma cells producing a monoclonal immunoglobulin. This clone of plasma cells proliferates in the bone marrow and often results in extensive skeletal destruction with osteolytic lesions, osteopenia, and/or pathologic fractures. Additional disease-related complications include hypercalcemia, renal insufficiency, anemia, and infections. MM accounts for approximately 10% of hematologic malignant disorders. The annual incidence, age-adjusted to the US population, is 6.7 per 100000, resulting in over 30770 new patients in the United States in 2018. The median age at onset is 69 years, and only 3.3% of patients are younger than 45 years of age at diagnosis. Several drugs have been approved over the last few years for the treatment of MM, substantially expanding the number of treatment regimens available for patients in all stages of the disease. In the last decade, survival of MM patients has markedly improved with a median survival of approximately 7 to 10 years but with major variation depending on host factors, stage of the disease, cytogenetic abnormalities, and response to therapy. However, despite this progress, patients with disease refractory to both immunomodulatory drugs (IMiDs) and proteasome inhibitors have a median overall survival (OS) of only 9 to 13 months.

Non-Hodgkin Lymphoma (NHL)

NHL is a heterogeneous disease resulting from the malignant transformation of lymphocytes with distinctive morphologic, immunophenotypic, genetic, and clinical features. NHL is more common than the other general type of lymphoma, Hodgkin lymphoma (HL). The past several decades have seen a steady increase in incidence rates of NHL, with overall rates in the United States nearly doubling over the period 1975 to 2008. In 2018, there were 74680 estimated new cases with 19910 estimated deaths. In 2015, there were an estimated 686042 people living with NHL in the United States. Many different subtypes of non-Hodgkin's lymphoma exist. The most common NHL subtypes include diffuse large B-cell lymphoma (DLBCL) and follicular lymphoma (FL).

Blastic Plasmacytoid Dendritic Cell Neoplasm (BPDCN)

BPDCN is a rare and aggressive hematological neoplasm classified among AML in the 2008 World Health Organization (WHO) classification of hematologic malignancies, and reclassified under myeloid neoplasms, acute leukemia in the 2016 WHO classification. BPDCN is a rare myeloid disease characterized by the clonal proliferation of precursors of plasmacytoid dendritic cells. There are no formal studies on the incidence of BPDCN in the general population. The few available data reported indicate that its overall incidence is extremely low, accounting for 0.44% of all hematologic malignancies and 0.7% of cutaneous lymphomas. Moreover, the leukemic form of disease is a rare phenomenon, representing fewer than 1% of cases of acute leukemia. The disease may occur at any age, but most patients are elderly men who present with skin lesions and/or involved lymph nodes, spleen, and bone marrow. Given its rarity and only recent recognition as a distinct clinico-pathological entity, no standardized therapeutic approach has been established for BPDCN and the optimal therapy remains to be defined. Although transient responses are seen to combination chemotherapy regimens used to treat acute leukemia or lymphoma, most patients relapse with drug-resistant disease with a median OS rate of 9 to 13 months, irrespective of the initial presentation of the disease.

UCART19 for ALL

UCART19 is an allogeneic, off-the-shelf product candidate designed to exhibit high efficacy in fighting hematological malignancies bearing the B-lymphocyte antigen CD19. In November 2015, Servier acquired the exclusive rights to UCART19 from Cellectis. Servier and Allogene collaborate on a joint clinical development program for UCART19, and Allogene has the exclusive rights from Servier to develop and commercialize UCART19 in the United States.

Product Features

UCART19 is an allogeneic T-cell product intended for the treatment of CD19-expressing hematologic malignancies such as ALL.

UCART19 is designed to become active, proliferate, secrete cytokines and kill CD19-bearing B-cell malignancies upon contact with such cells, following administration to patients. Activation of UCART19 is driven by contact between its anti-CD19 CAR and the CD19 protein on the surface of tumor cells.

UCART19 cells bear a CAR targeting the CD19 antigen that drives their capacity to kill CD19-bearing cells. Moreover, as all UCART product candidates, UCART19 lacks the TCR responsible for recognition of non-self antigens by the T-cells, which allows use of healthy donor T-cells to produce UCART19, with reduced potential for GvHD. In addition, some UCART19 cells lack CD52, a protein expressed on the cell surface that makes T-cells sensitive to alemtuzumab. This feature permits the use of UCART19 in patients recently treated or being treated with the immunosuppressing/lymphodepleting agent alemtuzumab.

UCART19 activation could potentially lead to eradication of CD19-expressing cancer cells through T-cell mediated killing of such cancer cells and potentially pro-inflammatory immune system production as well as CAR T-cell amplification.

Clinical Findings

In December 2018, Servier presented pooled intermediate results from the UCART19 Clinical Studies during the ASH annual conference. After UCART19 infusion, 82% (14/17) of patients who received a lymphodepletion regimen (consisting of fludarabine, cyclophosphamide and alemtuzumab, an anti-CD52 monoclonal antibody) achieved a complete remission (CR) or complete remission with incomplete blood cell recovery (CRi) by day 28 or day 42. Within responder patients, 71% (10/14) of them were 'minimum residual disease' (MRD) negative (MRD- stands for less than 1 leukemic cell among 10E4 normal cells) assessed by flow or qPCR. When considering all treated patients (lymphodepleted or not), 67% (14/21) of them did achieve CR/CRi. Regarding safety considerations, there was no serious adverse events (grade □3) for graft versus host disease (GvHD) and neurological events. Grade 3-4 toxicities did only regard events of cytokine release syndrome (14%, 3/21), prolonged cytopenia (29%, 6/21) and viral infections (24%, 5/21). We are encouraged by these promising preliminary results reported for the UCART19 Clinical Studies.

Development Status

In 2016, Servier commenced the UCART19 Clinical Studies—a Phase I clinical study in pediatric ALL, the PALL study, and a Phase I clinical study in adult patients with ALL, the CALM study, each of which was approved by the MHRA.

The PALL Study is commenced in the United Kingdom at UCL Great Ormond Hospital (London), in Belgium at Het Kinderziekenhuis Prinses Elisabeth (Gent), in France at Hôpital Robert-Debré (Paris) and in United States at the Children's Hospital of Philadelphia (Pennsylvania).

The CALM Study is commenced in the United Kingdom at King's College Hospital NHS Foundation Trust (London), in United States at the Hospital of the University of Pennsylvania (Philadelphia, Pennsylvania), at University of Texas MD Anderson Cancer Center (Houston, Texas) and at the Massachusetts General Hospital (Boston, Massachusetts), in France at Hôpital Saint-Antoine (Paris) and Hopital Saint-Louis.

UCART19, or ALLO-501, for NHL

ALLO-501 (or UCART19 corresponding to the product candidate which we exclusively licensed to Servier and which was sublicensed to Allogene by Servier in the United States) is an allogeneic engineered T-cell product intended for the treatment of CD19-expressing hematologic malignancies. ALLO-501 is a product candidate under the license agreement between Servier and Cellectis.

Development Status

On January 28, 2019, Allogene announced, in collaboration with Servier, that the FDA approved the IND for Phase 1 clinical study for ALLO-501 in relapsed/refractory NHL (the "ALPHA Study").

UCART123 for AML and BPDCN

UCART123 is an allogeneic engineered T-cell product designed for the treatment of hematologic malignancies expressing the alpha chain of the interleukin-3 receptor (IL3RA), or CD123, and is currently being developed for the treatment of AML and BPDCN.

Product Features

UCART123 is an allogeneic T-cell product candidate intended for the treatment of CD123-expressing hematologic malignancies.

UCART123 is designed to become active, proliferate, secrete cytokines and kill CD123 expressing cells. UCART123 bears a CAR targeting the CD123 antigen, providing specificity for CD123 expressing cells. In addition, as with all UCART products, UCART123 lacks the TCR and is intended to be used in an allogeneic context. UCART123 activity could potentially lead to eradication of CD123-expressing cancer cells through T-cell mediated killing, pro-inflammatory cytokine production as well as CAR T-cell amplification. New versions of UCART123 produced during the fourth quarter of 2018 have, in addition of the suppression of the TCR∝ gene, the suppression of the CD52 gene in order to eventually induce resistance to alemtuzumab preconditioning. This product might get into the clinic during the year 2019.

Pre-clinical Findings

UCART123 has been evaluated both *in vitro* and in animal studies, with promising results.

In vitro studies demonstrated efficient killing of human CD123-bearing cell lines by UCART123. In addition, UCART123 has also demonstrated efficient killing of human CD123-expressing cells derived from AML and BPDCN patients. Animal studies were conducted in mice injected both with UCART123 and human CD123-bearing tumor cells, and have shown anti-tumor activity in an immunodeficient mouse model. In addition, in another animal model, limited toxicity against normal, healthy cells, has been observed.

UCART123 was also tested for its potential to induce GvHD. Mice receiving unmodified T-cells from a human donor showed GvHD, while mice receiving the UCART123 cells that lack the TCR showed no sign of GvHD. Pre-clinical and translational activities on UCART123 in AML and BPDCN were performed in collaboration with Weill Cornell and MD Anderson Cancer Center, respectively.

Development Status

On December 14, 2016, Cellectis received unanimous approval from the RAC for two proposed Phase I protocols for UCART123. In February 2017, the FDA granted Cellectis an IND approval to conduct a Phase I clinical study with UCART123 in AML and BPDCN. The initial patients were enrolled during 2017, at Weill Cornell Medical College for AML and at MD Anderson Cancer Center for BPDCN. Due to a death in the BPDCN study, both trials were put on hold in September 2017 but then cleared to resume by the FDA, in November 2017, based on revised protocols.

On September 14, 2018, Cellectis received approval from the MHRA in the United Kingdom for a proposed Phase I protocol for UCART123 in first-line adverse genetic risk AML.

UCART22 for ALL

UCART22 is an allogeneic engineered T-cell product candidate designed for the treatment of ALL.

Product Features

UCART22 is an allogeneic engineered T-cell product candidate intended for the treatment of CD22-expressing hematologic malignancies. UCART22 is designed to become active, proliferate, secrete cytokines and kill CD22 expressing cells (i.e. either CD22 positive tumor cells or non-malignant CD22-positive B lineage cells). UCART22 bears a CAR targeting the CD22 antigen, providing specificity for CD22 expressing cells. As with all UCART products, UCART22 lacks the TCR and is intended to be used in an allogeneic context. In addition, some UCART22 cells lack CD52, a protein expressed on the cell surface that makes T-cells sensitive to alemtuzumab, a drug often used to treat CLL patients. This feature should allow for improved engraftment of the cells in conjunction with a potential alemtuzumab treatment.

UCART22 activity could potentially lead to eradication of CD22-expressing cancer cells through T-cell mediated killing, pro-inflammatory cytokine production as well as CAR T-cell amplification.

Pre-clinical findings

UCART22 has been evaluated both *in vitro* and in animal studies, with promising results.

In vitro studies demonstrated efficient killing of human CD22-bearing cell lines by UCART22. In addition, UCART22 has also demonstrated efficient killing of human CD22-expressing cells derived from ALL patients. Animal studies were conducted in mice injected both with UCART22 and human CD22-bearing tumor cells, and have shown anti-tumor activity in an immunodeficient mouse model. Further *in vitro* and *in vivo* studies are ongoing to further investigate the safety and the activity of UCART22.

Pre-clinical and translational activities on UCART22 in ALL are performed in collaboration with MD Anderson Cancer Center.

Development Status

In April 2018, we filed an IND and in May 2018, the FDA granted Cellectis an IND approval to conduct a Phase I clinical study with UCART22 in ALL. Manufacturing of clinical-grade UCART22 at large scale in accordance with GMP is still ongoing and should be completed in 2019.

UCARTCS1 for MM

UCARTCS1 is an allogeneic engineered T-cell product candidate designed for the treatment of CS1-expressing hematologic malignancies which is being developed in MM.

Product Features

UCARTCS1 is an allogeneic T-cell drug candidate intended for the treatment of CS1 (also known as SLAMF7)-expressing hematologic malignancies, in particular MM. UCARTCS1 is designed to become active, proliferate, secrete cytokines and kill CS1 expressing cells. As CS1 is strongly expressed on the cell surface of CD8 T-cells but also mildly expressed on CD4 cells, B cells, NK cells and macrophages, CS1 will be inactivated in UCART cells prior to transduction with a viral vector encoding an anti-CS1 CAR. The inactivation of the CS1 gene may improve the production and activity of UCARTCS1 by preserving the balance between CD8 and CD4 T-cell population. In addition, as with all UCART products, UCARTCS1 lacks the TCR and is intended to be used in an allogeneic context. We believe that UCARTCS1 might have a potential lymphodepleting activity by attacking the immune cells of the patient expressing CS1.

As compared to other targets frequently addressed by CAR-T candidates in MM, such as BCMA, CS1 expression has been observed to be higher and more uniform. In certain mouse models, CS1 CAR-T therapy is showing deeper response than what is seen with BCMA CAR-T therapy.

Pre-clinical Findings

In vitro studies demonstrated efficient killing of human CS1-bearing cell lines by UCARTCS1. In addition, UCARTCS1 has also demonstrated efficient killing of human CS1-expressing cells derived from MM patients. Furthermore, while non-gene-edited T-cells expressing an anti-CS1 CAR display limited cytolytic activity *in vitro* against MM cell lines and result in a progressive loss of CD8 T-cells, CS1-gene-edited CAR cells (UCARTCS1) display significantly increased cytotoxic activity, with the percentage of CD8 T-cells remaining unaffected. Experiments in an orthotopic MM mouse model showed that UCARTCS1 was able to mediate an *in vivo* anti-tumoral activity. Further *in vitro* and *in vivo* studies are ongoing to further investigate the safety and the activity of UCARTCS1.

Pre-clinical and translational activities for UCARTCS1 in MM are performed in collaboration with the MD Anderson Cancer Center.

Development Status

During the second half of 2018, a first set of batches of the manufacturing campaign of UCARTCS1 have been manufactured at CELLforCURE, our third-party manufacturing contractor.

On December 28, 2018, Cellectis filed an IND, which was approved by the FDA on January 25, 2019 by the FDA, in order to conduct a Phase I clinical study with UCARTCS1 in MM.

UCARTCLL1 for AML

UCARTCLL1 is an allogeneic engineered T-cell product candidate designed for the treatment of AML.

Product Features

UCARTCLL1 is an allogeneic T-cell drug candidate intended for the treatment of CLL1 (also known as CLEC12A)-expressing hematologic malignancies, in particular AML. UCARTCLL1 is designed to become active, proliferate, secrete cytokines and kill CLL1 expressing cells. In addition, as with all UCART products, UCARTCLL1 lacks the TCR and is intended to be used in an allogeneic context. In our UCARTCLL1 product, the ß2-microglobulin (ß2M) gene will also be inactivated, which is expected to result in better CAR-T persistence (see section on "Next-generation products" above). Furthermore, while we are using lentiviral (LV) vectors to express the CAR in all our current UCART products, UCARTCLL1 will benefit from targeted insertion of the CAR at the TCR locus through an adeno-associated viral (AAV) vector. This is expected to result in targeted integration of our CAR gene in the T-cell and more predictable expression profile of the CAR gene, which will be under endogenous regulatory elements.

UCART programs for solid tumors

We are currently applying our UCART platform to develop CAR-T candidates targeting solid tumors, currently in preclinical phase.

Other gene editing programs

Beyond our CAR-T programs, we are leveraging our TALEN gene editing platform to pursue additional development opportunities, both internally and in collaboration with third party companies and academics centers. We aim to enter the clinic with one or more gene editing programs beyond UCARTs in the near future.

Our Strategic Alliances

In addition to the development of our own portfolio of product candidates targeting tumor-associated antigens, we have pursued a strategy of forging strong pharmaceutical alliances.

License Agreement with Allogene

In June 2014, we entered into a Research Collaboration and License Agreement (the "Collaboration and License Agreement") with Pfizer, Inc. ("Pfizer") pursuant to which we agreed to collaborate to conduct discovery and pre-clinical development activities to generate CAR T-cells directed at Pfizer- and Cellectis-selected targets in the field of human oncology. We granted Pfizer an exclusive, worldwide, royalty-bearing, sublicensable license, on a target-by-target basis, under certain of our intellectual property to make, use, sell, import, and otherwise commercialize products directed at the Pfizer-selected targets in the field of human oncology. Pursuant to the Collaboration and License Agreement, Pfizer made an upfront, non-refundable $80.0 million payment to us, concurrent with Pfizer's €25.8 million equity investment in our company. On April 3, 2018, Pfizer and Allogene Therapeutics, Inc. ("Allogene"), a new company started by former Kite Pharma executives Dr. Arie Belldegrun and Dr. David Chang, announced that they entered into an asset contribution agreement, pursuant to which Allogene purchased Pfizer's portfolio of assets related to allogeneic CAR T-cell therapy (the "Asset Contribution Transaction"). Pursuant to the Asset Contribution Transaction, effective as of April 6, 2018, Allogene purchased Pfizer's portfolio of assets related to allogeneic CAR T-cell Therapy, including the Collaboration and License Agreement.

During the ASH annual conference in December 2018, Allogene presented data related to ALLO-715 and ALLO-819, which are product candidates directed at two of the fifteen targets (BCMA and FLT3 respectively) that are exclusively licensed to Allogene from Cellectis. ALLO-715 is an allogeneic BCMA CAR-T therapy for the treatment of Multiple Myeloma and ALLO-819 is an allogeneic FLT3 CAR-T therapy for the treatment of AML. Each of ALLO-715 and ALLO-819 is designed to possess an off-switch for safety. Allogene holds the exclusive development and commercial rights for these product candidates.

On March 7, 2019, we and Allogene agreed to terminate the Collaboration and License Agreement and entered into a new license agreement (the "Allogene License Agreement") to reflect the relationship between us and Allogene following the Asset Contribution Transaction. The Allogene License Agreement establishes the rights and obligations of Cellectis and Allogene with respect to their collaboration program.

Pursuant to the Allogene License Agreement, we granted to Allogene an exclusive, worldwide, royalty-bearing, license, on a target-by-target basis, with sublicensing rights under certain conditions, under certain of our intellectual property, including our TALEN and electroporation technology, to make, use, sell, import, and otherwise exploit and commercialize chimeric antigen receptor (CAR) T products directed at certain targets, including BCMA, FLT3, DLL3 and CD70, for human oncologic therapeutic, diagnostic, prophylactic and prognostic purposes. In addition, the Allogene License Agreement accommodates an exclusive global license and collaboration agreement under which Allogene has obtained from Servier exclusive rights to develop and commercialize

UCART19 in the United States. Further, Allogene granted us a non-exclusive, worldwide, royalty-free, perpetual and irrevocable license, with sublicensing rights under certain conditions, under certain of Allogene' s intellectual property, to make, use, sell, import and otherwise commercialize CAR T products directed at certain targets.

The Allogene License Agreement provides for development and sales milestone payments by Allogene of up to $185.0 million, with aggregate potential development and sales milestone payments totaling up to $2.8 billion. Allogene expects to pay us $5.0 million upon the dosing of the first patient in its Phase 1 clinical trial of ALLO-715. We are also eligible to receive tiered royalties on annual worldwide net sales of any products that are commercialized by Allogene that contain or incorporate, are made using or are claimed or covered by, our intellectual property licensed to Allogene under the Allogene License Agreement at rates in the high single-digit percentages.

Unless earlier terminated in accordance with the agreement, our agreement with Allogene will expire on a product-by-product and country-by-country basis, until the later of (1) the expiration of the last to expire of the licensed patents covering such product; (2) the loss of regulatory exclusivity afforded such product in such country, and (3) the tenth anniversary of the date of the first commercial sale of such product in such country; however, in no event shall the term extend, with respect to a particular licensed product, past the twentieth anniversary of the first commercial sale for such product. At any time after the first anniversary of the effective date of the agreement, Allogene will have the right to terminate the agreement at will upon 60 days' prior written notice, either in its entirety or on a target-by-target basis. Either party may terminate the agreement, in its entirety or on a target-by-target basis, upon 90 days' prior written notice in the event of the other party's uncured material breach. The agreement may also be terminated upon written notice by Allogene at any time in the event that we become bankrupt or insolvent or upon written notice within 60 days of a consummation of a change of control of Cellectis.

License, Development and Commercialization Agreement with Servier

In February 2014, we entered into a Research, Product Development, Option, License and Commercialization Agreement (as amended, the "Prior Servier Agreement") with Servier. Pursuant to the Prior Servier Agreement, we were responsible for the research and development up to and including the Phase I clinical trial of candidate products directed against five targets, including the UCART19 product candidate. Pursuant to the Prior Servier Agreement, we granted Servier options to obtain exclusive, worldwide licenses, each on a product candidate-by-product candidate basis, with respect to each product candidate selected by Servier and developed under the Prior Servier Agreement.

On March 6, 2019, we and Servier entered into a License, Development and Commercialization Agreement (the "Servier License Agreement"). The Servier License Agreement supersedes the Prior Servier Agreement to establish the terms of our continuing collaboration and to reflect the status of products in development. Among other things, the Servier License Agreement updates the targets covered by the Prior Servier Agreement. Servier exercised such option with respect to the UCART19 and continues to have an exclusive license to this product candidate.

Pursuant to the Servier License Agreement, upon Servier's exercise of each license option, Servier will pay us a lump sum license fee, and we will grant Servier an exclusive, worldwide, royalty-bearing license, with right to sublicense, under certain of our patents and know-how covering the relevant product candidate. This license will cover the development, manufacture and commercialization of such product in the field of anti-tumor adoptive immunotherapy. At such time, Servier will assume responsibility for the further clinical development, manufacture and commercialization of such product.

The Servier License Agreement restricts us from researching, developing, or commercializing any product directed against a target that is used for the same purpose as it is used with a product candidate developed under the agreement.

We are eligible to receive aggregate payments from Servier of up to $1,064 million pursuant to the Servier License Agreement, comprising payments upon the exercise of options granted to Servier under the agreement and payments upon the occurrence of certain specified milestones (development and commercial in nature), as well as reimbursement for development costs.

We are also eligible to receive tiered royalties ranging in the high single-digit percentages based on annual net sales of commercialized products.

The agreement will expire upon the expiration of the last sale of products licensed pursuant to the agreement. The parties also may terminate the agreement at any time by mutual consent. At its sole discretion, Servier has the right to terminate the agreement in its entirety or with respect to specific products, upon three months' prior written notice to us.

In addition, either party may terminate the agreement following the other party's uncured material breach upon 90 days' prior written notice to the breaching party, or 30 days' notice if such breach relates to a payment obligation. Servier may terminate the agreement at any time for product-related safety reasons. Either party may terminate the agreement in the event of the other party's bankruptcy or insolvency.

In the event that Servier does not exercise its option to license a product candidate, we may independently pursue all activities related to such product candidate and/or license such product candidate and the associated intellectual property to a third party. For such purpose, Servier granted us a non-exclusive license, with right to sublicense, under any such Servier-controlled intellectual property for which we will pay tiered royalties on annual net revenues at rates ranging in the low single-digit percentages.

Collaboration with research and clinical centers

Alliance with The University of Texas M.D. Anderson Cancer Center

On September 1, 2015, Cellectis and the University of Texas MD Anderson Cancer Center (the MD Anderson Cancer Center) entered into a research and development alliance (the Strategic Alliance Agreement) aimed at bringing novel cellular immunotherapies to patients suffering from different types of liquid tumors, particularly MM, ALL, T-cell ALL (T-ALL) and BPDCN. Under this strategic alliance, the MD Anderson Cancer Center and Cellectis have agreed to collaboratively conduct several pre-clinical studies on candidate products: UCART123 in BPDCN, UCARTCS1 for multiple myeloma, UCART38 for T-ALL and UCART22 for ALL. Cellectis has agreed to provide funding and other support for these studies. The objective of the studies is to build on complementary expertise from the MD Anderson Cancer Center and Cellectis for the development of the product candidates. The MD Anderson Cancer Center and Cellectis will work together to develop and implement improvements to the research plan for the programs under joint direction of the MD Anderson Cancer Center and Cellectis' investigators. The objective of the studies is to demonstrate the functionalities and specificity of the UCART candidate products listed above, define the pre-clinical package required for clinical trial applications, prepare a clinical trial protocol and the regulatory documents required for interactions with FDA and the clinical trial applications. Pursuant to the alliance, Cellectis is responsible for generation and manufacturing of the UCART candidate products and some of the in vitro and in vivo pre-clinical work. The MD Anderson Cancer Center is responsible for evaluation of the candidate products against primary patient samples and for some activities to be performed in animal models. The alliance also includes the possibility for Cellectis and the MD Anderson Cancer Center to collaborate on one or more early phase clinical studies on the same product candidates.

Pursuant to the Strategic Alliance Agreement, we entered in March 2017 into a study order with MD Anderson Cancer Center, according to which MD Anderson Cancer Center performs the UCART123 clinical study for BPDCN.

In January 2018, we entered into a new study order with MD Anderson Cancer Center in order to expand the performance of the UCART123 clinical study in AML to MD Anderson Cancer Center.

In May 2018, we entered into a new study order with MD Anderson Cancer Center according to which MD Anderson Cancer Center performs the UCART22 clinical study for ALL.

Research Collaboration Agreement with Cornell University, for and on behalf of its Joan & Standford I. Weill Medical College

On February 20, 2019, Cellectis and Cornell University, for and on behalf of its Joan & Standford I. Weill Medical College, entered into a Research Collaboration agreement. Under this Research Collaboration Agreement, Cornell University performs pre-clinical evaluation regarding certain of our product candidates in pre-clinical development.

Clinical collaborations with Weill Cornell, Dana Farber Cancer Institute and H. Lee Moffitt Cancer Center

In April 2017, we entered into a clinical trial agreement with Cornell University acting for and on behalf of its Joan and Sanford I. Weill Medical College and The New York Presbyterian Hospital (collectively referred to as Weill Cornell) under which Weill Cornell performs the UCART123 clinical study for AML.

In August 2018, we entered into a new clinical study agreement with Dana Farber Cancer Institute and H. Lee Moffitt Cancer Center in order to expand the performance of the UCART123 clinical study in AML to Dana Farber Cancer Institute and H. Lee Moffitt Cancer Center.

Immunotherapy: Turning the Immune System into "Smart Drugs"

The immune system has evolved to protect the body from invading pathogens or external harmful materials by identifying these foreign bodies through "non-self" antigens, which are molecular signatures that they carry and are foreign to the body. A central function of the immune system is to discriminate between "self," which is recognized through antigens normally present in the body and borne by cells, proteins, sugars or lipids, and "non-self", which is detected through abnormal or foreign antigens. Cancer cells thrive, in part, because they trick the immune system into treating them as self, even though they express abnormal antigens, and thus immune tolerance occurs when the immune system fails to recognize and attack tumors. Breaking immune tolerance is an important aspect of most immuno-oncology-based therapeutics because it enables the immune system to recognize and treat tumors as non-self and lead to tumor destruction.

The immune system recognizes non-self danger signals and responds to threats at a cellular level. The immune system may be conceptualized as comprising two arms. The first arm, known as the innate immune system, recognizes non-specific signals of infection or abnormalities as a first line of defense. The innate immune system is the initial response to an infection, and the response

is the same every time regardless of prior exposure to the infectious agent. The second arm, known as the adaptive immune system, is composed of highly specialized cells and provides long-term specific recognition and protection from infectious agents and abnormal processes such as cancer. The adaptive immune response is further subdivided into antibody-based responses and cellular responses, which include T-cell-based immune responses. The most significant components of the cellular aspect of the adaptive immune response are T-cells, which are specialized cells that generally mature in the thymus. T-cells are involved in sensing and killing infected or abnormal cells, as well as coordinating the activation of other cells and mounting an immune response.

Although the immune system is designed to identify and destroy foreign or abnormal protein-bearing tumor cells, this process is often defective in cancer patients. Additionally, cancer cells employ a number of mechanisms to escape immune detection and attack to suppress the effect of the immune response.

Immunotherapy is a type of treatment that modifies, stimulates, or re-directs certain parts of the immune system to fight diseases, such as cancer. Immunotherapy works by stimulating a patient's own immune system or by turning its attacks towards harmful targets, such as cancer cells. Immunotherapy can also be pursued by giving patients engineered immune cells, such as CAR T-cells to target certain cells. Immunotherapy is playing an increasingly large role in treating cancer, chronic infectious diseases, autoimmune diseases and allergic diseases.

T-cells and T-cell Receptors (TCRs)

T-cells are a class of white blood cells that carry a specific TCR at their surface that allows them to recognize and kill other cells that express antigens foreign to the individual. Normal cells express a set of specific molecules, called human leukocyte antigen, or HLA, at their surface. HLA is associated with small fragments, or peptides of the proteins expressed inside the cell or processed from the extracellular body fluids. Abnormal or foreign proteins (viruses, for example) can attach to HLAs and be presented at the cell's surface and be recognized by T-cells through these HLA-peptide complexes and identified as foreign antigens. This recognition triggers the activation of the T-cells, which destroy the foreign HLA-peptide complex-bearing cell, secrete specific cytokines attracting other immune-competent cells to their location, and start multiplying to establish a full immune response.

Unlike antibodies that mainly diffuse passively through the body and its circulating fluids, T-cells actively leave blood vessels or lymphoid organs and travel through the tissues of the body where they can attack foreign antigens. Once the antigen is eliminated from the body, the T-cells run out of stimulation and die off, with only a fraction surviving as "memory T-cells," which can react promptly should the antigen reappear in the body.

There is a high variability of HLA molecules in the population. Therefore, if a cell is introduced into a person and originally comes from another individual that is not HLA-matched, it will bear, at its surface, HLA-peptide complexes that are recognized as foreign and will be killed by the T-cells of the recipient. This mechanism of graft rejection has been a major limitation to transplanting patients with allogeneic tissues. Reciprocally, if T-cells are grafted from one individual to another and start recognizing as foreign the normal HLA-peptide complexes at the surface of all tissues of the grafted individual, then they may attack and kill those healthy tissues, leading to Graft-versus-Host disease (GvHD), which can be very severe, and potentially fatal, if left untreated.

Cancerous cells express abnormal antigens and can be killed by T-cells. However, cancer may grow and spread to various organs when T-cells with cancer-specific receptors are in low numbers, of poor quality, or rendered inactive by suppressive mechanisms employed by tumor tissues. T-cells are a key armament when fighting cancers. They play a particularly significant role if they are tailored to target tumors, and potentially even more so if their genes are edited to overcome tumor defenses, to make T-cells compatible with other anti-cancer drugs that can be combined with them, and to prevent GvHD, which would allow the use of allogeneic T-cells.

Chimeric Antigen Receptor (CAR)

CARs are engineered molecules that, when present at the surface of T-cells, enable them to recognize specific proteins or antigens that are present on the surface of other cells. These receptors are typically used to graft the specificity of an antibody derived from a single cell, or a monoclonal antibody, onto a T-cell and provide it with a specific targeting mechanism to seek, identify, interact with and destroy the tumor cells bearing a selected antigen associated with that tumor also known as tumor-associated antigen, or TAA and tumor-specific antigens, or TSA. The expression of some genes, or combinations of genes, can be associated with certain classes of cancers. It is sometimes possible to identify TAAs that are expressed at various levels by tumor cells from a given cancer type. These TAAs may also be normally expressed by other tissues at different stages of development.

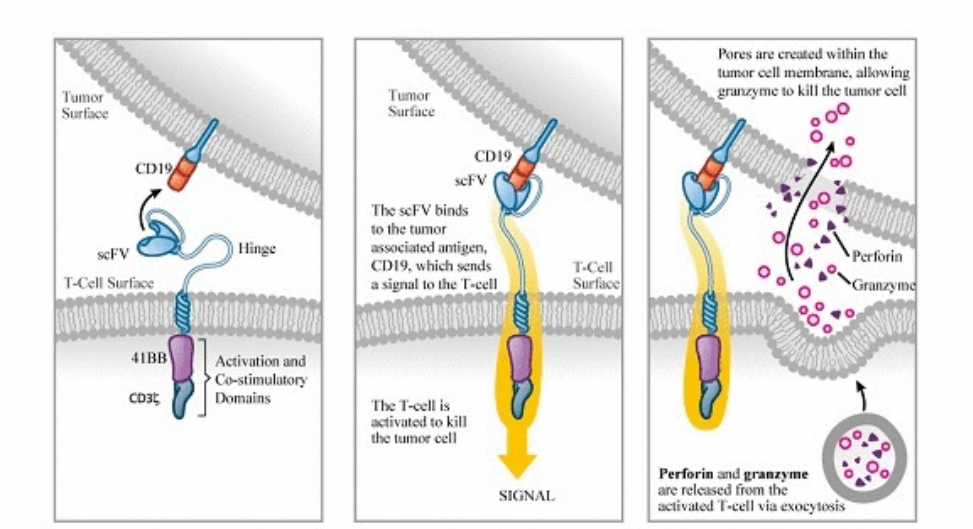
T-cells with CARs are referred to as CAR T-cells. Whereas natural T-cell receptors, or TCRs, only recognize antigens bound to an HLA molecule at a cell's surface, a CAR is able to directly recognize antigens that are present at the targeted cell's surface. It is believed that upon cell-to-cell contact between a CAR T-cell and an antigen-bearing targeted cell, antigen recognition by the CAR "activates" the CAR T-cell, triggering it to multiply, attack and kill its target through the release of "hole-forming" proteins, known

as perforins, and "degradation enzymes," known as granzymes, that enter the targeted cell through the perforin-formed holes and carry out the killing. The activation of a T-cell through a CAR results in a target-associated "kill and amplify" chain reaction that eradicates the tumor.

CARs are constructed by assembling components, or domains, from different proteins, including:

- In the extracellular space, one or more target binding domains, coming from ligands, such as antibodies or receptors, that can recognize their targets on the outside of the T-cell;
- A hinge that helps position the target binding domains relative to their targets;
- Trans-membrane domains that anchor the CAR at the T-cell's surface relative to the T-cells; and
- A set of activating or signaling domains, which are located within the T-cell's interior, that deliver appropriate signals to the T-cells leading to T-cell activation or repression according to the T-cell environment. Such signals may induce tumor cell killing, cytokine secretion and CAR T-cell multiplication.

The following diagram shows the mechanism by which a CAR T-cell is believed to attack a tumor cell:



Recent immuno-oncology advancements have supported the potential to cure certain cancers by harnessing the body's immune system to fight cancer cells. In particular, two autologous CAR-T cell therapies targeting the antigen CD19 have been approved in 2017:

- In August 2017, the FDA approved tisagenlecleucel (Kymriah®) for the treatment of patients up to 25 years of age with B-cell precursor ALL that is refractory or in second or later relapse. In May 2018, the FDA approved a label extension for Kymriah® for the treatment of adult patients with relapsed or refractory large B-cell lymphoma after two or more lines of systemic therapy. Q1-Q3 2018 sales of Kymriah® were $48 million.
- In October 2017, the FDA approved axicabtagene ciloleucel (Yescarta®) for the treatment of adult patients with relapsed or refractory large B-cell lymphoma after two or more lines of systemic therapy. Q1-Q3 2018 sales of Yescarta were $183 million.

Based on these and other advancements, immuno-oncology has become a new frontier for treatment, and we believe it is one of the most promising areas of development within oncology.

Our Gene-Editing Approach to Allogeneic CAR T-cell Therapy

The most fundamental challenge of genome engineering is the need to specifically and efficiently target a precise DNA sequence within a complex genome. Our founder, Chairman and CEO, Dr. André Choulika, was one of the pioneers and first researchers in nuclease-based genome engineering in the early 1990s and has been integral in the development and advancement of gene-editing tools.

Our proprietary gene-editing platform relies on our capacity to custom design DNA-sequence specific cutting enzymes, or nucleases, for any chosen gene we need to modify and our capability to introduce such custom-made nucleases into the living cells we want to engineer. Our platform relies on precisely chosen protein families that can specifically recognize unique DNA sequences and can be tailored to target such sequences in any chosen gene or genetic region.

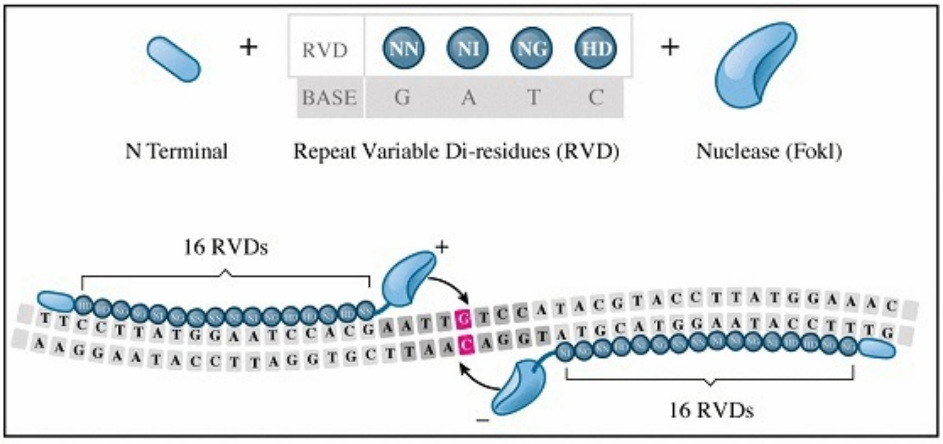
We are currently developing an allogeneic CAR T-cell therapy approach based on our technology platform that combines CARs, TALEN and PulseAgile, our electroporation technology, to address the opportunities for improvement discussed above. Our approach aims to deliver an off-the-shelf product with the following benefits:

- *Market access*. Enable products to be shipped globally, thereby reducing deployment obstacles and providing accessibility to a broad patient population;
- *Cost-effectiveness and Scalable Manufacturing*. Streamlined manufacturing process has the potential to reduce costs, with approximatively hundreds of doses per batch;
- *Novel Features*. Develop products with specific safety and control properties, through a CAR linked to a suicide switch;
- *Engraftment.* Avoid graft-versus-host disease (GvHD) through the inactivation of the T-cell receptor (TCR).
- *Persistence*. Manage rejection and persistence of the UCART product candidate, through notably the option to inactivate CD52 and beta2-microglobulin (ß2M) genes respectively;

TALEN—Proprietary Gene-editing Technology

The flagship nuclease structure we use for gene editing is based on a class of proteins derived from transcription activator-like effectors, or TALE. TALEN products are designed by fusing the DNA-cutting domain of a nuclease to TALE domains, which can be tailored to specifically recognize a unique DNA sequence. These fusion proteins serve as readily targetable "DNA scissors" for genome engineering applications that enable us to perform targeted genome modifications such as sequence insertion, deletion, repair and replacement in living cells.

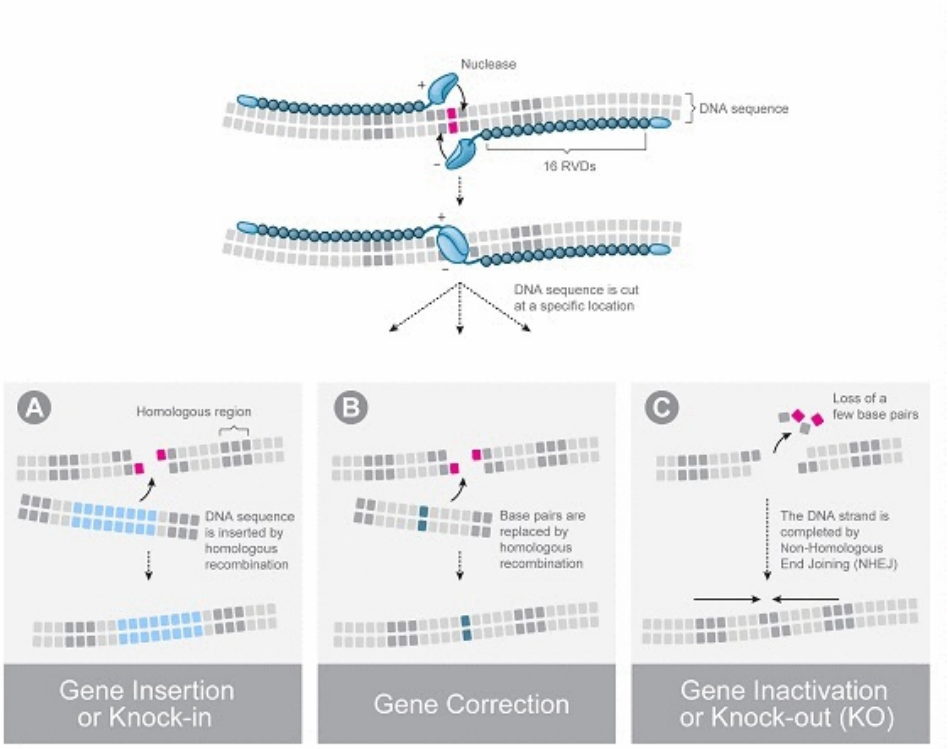
The following diagram shows the structure of a TALEN. The DNA binding domain of TALEN is composed of DNA binding units (repeat variable di-residues or RVDs) that each individually recognize a single base pair, and that are assembled to collectively recognize a DNA sequence. The specificity of this RVD single base pair recognition is mediated by two of the amino-acids in the RVD (NN, NI, NG, or HD), the RVDs that directly interact with the base of the DNA.



We believe the key benefits of TALEN technology are:

- *Precision*. It is possible to design a TALEN that will cleave at any selected region in any gene, giving us the ability to achieve the desired genetic outcome with any gene in any living species.
- *Specificity and Selectivity*. TALEN may be designed to limit its DNA cleavage to the desired sequence and to reduce the risk of cutting elsewhere in the genome. This parameter is essential, especially for therapeutic applications, because unwanted genomic modifications potentially could lead to harmful effects for the patient. In addition, gene editing requires only a transient presence of TALEN, thus preserving the integrity and functionality of the T-cell's genome.
- *Efficiency*. A large percentage of cells treated by the nuclease bear the desired genomic modification after treatment is completed. In our routine gene-editing processes, around 70% of the T-cells treated by TALEN to inactivate one gene copy bear the desired genomic modification. We believe TALEN's high efficiency will be important to the cost-effectiveness of a manufacturing process involving the generation of gene-edited T-cells.

The following diagram shows the various gene editing mechanisms enabled by TALEN:



We are able to assemble long arrays of modular domains with predictable specificity for a chosen sequence of DNA unique within a genome. When a TALEN is present, its TALE domains recognize its target DNA sequence and thereby direct the enzyme to the proper chromosomal location. Once bound to its target DNA sequence, the DNA cleaving-domain of the TALEN induces a DNA break at the targeted location to induce permanent DNA modifications. We believe TALEN stands out among nucleases as exceptionally precise, accurate and efficient to perform gene inactivation.

Other Types of Gene Editing Technologies

We have developed a strong expertise and capacity in meganuclease technologies, which involve enzymes capable of recognizing very large unique DNA sequences. In addition, using the flexibility of the TALE domain, we have developed new classes of custom-designed nucleases, such as compact TALEN and mega-TALE nucleases that combine meganucleases and TALEN technology. Compact-TALEN is built with a single TALE molecule fused to a fragment of a chosen meganuclease that carries limited DNA sequence recognition functionality but fully functional DNA-cleaving activity. These chimeric proteins are smaller in size than classical TALEN, which can facilitate their delivery to cells. In contrast, mega-TALE use a full-size meganuclease to enhance their DNA sequence recognition capacities, while demonstrating enhanced precision. We also have

discovered a new class of nuclease that we named BurrH nucleases, also based on arrays of single DNA-base recognizing modular domains. Recently, we announced the issuance of two US CRISPR (clustered regularly interspaced short palindromic repeats) patents, covering certain uses of RNA-guided endonucleases, such as Cas9 or Cpf1, for the genetic engineering of T-cells.

PulseAgile—Electroporation Technology

In order to perform gene editing, we use our proprietary PulseAgile electroporation technology to introduce nucleases inside the target T-cell where they can access the cell's DNA. Electroporation allows messenger RNA, or mRNA, molecules coding for the nuclease to enter into the cell, where it is translated into the nuclease protein that can cut into the cell's DNA. The mRNA molecules are rapidly degraded by the cell, which means that the nuclease is only expressed for a short time.

PulseAgile electroporation uses a unique electrical field wave-form that, in combination with a proprietary buffer solution, enables molecules, such as nucleases, to enter efficiently into the cell while maintaining a high percentage of viable cells. PulseAgile technology is particularly effective due to the shape of the electrical field that includes high voltage peaks, which are optimized to create transient holes in the cell membrane, followed by lower voltage pulses that help mRNA (for example TALEN-encoding mRNA) migrate into the cells. In addition, PulseAgile is optimized to preserve high cell viability and thus suited for large-scale manufacturing.

Nuclease Technology and T-cells: The Design Process

Our T-cell gene-editing process involves two engineering rounds:

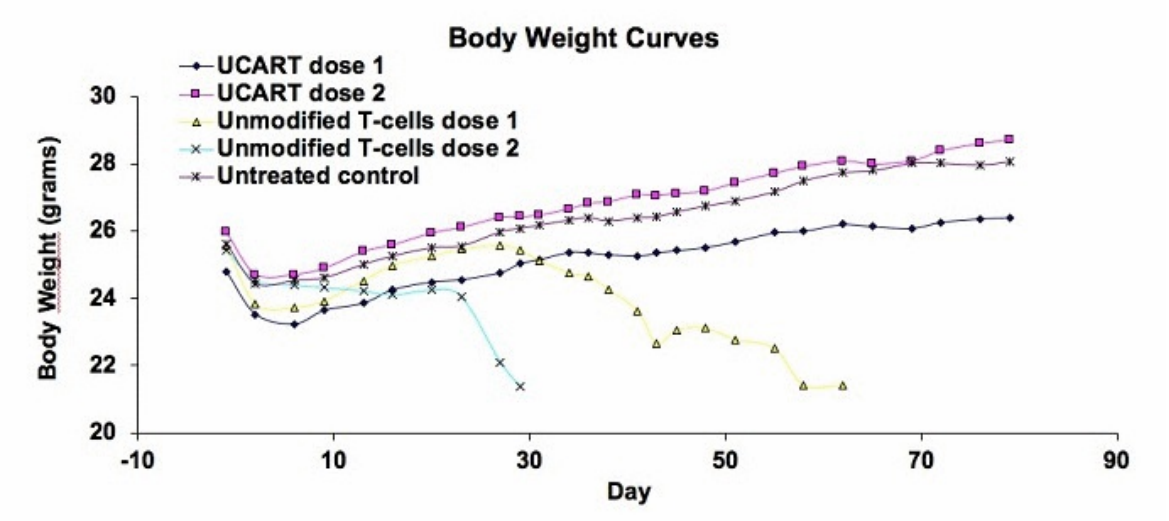
Step 1: Gene Editing to add Genes, such as a CAR

In the first round, genetic material is added to the T-cell's genome using a viral vector—a benign modified virus that cannot replicate autonomously but can efficiently deliver such genetic material into a cell with which it is in contact. In particular, we use targeted integration. The genetic material added includes a gene coding for a CAR, which becomes a new receptor at the T-cell's surface that allows it to recognize and bind to a target molecule that is present at the surface of other cells. At this stage, we can also add other genes to these cells that confer specific properties. For example, we add suicide genes, which code for proteins that can make T-cells susceptible to certain drugs and enable us to deplete our engineered T-cells at our discretion by administering a drug to the patient. This system can also be integrated within the CAR itself.

Step 2: Gene Editing to Inactivate Genes, such as the TCR∝ and CD52

In the second round, we use our PulseAgile electroporation technology to introduce specific TALEN mRNA into the T-cells to inactivate a number of genes that are naturally present in the genome of these T-cells.

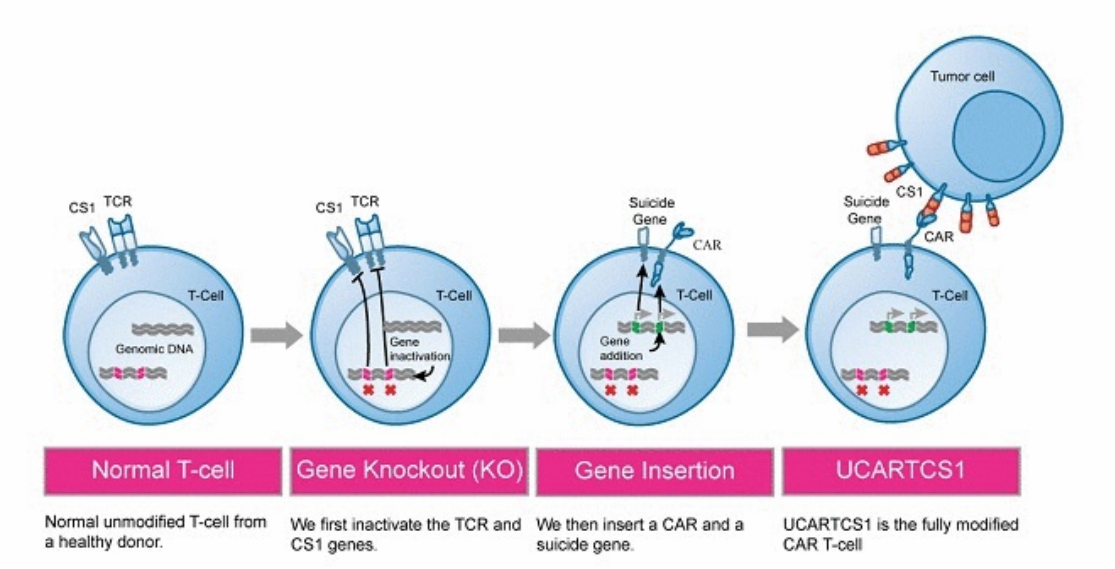
TCRs at the surface of T-cells allow them to recognize cells that express foreign, non-self, antigens (for example, cells infected by a virus or cells coming from another individual). Non-modified allogeneic T-cells bear functional TCRs and, if injected into a patient, can potentially recognize non-self on that patient's tissues and start to attack them. For this reason, all of our UCART product candidates undergo the inactivation of a gene coding for TCR∝, a key component of the natural antigen receptor of T-cells, to suppress their alloreactivity. The engineered T-cells lack functional TCRs and are no longer capable of recognizing foreign antigens. As a result, when injected into a patient, the engineered T-cell would not recognize the tissues of the host patient as foreign and thus would avoid attacking the patient's tissues. This could avoid the GvHD that can sometimes be observed when allogeneic TCR-positive T-cells are infused into some patients. The figure below depicts the suppression of alloreactivity in T-cells engineered to lack functional TCRs. The figure summarizes experiments in which we injected mice with T-cells engineered for the inactivation of TCR∝ while injecting other mice with non-engineered T-cells with functional TCRs. We then measured the effects of such injections on mean body weight, which serves as a proxy for the impact of GvHD.



During the manufacturing process, the T cells from a healthy donor are first engineered. The CAR gene is transduced and cell attributes like the TCR alpha gene are knocked out by TALEN. Then, the T-cells of our UCART products are amplified. The desired TCR alpha deleted are finally purified from the cells that may still bear a TCR, and are finally frozen. We perform a battery of specialized testing techniques and various quality assurance and quality control assays to further validate cellular functional integrity following gene editing.

The lack of a TCR at the surface of our UCART product candidates is a key feature that allows them to be used as allogeneic off-the-shelf products. Other genes can also be inactivated in this round to confer additional specific attributes to the T-cells. They can be made resistant, and therefore compatible, with specific medical regimens used during the course of cancer treatments. For example, we inactivate the CD52 gene, which codes for the target of alemtuzumab, a monoclonal antibody sometimes used in CLL patients, that would otherwise destroy our engineered T-cells. Likewise, we believe we can inactivate the deoxycytidine kinase (dCK) or glucocorticoid receptor (GR) genes in order to make our T-cells respectively resistant to purine nucleotide analogs (e.g., fludarabine, clofarabine or cytarabine) or to corticoids that are used for several types of cancer patients.

The following diagram shows the key stages in our engineering of UCARTCS1:



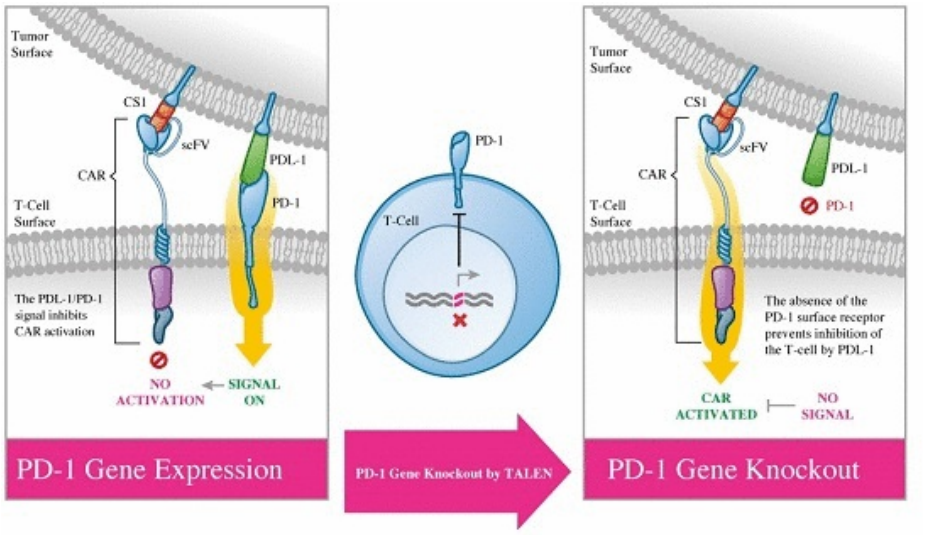
Next-Generation Products – Inactivate Additional Genes, such as ß2M and PD-1

The allogenic CAR T-cell approach developed by Cellectis aims at increasing accessibility to treatment for patients by using healthy donor cells to manufacture CAR T-cells. As evidenced above, the inactivation of the TRAC gene reduces the risk of graft vs. host disease, and the lymphodepletion regimen of the patients aims at supporting early engraftment of the candidate product.

We are investigating the inactivation of the beta2-microglobulin (ß2M) gene to increase persistence of allogenic cells in this context. ß2M is necessary for presentation of antigens on class I major histocompatibility complex (MHC) to cytotoxic T-cells. Allogenic TRAC/ß2M double knock-out CAR T-cells infused into a patient are expected not to be recognized by the patient's own T-cells and therefore to show prolonged survival after patients' T-cells recover following lymphodepletion.

We developed several ß2M-specific TALEN allowing high efficiency of gene inactivation in combination with TRAC TALEN (up to 88% double knock-out). We have shown on human cells and on mouse cells that ß2M inactivation improves allogenic cell survival in the presence of alloreactive T-cells, and we are pursuing the ß2M inactivation approach for our preclinical candidate UCARTCLL1.

Our engineered T-cell could also be made insensitive to inhibition signals, which diminishes immune system activity, that may be present within the tumor microenvironment and that usually block T-cell attacks. For example, we inactivate the programmed cell death 1 (PD-1) gene in our engineered T-cells in order to suppress the checkpoint regulator inhibition by tumors expressing PD-L1, a common anti-immune defense mechanism found in cancer. The following diagram shows the inactivation of the PD-1 gene to suppress checkpoint inhibition in the T-cell:

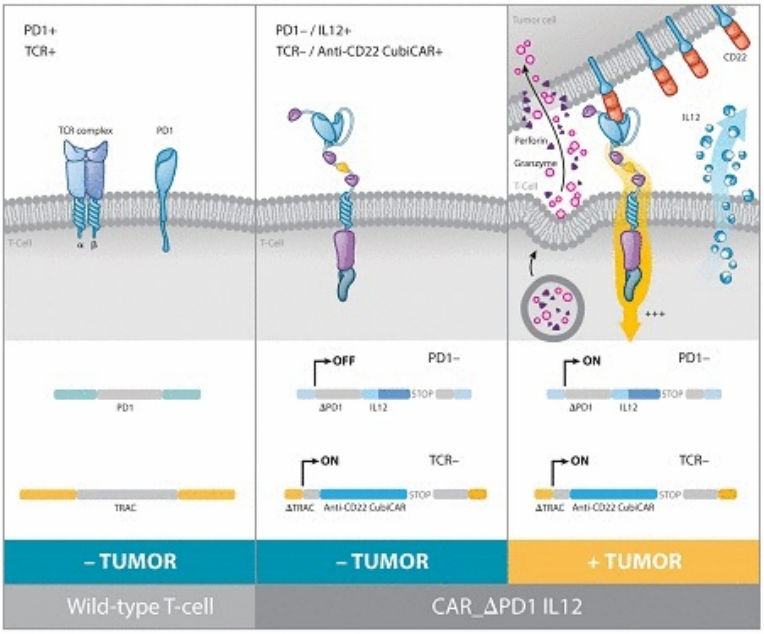


Using our ability to add and to inactivate genes, our platform has the potential to deliver smart T-cells designed for specific indications and purposes.

Next-Generation Products – Armored CARs

While CAR T-cell therapies have led to complete remission in previously untreatable diseases such relapse/refractory ALL, not all patients respond, and even among those that respond, a fraction end up relapsing. There is therefore a need to investigate strategies to make CAR T-cells even more effective, such as boosting their activity by overexpression of an immunomodulatory molecule (i.e. a cytokine or a costimulatory receptor). In order to limit toxicity effects due to immunostimulatory molecules being produced uncontrollably and systemically, we have developed strategies exploiting cellular endogenous pathways to restrict expression of a gene of interest only when CAR T-cells are activated. This is made possible by inserting genes of interest at a desired position in the genome by combining a locus-specific nuclease and a donor template vectorized with an adeno-associated viral (AAV) vector. Since PD-1 and CD25 are known to be upregulated upon T-cell activation, inserting certain cytokine coding sequence under the control of PD-1 or CD25 genetic regulatory elements allows secretion of that certain cytokine only upon activation of the CAR T-cells and enhances *in vitro* antitumor activity.

This strategy could be extended to the use of various genetic loci to express genes with therapeutic benefits at desirable expression level or with a specific temporal or regional expression pattern.



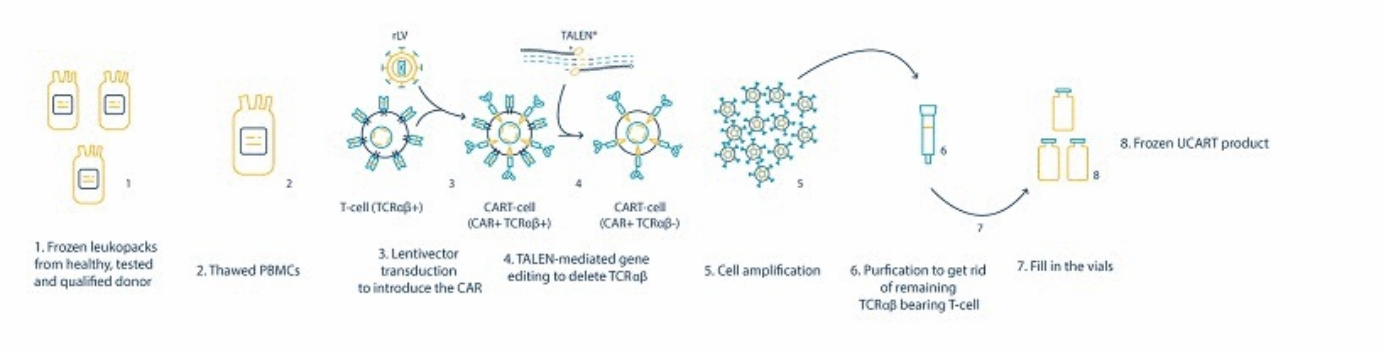
UCART Manufacturing: How can we turn a procedure into a large-scale, widely available drug?

Autologous CAR-T cell approaches are therapeutic procedures conducted for each patient, which involve the engineering of T-cells by addition of a transgene coding for a chimeric antigen receptor into the patient's own T cells. Our UCART approach goes one step further in engineering and also in moving the CAR concept from a patient-by-patient therapeutic procedure to an off-the-shelf widely available pharmaceutical compound.

The manufacturing process of our allogeneic CAR T-cell product line, Universal CARTs or UCARTs, yields frozen, off-the-shelf, allogeneic, engineered CAR T-cells. UCARTs are meant to be readily available CAR T-cells for a large patient population. The specificity of those allogeneic therapies is that T-cells from healthy donors are genetically edited with our proprietary technology, TALEN, to seek and destroy cancer cells. TALEN-based gene editing is designed to suppress T-cell alloreactivity (and, for certain UCART product candidates, to confer resistance to alemtuzumab) to the T-cells.

Our UCARTs are designed and manufactured through a common platform that relies on defined unit operations and technologies combined into a single process adapted to each individual UCART. The process is gradually developed from small to larger scales, incorporating elements that are eventually used in GMP conditions. Notwithstanding this central unit operations based model, each product is unique and for each new UCART, a developmental phase is necessary to individually customize each engineering step and to create a robust procedure that can later be implemented in a GMP environment to ensure the production of clinical batches. This work is performed in our research & development environment to evaluate and assess variability in each step of the process in order to define the most reliable experimental conditions.

The following diagram summarizes the generic UCART production process made of distinct unit operations. The engineering steps for transduction and electroporation can take place one before another (and several times), depending on the product.



On October 28, 2015, we announced that we completed a series of three production runs of UCART19 confirming the transfer of Cellectis' manufacturing process into clinical grade, GMP conditions. This important milestone showed that UCARTs can be manufactured in GMP conditions and demonstrated the industrial production of UCART19, as well as the capacity of Cellectis' pipeline of UCART product candidates to be manufactured for clinical investigations. On November 15, 2016, we announced that we completed a series of production runs of UCART123 at CELLforCURE, our CMO, to support the UCART123 Clinical Trials for which we filed an IND, the FDA approval of which was announced on February 6, 2017. In November 2017, we started a series of production runs of UCART22 at CELLforCURE, to support the UCART22 Clinical Trial. In November 2018, we started a series of production runs of UCARTCS1 at CELLforCURE to support the UCARTCS1 Clinical Trial, and started a new campaign of UCART123 in November 2018 at CELLforCURE

On July 27, 2017, we announced the signature of a capacity production agreement with MolMed, a biopharmaceutical company based in Milan, Italy that has Contract Manufacturing Operations facilities for the production of GMP grade CAR T-cells. At the end of 2018, we completed the technology transfer to MolMed for the production of UCART123, and it is our intention to start production of UCART products at MolMed in 2019.

In June 2018, CELLforCURE informed us that GMP grade batches of dimethyl-sulfoxide (DMSO) and Dulbecco's phosphate-buffered saline (dPBS) used during manufacturing of UCART123 and UCART22 contained particles, and that some batches of final product had been produced using this DMSO and dPBS batches. We informed the FDA and voluntarily decided not to use the batches that could potentially contain particles until receiving clearance from the FDA. Subsequently, CELLforCURE informed us that the water for injection (WFI) they had used during manufacturing contained glass particles and that some batches of UCART123 and UCART22 had been manufactured with this WFI. We informed the FDA and voluntarily decided not to use the batches that could potentially contain glass particles until receiving clearance from the FDA. We have been, since then, working with the FDA to assess the risk-benefit profile of vials produced during these campaigns. The batches of UCARTCS1 and UCART123 that were made during the fourth quarter of 2018 did not use these DMSO, dPBS and WFI batches and were successfully manufactured.

We aim to continuously improve our manufacturing processes for better safety and robustness of our product lines.

Towards manufacturing autonomy: building two state-of-the-art plants

In order to achieve manufacturing autonomy, we have started the construction of two manufacturing facilities, dedicated to starting materials for clinical supply and clinical & commercial UCART products, respectively.

SMART (Starting MAterial Realization for CAR-T products) will be a ~14,000 sq. ft. in-house manufacturing in Paris, France. SMART will be dedicated to the production of certain raw material for clinical supply, with the potential to supply commercial starting material. We expect this manufacturing facility to be operational in 2020.

IMPACT (Innovative Manufacturing Plant for Allogeneic Cellular Therapies) will be a ~80,000 sq. ft. facility located in the U.S. East Coast. IMPACT will be dedicated to the production of clinical and commercial UCART products. We expect this manufacturing facility to be operational in 2021.

Raw Materials

We are currently dependent on specialized third parties, who are subject to stringent manufacturing requirements and regulations, for the supply of various critical and biological materials – such as cells, chemicals, water, cytokines, vectors, nucleic acids, antibodies, medium, serum, buffers —that are necessary to produce our product candidates. We source these raw and starting materials through service agreements and do not systematically have long-term supply contracts in place. However, we believe that

competitive pricing is achieved because there are a number of potential long-term replacements to each of our suppliers. Generally, the prices of the principal biological raw and starting materials that we purchase are stable or fluctuate within a limited range. To the extent that we are exposed to price fluctuations, we generally do not expect, in the near term, to be able to pass on cost increases because of the early development stage of our product candidates. However, with the SMART facility project, we expect to become independent for the supply of the most critical raw and starting materials.

Applications of Our Technology in Agriculture

Calyxt was incorporated in the State of Delaware in the United States in 2010. Calyxt is a healthy food ingredient company.

Before its initial public offering, which closed on July 25, 2017, Calyxt was a wholly-owned subsidiary of ours. As of December 31, 2018, we owned approximately 69.5% of Calyxt's outstanding common stock. Calyxt's common stock is listed on the Nasdaq market under the ticker symbol "CLXT".

Calyxt leverages proprietary intellectual property, technical expertise and an end-to-end supply chain toward its mission of "Making the Food You Love a Healthier Choice™". Calyxt's first product is a High Oleic Soybean designed to produce a healthier oil that has increased heat stability with zero trans fats per serving. Calyxt received its first order for its High Oleic Soybean Oil in the first quarter of 2019. Among its other product candidates are other soybean products and a high fiber wheat.

Using Calyxt's proprietary technologies and expertise, including TALEN gene-editing technology exclusively licensed to Calyxt in the field of agriculture, Calyxt precise cuts to DNA in a single plant cell using the plant's natural repair machinery. This allows Calyxt to make our desired genome edit and regenerate the single cell into a full plant that includes this gene edit.

Market and Industry Overview

Consumers have developed an increasingly heightened awareness of the role that dietary habits play in long-term wellness. This trend is especially prevalent in wealthier, developed nations where consumers have greater access to information that is helping to shift their consumption habits. In the United States and other developed nations buying habits have been creating dynamic shifts in the grocery aisle. Consumers now view food as a key to good health. More food products are being launched that go beyond basic nutrition to support health, digestive health, and higher energy levels. Locally sourced foods with a direct-to-consumer model are becoming more attractive and the demand for transparency in food sourcing, production and labeling is gaining traction. Calyxt believes that as consumers continue the shift from a traditional production-driven food culture to a modern demand-driven food culture, they will continue to demand more information and accountability about how ingredients are sourced and processed, how "real" their food products are, and how responsive they are to consumers' desire for choice and customization.

Regulatory agencies are also playing a larger role in monitoring which food ingredients reach consumers. Beginning in 2018, the FDA banned certain uses of partially hydrogenated oils, the primary artificial source of trans fat in processed foods. Following the passage of the Healthy, Hunger-Free Kids Act of 2010, the USDA gained significant oversight of the federal school lunch program and holds the authority to set new, healthier standards for food sold in U.S. schools. These healthier food mandates include minimum serving requirements for fiber, fruits and vegetables and maximum allowable content standards for fat, sugar and sodium. Consumers' rising demand for healthier food presents an opportunity for us to provide our innovative solutions for customers and consumers and the food industry.

TALEN Technology in Agricultural Biotechnology

Calyxt's gene-editing platform relies on Calyxt's capacity to custom design DNA-sequence specific cutting enzymes, or nucleases, for any chosen gene it intends to edit and its capability to introduce such custom-made nucleases into the living plant cells it wants to edit. Calyxt's platform also relies on precisely chosen protein families that can specifically recognize unique DNA sequences and can be tailored to target such sequences in any chosen gene or genetic region.

Calyxt's proprietary technologies and intellectual property portfolio enable Calyxt to edit the plant genome by knocking out genes or making precise gene edits. Calyxt takes advantage of its knowledge about plant gene function to produce novel genetic variation that results in traits of value. A key difference between Calyxt's gene-edited products and products created through genetic modification (GMO) is that GMOs insert foreign DNA into crops and Calyxt's gene-editing does not. For each of Calyxt's product candidates that it submitted to the U.S. Department of Agriculture (USDA), the USDA confirmed that the product candidates are not regulated articles. This determination decreased Calyxt's costs and increased speed to market.

Using Calyxt's proprietary technologies and expertise, including TALEN gene-editing technology exclusively licensed to Calyxt in the field of agriculture, Calyxt develops food crops with targeted traits quickly and more cost effectively than traditional methods. We believe that Calyxt is able to identify a consumer need and develop a product from "concept to fork" in cycles as short as six years by utilizing these proprietary technologies.

Calyxt Agricultural Biotechnology Products

Calyxt's product pipeline includes a variety of traits for soybeans, wheat, and alfalfa, and Calyxt intends to conduct further development programs to build upon our current pipeline. In the future, Calyxt may expand our product pipeline to include other food crops. Calyxt's initial focus is on its High Oleic Soybean and High Fiber Wheat product candidates. Calyxt received its first order for its High Oleic Soybean product candidate in the first quarter of 2019.

High Oleic Soybean

Soybean oil has historically been partially hydrogenated to enhance its oxidative stability in order to increase shelf life and improve frying characteristics. This process, however, creates trans-unsaturated fatty acids, or trans fats, which have been demonstrated to raise low-density lipoprotein (LDL) cholesterol levels and lower high-density lipoprotein (HDL) cholesterol levels. High LDL and low HDL have been tied to increased risk for cardiovascular disease. The discovery that dietary trans fats increase the risk of several adverse health issues led the FDA to rule in 2003 that manufacturers be required to include trans-fat content information on the "Nutrition Facts" label of foods. In 2015, the FDA took a further step and banned the use of partially hydrogenated oils, the primary dietary source of artificial trans-fat in processed foods, by all food manufacturers beginning in 2018.

Monounsaturated fats, such as oleic acid, have been linked to reducing LDL cholesterol and triglycerides and raising HDL cholesterols. Diets rich in monounsaturated acids are associated with lower fat mass and decreased blood pressure. High levels of oleic acids can be found in olive, canola, sunflower and safflower oils.

Calyxt developed a soybean trait that has produced oils with a fatty acid profile that contains 80% oleic acid, 20% less saturated fatty acids compared to commodity soybean oil and zero grams of trans fats per serving.

Oil produced from Calyxt's High Oleic Soybean has multiple desirable characteristics as an ingredient for the food industry. The high level of oleic acid in Calyxt's soybean oil enhances oxidative stability more than fivefold when compared to commodity oil. This eliminates the need for partial hydrogenation, and thus little to no trans fats are produced during oil production. Furthermore, Calyxt's High Oleic Soybean Oil offers additional potential benefits, including reduced saturated fats, a threefold increase in fry-life, and reduced polymerization upon frying at high temperatures. Soybean oil is also neutral in flavor, odorless and colorless, and is therefore desired as a food ingredient because it has limited impact on the sensory characteristics of the final food product.

Calyxt's High Oleic Soybean was developed using TALEN gene-editing technology. Calyxt designed a TALEN to specifically target two fatty acid desaturase genes (designated FAD2-1A and FAD2-1B). These genes convert oleic acid (a mono-unsaturated fatty acid) to linolenic acid (a polyunsaturated fat). By specifically inactivating both the FAD2-1A and FAD2-1B genes, oleic acid accumulates in the seed—increasing from about 20% to 80%. By key measures, including yield, Calyxt's High Oleic Soybean variety performs comparably to its unedited conventional (non-GMO) counterpart.

In mid-2015, Calyxt received a letter from the USDA indicating that Calyxt's High Oleic Soybean Oil is not a regulated article under the Plant Protection Act. In November 2015, Calyxt announced the completion of the second year of multi-location field trials in Minnesota and South Dakota. The agronomic and yield performance of Calyxt's High Oleic Soybean is on par with the non-GMO variety used to develop this product.

Soybeans are a crop that is photoperiod sensitive, meaning the crop is sensitive to the length of the day. Plant breeders have developed soybean varieties that are adapted to distinct latitudes and agroclimatic conditions—which are referred to as maturity groups. Different growing regions in the United States require different maturity groups. For example, the northern United States requires soybeans in the 1.5- 2.2 maturity group ranges, with farmers typically planting a few varieties within this range to diversify their risk.

Calyxt has in-licensed over thirty non-genetically modified soybean varieties with commercial rights. Calyxt initially introduced Calyxt's High Oleic Soybean in the northern United States on one variety within a particular maturity group range. Over time, Calyxt intends to expand to additional varieties for farmers in the same region to provide farmers with the ability to diversify their risk. Calyxt expects to continue this expansion over time by adding regions in other maturity groups and varieties. Over the next five to ten years Calyxt envisions expanding its germplasm portfolio to early, middle and late maturity groups. Calyxt believes this strategy will enable it to expand its supply chain through additional crushing plants within target growing regions and at the same time lower potential premiums and production costs as it introduces into the supply chain additional varieties that meet the diversity of seed variety that farmers need to mitigate their risk.

Calyxt plans to focus its efforts on farmers in the upper Midwest. Calyxt currently has growers in South Dakota and Minnesota and will be launching new soybean varieties in 2020 and 2021 that will enable it to expand to other growing locations. The High Oleic Soybean seed is sold either directly or through distributors to farmers. Calyxt believes that it can generate a successful supply chain by contracting with fewer than 2,000 farmers.

In 2018 Calyxt contracted more than 17,000 acres with nearly 80 growers in South Dakota and Minnesota to grow this High Oleic Soybean. The harvest of these High Oleic Soybean acres has been completed and Calyxt has taken delivery of a portion of the harvested crop. Calyxt has contracted with third parties to crush and refine Calyxt's High Oleic Soybean on a commercial scale, enabling sales of High Oleic Soybean Oil and High Oleic Soybean Meal to customers. Calyxt has commercialized its High Oleic Soybean product candidate in the first quarter of 2019.

High Fiber Wheat

Fiber is the indigestible portion of food that is essential for healthy digestion. Research has shown that fiber may play a large role in maintaining bowel health, lowering cholesterol, stabilizing blood glucose levels and controlling weight gain. A high fiber diet has the potential to lower the rate of glucose entry into circulation, thus decreasing the risk of food-related chronic diseases, such as coronary artery disease and diabetes. The average American adult consumes approximately 15-18 grams of fiber daily, only half of the amount recommended by the U.S. Department of Health's dietary guidelines based on the average caloric intake. In recent years, the awareness of the health benefits of high fiber diets has increased. This has translated to a strong growth in demand for high fiber food products, with approximately 35% of grocery shoppers now seeking high fiber foods.

Calyxt is developing its High Fiber Wheat product candidate that could be used to produce white flour with up to three times more dietary fiber than standard white flour while maintaining the same flavor and convenience of use. By altering the proportion of certain slower digested carbohydrates in the wheat grain, Calyxt has developed a product candidate that it believes will exhibit increased dietary fiber. This would allow consumers to reach their daily value of fiber without changing their existing food preferences.

Calyxt believes its High Fiber Wheat flour will be able to be incorporated into many food products—from pasta to bread. Whereas a single serving of whole wheat flour can provide 49% of an individual's daily fiber needs, a single serving of Calyxt's High Fiber Wheat flour may provide up to 100% of the recommended daily requirement thereby allowing food manufacturers to make high fiber products sought after by many consumers.

This product candidate is currently in Phase II of Calyxt's development process and is expected to be commercialized as early as 2022. In March 2018 Calyxt received confirmation from USDA that its High Fiber Wheat is deemed non-regulated pursuant to APHIS's regulatory procedures. In October 2018 Calyxt successfully harvested High Fiber Wheat in field trials. In the next year, Calyxt intends to further confirm the product concept in field conditions and to complete food application studies.

In addition to Calyxt's High Fiber Wheat product candidate, the company is also developing other consumer traits in our wheat pipeline, including a reduced gluten product candidate.

Intellectual Property

We seek to protect and enhance proprietary technology, inventions, and improvements that are commercially important to the development of our business by seeking, maintaining, and defending patent rights, whether developed internally or licensed from third parties. We will also seek to rely on regulatory protection afforded through orphan drug designations, data exclusivity, market exclusivity and patent term extensions where available.

To achieve this objective, we maintain a strategic focus on identifying and licensing key patents that provide protection and serve as an optimal platform to enhance our intellectual property and technology base.

Historical Perspectives

Cellectis was founded in early 2000. In June 2000, Institut Pasteur provided us with exclusive rights to its gene-editing patent portfolio. This patent portfolio includes patents relating to homologous recombination and rare-cutting endonucleases (also named meganucleases), respectively, for genetic engineering in living cells.

Since 2002, we have filed a large number of patent applications, many now issued as patents, for custom-made meganucleases, and uses thereof, that specifically target a desired genetic sequence in a genome. In 2014, we entered into a cross-licensing agreement with Precision Biosciences, Inc., or Precision, in settlement of patent litigation and patent proceedings related to this technology. Pursuant to this cross-license, we licensed our patents and patent applications in this area to Precision, and Precision licensed its relevant patents and patent applications to us.

In 2010, we acquired a portfolio of patents and patent applications relating to electroporation methods and devices. In 2011, we entered into an exclusive license agreement with the Regents of the University of Minnesota (UMN) pursuant to which we in-licensed one patent family related to customized rare-cutting endonucleases, in connection with which we have registered the trademark TALEN in certain jurisdictions. This patent portfolio comprises six patents in the United States and two European patents,. In addition, in 2014, we entered into a series of agreements with Life Technologies Corporation (controlled by Thermo Fisher Scientific Inc.) pursuant to which we received a non-exclusive sublicense under certain patents and patent applications related to the research and therapeutic uses of TALE-nucleases and we granted certain rights to Life Technologies under our TALEN technology. In addition, we entered into a license agreement with Calyxt, pursuant to which Calyxt has been granted certain rights in connection with our gene editing and plant intellectual property portfolio.

Since 2012, we have filed about 60 new patent applications related to the CAR T-cell technology. Included in this patent portfolio are patent applications relating to manufacturing allogeneic immune cells and to CAR design, including multi-subunit CARs and conditional expression CARs. In addition, we have filed a number of patent applications related to new TALEN structures (for example, compact TALEN, methylation TALEN) and alternatives to the TALEN structure (BurrH, CRISPR-Cas9). On December 2018, an anonymous third-party filed an opposition to two European patents of the patent family entitled “A Method for producing precise DNA cleavage using CAS9 – Double nickase”.

In October 2014 and March 2014, we exclusively in-licensed two patent portfolios from Ohio State Innovation Foundation and University College London, respectively. The Ohio State Innovation Foundation patent portfolio includes patent applications relating to CARs directed to cancer marker CS1. The University College London patent portfolio includes patent applications relating to a polypeptide expressing the suicide gene RQR8, and uses thereof.

Current Intellectual Property Portfolio

As a result of the licensing opportunities described below and our continuing research and development efforts, our intellectual property estate now contains patent applications that cover our products, including claims that cover:

- methods central to genome engineering and gene editing, including methods of homologous recombination, nuclease-based gene targeting, replacement, insertions and/or knock-out;
- the main products we use in the manufacturing process, including nucleases;
- manufacturing steps, including cell electroporation, transformation and genetic modifications;
- engineered cells;
- single-chain and multi-subunit CARs expressed at the surface of T-cells;
- specific gene inactivation and suicide gene expression;
- allogeneic and autologous treatment strategies using our T-cell products; and
- plant traits and methods for gene editing plant cells.

The most relevant issued patents in our portfolio consist of approximately 33 Cellectis-owned and 18 in-licensed U.S. patents, 32 Cellectis-owned and 4 in-licensed European patents, and 47 Cellectis-owned and 13 in-licensed patents in other jurisdictions, such as Australia, Canada, China, Hong Kong, India, Israel, Japan, Korea, Mexico and Singapore.

The most relevant pending patent applications in our portfolio consist of approximately 88 Cellectis-owned and 4 in-licensed U.S. patent applications, 68 Cellectis-owned and 2 in-licensed European patent applications, 412 Cellectis-owned and 28 in-licensed patent applications pending in other jurisdictions, such as Australia, Brazil, Canada, China, Hong Kong, India, Israel, Japan, Korea, Mexico and Singapore.

Our most relevant portfolio includes a total of 146 owned and in-licensed granted patents, and 596 owned and in-licensed patent applications.

Our UCART product candidates rely for each product candidate upon one or more patent rights protecting various aspects of the technologies, including rights relating to:

- the genetic editing of T-cells, using TALEN technology, covered by approximately twelve Cellectis-owned patent families and three in-licensed patent families;
- the insertion of transgenes into T-cells using electroporation of mRNA, covered by approximately five Cellectis-owned patent families;
- the appending of attributes to T-cells, covered by approximately eight Cellectis-owned patent families and one in-licensed patent family;
- the molecular structure of CARs, covered by approximately six Cellectis-owned patent families; and
- specific CARs that target selected antigen markers are covered by approximately fifteen Cellectis-owned patent applications and one in-licensed patent family.

For additional information, see "—Gene-Editing Platform" below.

Similarly, our most advanced agricultural product candidates each rely upon one or more patent rights relating to:

- the genetic editing of plants using TALEN technology, covered by approximately six Cellectis-owned patent families and two in-licensed patent families;
- the genetic editing of plants using meganuclease technology, covered by approximately eight Cellectis-owned patent families and one in-licensed patent family;
- the genetic editing of plants using CRISPR-Cas9 technology, covered by approximately two Cellectis-owned patent families and three in-licensed patent families; and
- specific plant traits, which are covered by approximately twelve Cellectis-owned patent families.

Individual patent terms extend for varying periods of time, depending upon the date of filing of the patent application, the date of patent issuance, and the legal term of patents in the countries in which they are obtained. In most countries in which we file patent applications, including the United States, the patent term is 20 years from the date of filing of the first non-provisional application to which priority is claimed. In certain instances, a patent term can be extended under certain circumstances. For example, in the United States, the term of a patent that covers an FDA-approved drug may be eligible for a patent term restoration of up to five years to effectively compensate for the patent term lost during the FDA regulatory review process, subject to several limitations discussed below under "—Our Intellectual Property Strategy." Also, in the United States, a patent's term may be lengthened by patent term adjustment, which compensates a patentee for administrative delays by the U.S. Patent and Trademark Office in granting a patent, or may be shortened if a patent is terminally disclaimed over an earlier-filed patent. Our issued patents will expire on dates ranging from 2019 to 2035. If patents are issued on our pending patent applications, the resulting patents are projected to expire on dates ranging from 2023 to 2035. However, the actual protection afforded by a patent varies on a product-by-product basis, from country-to-country, and depends upon many factors, including the type of patent, the scope of its coverage, the availability of regulatory-related extensions, the availability of legal remedies in a particular country, and the validity and enforceability of the patent.

The patent portfolio for our most advanced product candidates, UCART19 and UCART123, are summarized below.

Gene Editing Platform

Each of our UCART product candidates relies upon our gene-editing platform and T-cell and CAR technology platforms. The patent portfolio covering these platforms and technologies, includes approximately 30 issued patents or pending patent applications in various countries. These issued patents and pending patent applications, which expire between 2019 and 2033, cover product claims or process claims relevant to each of our product candidates, including UCART19 and UCART123.

Our gene-editing platform and each of our UCART product candidates benefits from the protections of several patents and patent applications in our patent portfolio. As a result of this broad range of patent protection, very few individual patents in our portfolio are critical to our ability to effectively conduct our product development activities. Although certain patents relating to our electroporation technology will expire in 2019, other patents covering this technology remain in force or are expected to be granted under patent applications, and additional patents protect the nucleases delivered by our electroporation technology, as well as the methods to modify the cells by use of such nucleases. As a result of the breadth of our patent protection and the integration of patented technologies, compositions and methods of use within our gene-editing, T-cell and CAR technology platforms, we do not expect that the expiration of these patents in 2019, individually or in the aggregate, will have a material effect on our future operations or financial position.

UCART19

In addition to the patent portfolio relating to our platform and technologies, described above, our patent portfolio relating specifically to UCART19 includes pending patent applications from the patent family WO2014184143 (CD19 Specific Chimeric Antigen Receptor and Uses Thereof). We believe these pending patent applications, which, if issued, would expire in 2034, include claims to cover the composition of matter of UCART19, methods of manufacture of UCART19, and methods to use UCART19 in treatment.

UCART123

In addition to the patent portfolio relating to our platform and technologies, described above, our patent portfolio relating specifically to UCART123 includes pending patent applications from the patent family WO2015140268 (CD123 Specific Chimeric Antigen Receptors for Cancer Immunotherapy). We believe these pending patent applications, which, if issued, would expire in 2034, include claims to cover the composition of matter of UCART123, methods of manufacture of UCART123, and methods to use UCART123 in treatment.

In each case, some of the issued patents and pending patent applications, if issued, may be eligible for patent term extension and patent term adjustment, thereby extending their terms, as described above.

UCARTCS1

Our patent portfolio relating specifically to UCARTCS1 includes pending patent applications from the patent family WO2014179759 (CS1-SPECIFIC CHIMERIC ANTIGEN RECEPTOR ENGINEERED IMMUNE EFFECTOR CELLS1) licensed exclusively from the Ohio State University, which, if issued, would expire in 2034. This patent family is directed to composition of matters including a CAR anti-CS1 per se. Our patent portfolio also includes patent applications filed by Cellectis from the family WO2015166056 (CS1 SPECIFIC MULTI CHAIN CHIMERIC ANTIGEN RECEPTOR) and WO2015121454 (T-CELLS FOR IMMUNOTHERAPY ENGINEERED FOR TARGETING ANTIGEN PRESENT BOTH ON T-CELLS AND PATHOLOGICAL CELLS), which, if issued, would expire on 2035. Both families relate to the use of CAR anti CS1 in allogeneic T-cells, methods of manufacture of UCARTCS1, and methods to use UCARTCS1 in cell therapy treatment.

Material Exclusive Licenses Granted to Cellectis

Licenses from Institut Pasteur

In 2000, we entered into series of license agreements with L'Institut Pasteur, or Pasteur, pursuant to which we in-licensed a substantial portion of Pasteur's gene-editing patent portfolio. The details of these license agreements which are still effective are provided below.

In June 2000, we entered into an agreement with Pasteur, later amended in 2003 (collectively, the "Second June 2000 Agreement"), acting on its own behalf and on the Boston Children Hospital's behalf, pursuant to which it granted to us an exclusive, worldwide, royalty-bearing, sublicenseable license under certain patents and know-how owned by Pasteur and the Boston Children's Hospital relating to certain chimeric endonucleases for chromosomal gene editing by homologous recombination in cells to use, manufacture, and sell products and to practice processes covered by such patents. The license granted under the Second June 2000 Agreement is non-exclusive, however, with respect to the licensed processes applied to human gene therapy. In the event that Pasteur has the possibility to grant exploitation rights for applications to human gene therapy, it must immediately inform us, and we may amend our agreement with Pasteur to obtain such exploitation rights.

The exclusivity of each of the licenses granted under the Second June 2000 Agreement is further contingent upon our continued diligence in designing, developing, and obtaining the required regulatory authorizations necessary to sell the respective licensed products and processes.

In October 2000, we entered into an agreement with Pasteur, later amended in 2003, 2004, 2005, and 2007 (collectively, the "October Agreement"), pursuant to which we obtained an exclusive, worldwide, royalty-bearing, sublicenseable license under certain patents and know-how owned by Pasteur relating to a method of homologous recombination to make, use, and sell products and to implement processes covered by such patents. The exclusivity of the license granted under the October Agreement is subject to a license granted to a third party under the licensed patents in the domain of genes that encode for Erythropoietin.

We may only grant sub-licenses under our Pasteur agreements with Pasteur's prior approval, which is deemed to have been given if Pasteur does not object to a proposed sub-license within a specified period of time from notice of the proposed sublicense and which may only be withheld for serious cause.

Pursuant to the terms of each of the Second June 2000 Agreement and the October Agreement, we made cash payments to Pasteur in an aggregate amount of 600,000 French Francs with respect to the entry into the agreement and the reimbursement of license fees. Pursuant to the terms of the October Agreement, we made cash payments to Pasteur in the aggregate amount of 500,000 French Francs with respect to the entry into the agreement and the reimbursement of license fees and 250,000 Euros in connection with the execution of amendments. Under the Second June 2000 Agreement, we are also required to pay Pasteur an ongoing royalty fee equal to a low- to mid-single digit percentage of our net income with respect to licensed products under the respective agreement. With respect to sublicenses granted under the Second June 2000 Agreement, we are also required to pay Pasteur a percentage of all payments received under such sublicenses, subject in certain cases to minimum payment amounts based on net revenues of the applicable sublicensee. Under the October Agreement, we are also required to pay Pasteur an ongoing royalty fee equal to a low-single digit percentage of our net income with respect to licensed products under the October Agreement. With respect to sublicenses granted under the October Agreement, we are required to pay Pasteur a tiered percentage of all compensation received by us during the applicable year under the sublicense agreement, subject in certain cases to minimum payment amounts based on net revenues of the applicable sublicensee.

The terms of each of our agreements with Pasteur will expire upon the expiration of the last-to-expire of the respective patents licensed to us pursuant to the applicable agreement. We expect the last to expire patent under the Second June 2000 Agreement to expire on February 3, 2020 and the last to expire patent under the October Agreement to expire on March 4, 2020. Pasteur and we may each terminate any of our agreements with Pasteur in the event of the other party's breach of an obligation under the applicable agreement, which remains uncured for 90 days following receipt of notice of such breach from the terminating party. Pasteur may immediately terminate such agreements if we challenge or contest the validity of any of the licensed patents under the respective agreement before a court or patents office. In addition, Pasteur and we may terminate any of the agreements, upon 60 days' prior notice, in connection with certain insolvency-related judicial proceedings instituted against the other party. Further, we have the right to terminate any of these agreements for any reason immediately upon notice to Pasteur.

License from Regents of the University of Minnesota

In January 2011, we entered into an exclusive license agreement with Regents of the University of Minnesota, or UMN. Pursuant to this agreement, as amended in 2012, 2014, and 2015 we and our affiliates were granted an exclusive, worldwide, royalty-bearing, sublicenseable license, under certain patents and patent applications owned by UMN, to make, use, sell, import, and otherwise dispose of products covered by the licensed patents, for all fields of use. These licensed patents relate to TALEN molecules and their use in gene editing. Pursuant to the agreement, we are required to achieve certain specified research- and sales-related milestones.

Pursuant to the terms of the agreement, we paid UMN an upfront license fee in the amount of $250,000 upon the effective date of the license agreement, and a second upfront payment in the amount of $1,000,000 following execution of the third amendment. In the non-agricultural field we are also required to pay to UMN low single digit percentage royalties on net sales of licensed products, as well as a percentage of all revenues received by us under sublicenses. Pursuant to the agreement, UMN is entitled to a minimum annual royalty of $30,000 per year. In the agricultural field, no royalties are due on net sales of licensed products, but an annual fee of $150,000 per year is due to UMN and commercial milestones are due upon the occurrence of certain commercial sale milestones. We are also required to pay UMN milestone payments up to a total of $290,000 in the aggregate upon the occurrence of specified events and to pay certain patent-related expenses incurred under the agreement for prosecuting and maintaining the licensed patents. If we undergo a change of control and wish to assign our rights and duties under the agreement, we will be required to pay UMN an additional transfer fee.

The license agreement will expire upon the expiration of the last to expire valid claim of the licensed patents. UMN may terminate the agreement upon advance written notice in the event of our insolvency or bankruptcy, and immediately upon written notice in the event that we challenge the validity or enforceability of any licensed patent in a court or other applicable authority. UMN and we may terminate the agreement by written notice in the event of the other party's breach that has not been cured within a specified number of days after receiving notice of such breach.

License from Ohio State Innovation Foundation

In October 2014, we entered into an exclusive license agreement with Ohio State Innovation Foundation. Pursuant to this agreement, we were granted an exclusive, worldwide, royalty-bearing, sublicenseable license under certain patents and patent applications owned by Ohio State Innovation Foundation to use, make, distribute, sell, lease, loan or import products or process covered by the licensed patents, for any and all activities relating to cancer immunotherapy. The licensed portfolio includes an international patent application relating to CAR directed to cancer marker CS1. Pursuant to the agreement, we must use diligence and commercially reasonable efforts to commercialize licensed products or processes, including achieving certain milestone events by specified deadlines, subject to our ability to extend such deadlines upon payment of certain fees.

Pursuant to the terms of the agreement, we paid Ohio State Innovation Foundation an upfront license fee in the amount of $100,000. We are required to pay an annual license maintenance fee of $20,000 from 2015 onward until our first sale of a licensed product. We are also required to pay to Ohio State Innovation Foundation low single-digit percentage royalties on net sales of licensed products and licensed processes by us and are subject to minimum annual royalties due to Ohio State Innovation Foundation of $100,000. We are also required to pay Ohio State Innovation Foundation a percentage of royalties paid to us by sublicensees. We are also required to pay Ohio State Innovation Foundation milestone payments up to a total of $1,950,000 in the aggregate upon the occurrence of certain development-related events prior to deadlines specified in the agreement.

Unless earlier terminated, the license agreement will expire upon the expiration of the last to expire valid claim of the licensed patents, which we expect will be on May 2, 2034. We may terminate the agreement at our option by giving 90 days' written notice. Ohio State Innovation Foundation may immediately terminate the agreement, any part of the licensed patent rights or the agreement's exclusivity if we fail to make required payments under the agreement and such breach continues for sixty days after delivery of written notice from Ohio State Innovation Foundation or if we breach any other provision of the agreement and fail to cure such breach within 60 days after delivery of written notice from Ohio State Innovation Foundation. Ohio State Innovation Foundation may also terminate the agreement if we or our affiliate initiates any proceeding or action challenging the validity, enforceability or scope of any of the patent rights or assists a third party in such a proceeding or action. The agreement automatically terminates if we file for bankruptcy or become bankrupt or insolvent, our board of directors elects to liquidate our assets or dissolve our business, we cease business operations, we make an assignment for the benefit of creditors or if we are otherwise placed in the hands of a receiver, assignee or trustee, whether by our voluntary act or otherwise.

Our Intellectual Property Strategy

We believe our current layered patent estate, together with our efforts to develop and patent next generation technologies, provides us with substantial intellectual property protection. However, the area of patent and other intellectual property rights in biotechnology is an evolving one with many risks and uncertainties.

Our strategy is also to develop and obtain additional intellectual property covering innovative manufacturing processes and methods for genetically engineering T-cells expressing new constructs and for genetically engineering plants expressing new traits. To support this effort, we have established expertise and development capabilities focused in the areas of pre-clinical research and development, manufacturing and manufacturing process scale-up, quality control, quality assurance, regulatory affairs and clinical trial design and implementation. Thus, we expect to file additional patent applications to expand this layer of our intellectual property estate.

The term of individual patents depends upon the legal term of the patents in the countries in which they are obtained. In most countries in which we file, the patent term is 20 years from the date of filing of the first non-provisional application to which priority is claimed. In the United States, a patent's term may be lengthened by patent term adjustment, which compensates a patentee for administrative delays by the U.S. Patent and Trademark Office in granting a patent, or may be shortened if a patent is terminally disclaimed over an earlier-filed patent. The term of a patent that covers an FDA-approved drug may also be eligible for a patent term restoration of up to five years under the Hatch-Waxman Act, which is designed to compensate for the patent term lost during the FDA regulatory review process. The length of the patent term restoration is calculated based on the length of time the drug is under regulatory review. A patent term restoration under the Hatch-Waxman Act cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval and only one patent applicable to an approved drug may be restored. Moreover, a patent can only be restored once, and thus, if a single patent is applicable to multiple products, it can only be extended based on one product. Similar provisions are available in Europe and certain other foreign jurisdictions to extend the

term of a patent that covers an approved drug. When possible, depending upon the length of clinical trials and other factors involved in the filing of a BLA, we expect to apply for patent term extensions for patents covering our product candidates and their methods of use.

Our commercial success may depend in part on our ability to obtain and maintain patent and other proprietary protection for commercially important technology, inventions and know-how related to our business; defend and enforce our patents; preserve the confidentiality of our trade secrets; and operate without infringing the valid enforceable patents and proprietary rights of third parties. Our ability to stop third parties from making, using, selling, offering to sell or importing our products may depend on the extent to which we have rights under valid and enforceable patents or trade secrets that cover these activities. With respect to both licensed and company-owned intellectual property, we cannot be sure that patents will be granted with respect to any of our pending patent applications or with respect to any patent applications filed by us in the future, nor can we be sure that any of our existing patents or any patents that may be granted to us in the future will be commercially useful in protecting our commercial products and methods of manufacturing the same.

We may rely, in some circumstances, on trade secrets to protect our technology. However, trade secrets can be difficult to protect. We seek to protect our proprietary technology and processes, in part, by entering into confidentiality agreements with our employees, consultants, scientific advisors and contractors. We also seek to preserve the integrity and confidentiality of our data and trade secrets by maintaining physical security of our premises and physical and electronic security of our information technology systems. While we have confidence in these individuals, organizations and systems, agreements or security measures may be breached, and we may not have adequate remedies for any breach. In addition, our trade secrets may otherwise become known or be independently discovered by competitors. To the extent that our consultants, contractors or collaborators use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

Competition

The biotechnology and pharmaceutical industries put significant resources toward developing novel and proprietary therapies for the treatment of cancer, which often incorporate novel technologies and incorporate valuable intellectual property. We compete with companies in the immunotherapy space, as well as companies developing novel targeted therapies for cancer. In addition, our products will compete with existing standards of care for the diseases that our product candidates target. We anticipate that we will face intense and increasing competition from many different sources, including new and established biotechnology and pharmaceutical companies, academic research institutions, governmental agencies and public and private research institutions.

The immuno-oncology cell therapy competitive landscape is increasing, with the main approaches including CAR-T cells (autologous and allogeneic) and autologous T-cell receptors (TCRs).

The most advanced autologous CAR-T cell programs are:

- two products approved in United States (see below for more details): Kymriah®, commercialized by Novartis (targeting CD19 in B-cell Acute Lymphoblastic Lymphoma and large B-cell lymphoma) and Yescarta® commercialized by Kite (targeting CD19 in B-cell Non Hodgkin Lymphoma);
- 3 product candidates in pivotal clinical trials in the United States: Juno's product candidate JCAR017 (targeting CD19 in B-cell Non Hodgkin Lymphoma), bluebird's product candidate bb2121 (targeting BCMA in Multiple Myeloma; in partnership with Celgene), Legend Bio's LCAR-B38M (target BCMA in Multiple Myeloma; in partnership with Janssen).

Our competitors include:

- Gene-editing space: CRISPR Therapeutics, Inc., Editas Medicine, Inc., Intellia Therapeutics, Inc., Precision BioSciences, Inc. and Sangamo BioSciences, Inc.
- Autologous and Allogeneic CAR T-cell space: Juno Therapeutics, Inc. (in collaboration with Editas Medicine Inc.), acquired by Celgene Corporation and acquired since by Bristol-Myers Squibb; Bluebird bio, Inc. (in collaboration with Celgene Corporation); Ziopharm Oncology Inc. (in collaboration with Intrexon Corporation); Kite Pharma Inc. (in collaboration with Amgen Inc. and with Sangamo Therapeutics Inc.), acquired by Gilead Sciences Inc.; Novartis AG (in collaboration with Intellia Inc.); Johnson & Johnson (in collaboration with Transposagen Biopharmaceuticals Inc.); Precision Biosiences (in collaboration with Shire Plc, asset acquired since by Servier), Regeneron Pharmaceuticals Inc. (in collaboration with Adicet Bio Inc); Fate Therapeutics Inc.; CRISPR Therapeutics Inc. (in collaboration with Bayer AG and Vertex Inc.).

- Cell-therapy space: Adaptimmune Ltd, Iovance Biotherapeutics, Unum Therapeutics, Inc., NantKwest, Inc., Celyad S.A., Atara Biotherapeutics, Inc., and Immunocore Ltd.
- Agricultural biotechnology space:
    - Companies developing plants with enhanced properties: Arcadia Biosciences, Inc., Cibus Global, Ltd., Evogene Ltd., Danzinger Innovation Ltd., Keygene N.V. Precision PlantSciences, Inc., Pairwise, Inari, Bension Hill.
    - Large Agricultural Biotechnology, Seed and Chemical Companies: BASF SE, Bayer AG, Corteva, ChemChina, and Takii & Company, LTD.
    - Specialty Food Ingredient Companies: International Flavors & Fragrances Inc., Givaudan, Keery Group plc, CSM N.V., FMC Corporation, CP Kelco, Novzymes, Ingredion Incorporated and Royal DSM N.V.

In August 2017, Novartis AG has obtained approval from the FDA to commercialize the first CAR-T cell therapy, Kymriah®, for children and young adults with B-cell ALL that is refractory or has relapsed at least twice, and has recently been granted US FDA priority review for adults with refractory/relapsed DLBCL, priced at $475,000. In May 2018, the FDA approved a label extension for Kymriah® for the treatment of adult patients with relapsed or refractory large B-cell lymphoma after two or more lines of systemic therapy, priced at $373,000. In October 2017, Kite Pharma, Inc. (acquired by Gilead Sciences, Inc., acquired since by Bristol-Myers Squibb) has obtained approval from the FDA to commercialize Yescarta®, the first CAR-T cell therapy for the treatment of adult patients with relapsed or refractory large B-cell lymphoma after two or more lines of systemic therapy, priced at $373,000. Due to the promising therapeutic effect of T-cell therapies in clinical exploratory trials, we anticipate substantial direct competition from other existing and new competitors developing these therapies. In particular, we expect to compete with therapies with tumor infiltrating lymphocytes, or TILs, that are naturally occurring tumor-reactive T-cells harvested, propagated *ex vivo* and re-infused into patients. We also expect to compete with therapies using genetically engineered T-cells, rendered reactive against tumor-associated antigens prior to their administration to patients. However, we believe that most of our competitors are currently focused on autologous therapies, and we believe that we are the most advanced company developing the allogeneic CAR-T cell approach. In addition, we differentiate ourselves by using our gene-editing capabilities to add specific features to our T-cell products, such as cancer drug resistance or resistance to checkpoint inhibition.

We also face competition from non-cell based treatments offered by companies such as Amgen Inc., AstraZeneca plc, Bristol-Myers Squibb Company, Incyte Corporation, Merck & Co., Inc., and F. Hoffman-La Roche AG. Immunotherapy is further being pursued by several biotech companies as well as by large-cap pharmaceuticals. Many of our current or potential competitors, either alone or with their collaboration partners, have significantly greater financial resources and expertise in research and development, manufacturing, pre-clinical testing, conducting clinical trials, and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical, biotechnology and gene therapy industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market or make our development more complicated. The key competitive factors affecting the success of all of our programs are likely to be their efficacy, safety, and convenience.

Government Regulation and Product Approval

Government Regulation of Biological Products

We are subject to extensive regulation. Our product candidates are regulated as biologics, gene therapies. Governmental authorities, including the FDA and comparable regulatory authorities in other countries, regulate the design, development, production / manufacturing, testing, safety, efficacy, labeling, storage, record-keeping, advertising, promotion and marketing of pharmaceutical products, including biologics. Non-compliance with applicable requirements can result in fines and other judicially imposed sanctions, including product seizures, import restrictions, injunctive actions and criminal prosecutions of both companies and individuals. In addition, administrative remedies can involve requests to recall violative products; the refusal of the government to enter into supply contracts; or the refusal to approve pending product approval applications until manufacturing or other alleged deficiencies are brought into compliance. The FDA and similar authorities around the world also have the authority to cause the withdrawal of approval of a marketed product, to impose labeling restrictions or to require that we redo some non-clinical and/or clinical studies.

The FDA categorizes human cell- or tissue-based products as either minimally manipulated or more than minimally manipulated, and has determined that more than minimally manipulated products require clinical trials to demonstrate product safety and efficacy and the submission of a BLA for marketing authorization.

Our product candidates must be approved by the FDA before they may be legally marketed in the United States and by the appropriate foreign regulatory agencies before they may be legally marketed in foreign countries. Generally, our activities in foreign countries will be subject to regulation that is similar in nature and scope as that imposed in the United States, although there can be important differences. Additionally, some significant aspects of regulation in Europe are addressed in a centralized way, but country-specific regulation remains essential in many respects. The process for obtaining regulatory marketing approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources.

Ethical, social and legal concerns about gene therapy, gene modifications, genetic testing and genetic research could result in additional regulations restricting or prohibiting the processes we may use. Federal and state agencies, congressional committees and foreign governments have expressed interest in further regulating biotechnology. More restrictive regulations or claims that our products are unsafe or pose a hazard could prevent us from commercializing any products in one or more jurisdictions. New government requirements may be established that could delay or prevent regulatory approval of our product candidates under development. It is impossible to predict whether legislative changes will be enacted, regulations, policies or guidance changed, or interpretations by agencies or courts changed, or what the impact of such changes, if any, may be.

Set forth below is a description of the process of obtaining U.S. government approval for biological product development. Similar processes apply in other jurisdictions.

U.S. Biological Product Development

In the United States, the FDA regulates biologics under the Federal Food, Drug, and Cosmetic Act, or FDCA, and the Public Health Service Act, or PHSA, and their implementing regulations. Biologics are also subject to other federal, state and local statutes and regulations. The process required by the FDA before biologic product candidates may be marketed in the United States and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant to administrative or judicial sanctions. These sanctions could include, among other actions, the FDA's refusal to approve pending applications, withdrawal of an approval, a clinical hold, untitled or warning letters, product recall requests or withdrawals from the market, labeling restrictions, non-clinical and/or clinical studies to be performed again, product seizures, total or partial suspension of production or distribution injunctions, import restrictions, fines, refusals of government contracts, restitution, disgorgement, or civil or criminal penalties for both companies and individuals. Any agency or judicial enforcement action could have a material adverse effect on us.

Our biological product candidates must be approved by the FDA through the Biologics License Application, or BLA, process before they may be legally marketed in the United States. The process required by the FDA before a biologic may be marketed in the United States generally involves the following:

- completion of extensive nonclinical, sometimes referred to as pre-clinical laboratory tests, pre-clinical animal studies and formulation studies in accordance with applicable regulations, including the FDA's GLP regulations;
- production and testing of clinical products according to the current Good Manufacturing Practices (cGMP) and possible FDA product specific requirements
- submission to the FDA of an IND, which must become effective before clinical trials may begin and must be updated at least annually;
- performance of adequate and well-controlled clinical trials in accordance with applicable IND and other clinical trial-related regulations, sometimes referred to as Good Clinical Practices, or GCPs, to establish the safety and efficacy of the proposed product candidate for each proposed indication;
- submission to the FDA of a BLA;
- satisfactory completion of an FDA pre-approval inspection of the manufacturing facility or facilities where the active pharmaceutical ingredient, or API, and finished product are manufactured to assess compliance with the IND/BLA and FDA's cGMP requirements to assure that the facilities, methods and controls are adequate to preserve the product's identity, strength, quality, purity and potency;
- FDA review and approval of the BLA prior to any commercial marketing or sale of the product in the United States.

The data required to support a BLA is generated in three distinct development stages: manufacturing, pre-clinical and clinical. The manufacturing development stage generally involves laboratory evaluations of drug chemistry and biology properties, formulation and stability, the pre-clinical stage generally involves studies to evaluate pharmacology and toxicity in animals, which support subsequent clinical testing. The conduct of the manufacturing and pre-clinical studies must comply with federal regulations, including GMPs and GLPs for the main Toxicology Studies.

The sponsor must submit the results of the pre-clinical studies, together with manufacturing information, analytical data, any available clinical data or literature and a proposed clinical protocol, to the FDA as part of an IND before any clinical testing may proceed. An IND is a request for authorization from the FDA to administer an investigational drug product to humans. The IND must become effective before clinical trials may begin. The IND is automatically approved 30 days after receipt by the FDA, unless during that time the FDA raises concerns or questions regarding the proposed clinical trials. In such a case, the FDA may place the IND on clinical hold and the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. The FDA may also impose clinical holds on a product candidate at any time before or during clinical trials due to safety concerns or non-compliance. Accordingly, we cannot be sure that submission of an IND will result in the FDA allowing clinical trials to begin, or that, once begun, issues will not arise that could cause the trial to be suspended or terminated.

Before the IND becomes active, the Clinical Protocol will also need to be approved by the relevant Institutional Review Boards (IRBs) and Institutional Biosafety Committees (IBCs), which are the cornerstone of institutional oversight of recombinant DNA clinical research.

Clinical trials involve the administration of the investigational product to human subjects under the supervision of qualified investigators, generally physicians not employed by or under the trial sponsor's control, in accordance with GCPs, which include the requirement that all research subjects provide their informed consent for their participation in any clinical trial. Clinical trials are conducted under protocols detailing, among other things, the objectives of the clinical trial, dosing procedures, subject selection and exclusion criteria, and the parameters to be used to monitor subject safety and assess efficacy. Each protocol, and any subsequent amendments to the protocol, must be submitted to the FDA as part of the IND. Further, each clinical trial must be reviewed and approved by an independent institutional review board, or IRB, at or servicing each institution at which the clinical trial will be conducted. An IRB is charged with protecting the welfare and rights of trial participants and considers such items as whether the risks to individuals participating in the clinical trials are minimized and are reasonable in relation to anticipated benefits. The IRB also approves the informed consent form that must be provided to each clinical trial subject or his or her legal representative and must monitor the clinical trial until completed.

All gene therapy experiments and clinical trials are also subject to review and oversight by an institutional biosafety committee, or IBC, a local institutional committee that reviews and oversees basic and clinical research conducted at that institution. The IBC assesses the safety of the research and identifies any potential risk to public health or the environment.

There are also requirements governing the reporting of ongoing clinical trials and completed clinical trial results to public registries. Sponsors of clinical trials of FDA-regulated products, including biologics, are required to register and disclose certain clinical trial information, which is publicly available at www.clinicaltrials.gov. Information related to the product, patient population, phase of investigation, study sites and investigators, and other aspects of the clinical trial is then made public as part of the registration. Sponsors are also obligated to discuss the results of their clinical trials after completion. Disclosure of the results of these trials can be delayed until the new product or new indication being studied has been approved.

Human clinical trials are typically conducted in three sequential phases. However, these phases may overlap or be combined:

- *Phase I.* The biological product candidate is initially introduced into healthy human subjects and tested for safety. In the case of some products for severe or life-threatening diseases, especially when the product may be too inherently toxic to ethically administer to healthy volunteers, if pre-clinical testing warrants, the initial human testing may be conducted in patients with the condition of interest.
- *Phase II.* The biological product candidate is evaluated in a limited patient population with the condition of interest to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance, optimal dosage and dosing schedule.
- *Phase III.* Clinical trials are undertaken to further evaluate dosage, clinical efficacy, potency and safety in an expanded patient population with the condition of interest at geographically dispersed clinical trial sites. These clinical trials are intended to establish the overall risk to benefit ratio of the product and provide an adequate basis for approval, including appropriate product labeling.

Post-approval clinical trials, sometimes referred to as "Phase 4" clinical trials, may be conducted after initial marketing approval. These clinical trials are used to gain additional experience from the treatment of patients in the intended therapeutic

indication, particularly for long-term safety follow-up. The FDA recommends that sponsors observe subjects for potential gene therapy-related delayed adverse events for a 15-year period, including a minimum of five years of annual examinations followed by ten years of annual queries, either in person or by questionnaire, of study subjects.

During all phases of clinical development, regulatory agencies require extensive monitoring and auditing of all clinical activities, clinical data, and clinical trial investigators. Annual progress reports detailing the results of the clinical trials must be submitted to the FDA. Written IND safety reports must be promptly submitted to the FDA, IRB, and the investigators for serious and unexpected adverse events, any findings from other studies, tests in laboratory animals or *in vitro* testing that suggest a significant risk for human patients, or any clinically important increase in the rate of a serious suspected adverse reaction over that listed in the protocol or investigator brochure. The sponsor must submit an IND safety report within 15 calendar days after the sponsor determines that the information qualifies for reporting. The sponsor also must notify the FDA of any unexpected fatal or life-threatening suspected adverse reaction within seven calendar days after the sponsor's initial receipt of the information.

Phase I, Phase II and Phase III clinical trials may not be completed successfully within any specified period, if at all. The FDA or the sponsor or its data safety monitoring board may suspend or terminate a clinical trial at any time on various grounds, including a finding that the research patients are being exposed to an unacceptable health risk, including risks inferred from other unrelated immunotherapy trials. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the biological product has been associated with unexpected serious harm to patients.

Human immunotherapy products and gene therapy products are a new category of therapeutics. Because this is a relatively new and expanding area of novel therapeutic interventions, there can be no assurance as to the length of the trial period, the number of patients the FDA will require to be enrolled in the trials in order to establish the safety, efficacy, purity and potency of immunotherapy products, or that the data generated in these trials will be acceptable to the FDA to support marketing approval.

Concurrently with clinical trials, companies usually complete additional animal studies and must also develop additional information about the biological and physical characteristics of the biological product as well as finalize a process for production and testing the product in commercial quantities in accordance with cGMP requirements. To help reduce the risk of the introduction of adventitious agents with use of biological products, the PHSA emphasizes the importance of manufacturing control for products whose attributes cannot be precisely defined. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things, the sponsor must develop and validate methods for testing the identity, strength, quality, potency and purity of the final biological product. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the biological product candidate does not undergo unacceptable deterioration over its shelf life.

U.S. Review and Approval Processes for Biological Product Candidates

After the completion of clinical trials, non-clinical and manufacturing activities of a biological product candidate, FDA approval of a BLA must be obtained before commercial marketing of the biological product. The BLA must include results of product development, laboratory and animal studies, human trials, information on the manufacture and composition of the product, proposed labeling and other relevant information. The approval processes require substantial time and effort and there can be no assurance that the FDA will accept the BLA for filing and, even if filed, that any approval will be granted on a timely basis, if at all.

Under the Prescription Drug User Fee Act, or PDUFA, as amended, each BLA must be accompanied by a significant user fee. The FDA adjusts the PDUFA user fees on an annual basis. PDUFA also imposes an annual product fee for biological products and an annual establishment fee on facilities used to manufacture prescription biological products. Fee waivers or reductions are available in certain circumstances, including a waiver of the application fee for the first application filed by a small business. Additionally, no user fees are assessed on BLAs for products designated as orphan drugs, unless the product also includes a non-orphan indication.

Within 60 days following submission of the application, the FDA reviews a BLA submitted to determine if it is substantially complete before the agency accepts it for filing. The FDA may refuse to file any BLA that it deems incomplete or not properly reviewable at the time of submission and may request additional information. In this event, the BLA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing. Once the submission is accepted for filing, the FDA begins an in-depth substantive review of the BLA. The FDA reviews the BLA to determine, among other things, whether the proposed product is safe and potent, or effective, for its intended use, and has an acceptable purity profile, and whether the product is being manufactured in accordance with cGMP regulations to assure and preserve the product's identity, safety, strength, quality, potency and purity. The FDA may refer applications for novel biological products or biological products that present difficult questions of safety or efficacy to an advisory committee, typically a panel that includes clinicians and other experts, for review, evaluation and a recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers

such recommendations carefully when making decisions. During the biological product approval process, the FDA also will determine whether a Risk Evaluation and Mitigation Strategy, or REMS, is necessary to assure the safe use of the biological product candidate. A REMS may be imposed to ensure safe use of the drug, and could include medication guides, physician communication plans, or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. If the FDA concludes a REMS is needed, the sponsor of the BLA must submit a proposed REMS. The FDA will not approve a BLA without a REMS, if required.

Before approving a BLA, the FDA will inspect the facilities at which the product candidate and the associated vector are manufactured. The FDA will not approve the product candidate unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. For cell based immunotherapy products, the FDA also will not approve the product if the manufacturer is not in compliance with the current good tissue practice, or GTP requirements, to the extent applicable. These requirements are set out in FDA regulations and guidance documents and govern the methods used in, and the facilities and controls used for, the manufacture of human cells, tissues, and cellular and tissue based products, or HCT/Ps, which are human cells or tissue intended for use in implantation, transplantation, infusion, or transfer into a human recipient. The primary intent of the GTP requirements is to ensure that cell and tissue based products are manufactured in a manner designed to prevent the introduction, transmission and spread of communicable disease. FDA regulations also require tissue establishments to register and list their HCT/Ps with the FDA and, when applicable, to evaluate donors through screening and testing. Additionally, before approving a BLA, the FDA may inspect one or more clinical sites to assure that the clinical trials were conducted in compliance with IND trial requirements and GCP requirements. To assure cGMP, GTP and GCP compliance, an applicant must incur significant expenditure of time, money and effort in the areas of training, record keeping, production, and quality control.

Notwithstanding the submission of relevant data and information, the FDA may ultimately decide that the BLA does not satisfy its regulatory criteria for approval and deny approval. Data obtained from clinical trials are not always conclusive and the FDA may interpret data differently than we interpret the same data. If the agency decides not to approve the BLA in its submitted form, the FDA will issue a complete response letter that describes all of the specific deficiencies in the BLA identified by the FDA. The deficiencies identified may be minor, for example, requiring labeling changes, or major, for example, requiring additional clinical trials. Additionally, the complete response letter may include recommended actions that the applicant might take to place the application in a condition for approval. If a complete response letter is issued, the applicant may either resubmit the BLA, addressing all of the deficiencies identified in the letter, or withdraw the application.

If a product candidate receives regulatory approval, the approval may be significantly limited to specific diseases and dosages or the indications for use may otherwise be limited, which could restrict the commercial value of the product.

Further, the FDA may require that certain contraindications, warnings or precautions be included in the product labeling. The FDA may impose restrictions and conditions on product distribution, prescribing, or dispensing in the form of a REMS, or otherwise limit the scope of any approval. In addition, the FDA may require post marketing clinical trials, sometimes referred to as Phase 4 clinical trials, or additional studies like safety studies, designed to further assess a biological product's safety and effectiveness, and testing and surveillance programs to monitor the safety of approved products that have been commercialized.

In addition, unless a waiver is granted, under the Pediatric Research Equity Act, or PREA, a BLA or supplement to a BLA must contain data to assess the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The Food and Drug Administration Safety and Innovation Act, or FDASIA, requires that a sponsor who is planning to submit a marketing application for a drug or biological product that includes a new active ingredient, new indication, new dosage form, new dosing regimen or new route of administration submit an initial Pediatric Study Plan, or PSP, within sixty days after an end-of-Phase II meeting or as may be agreed between the sponsor and FDA. The initial PSP must include, among other things, an outline of the pediatric study or studies that the sponsor plans to conduct, including to the extent practicable study objectives and design, age groups, relevant endpoints and statistical approach, or a justification for not including such detailed information, and any request for a deferral of pediatric assessments or a full or partial waiver of the requirement to provide data from pediatric studies along with supporting information. FDA and the sponsor must reach agreement on the PSP. A sponsor can submit amendments to an agreed-upon initial PSP at any time if changes to the pediatric plan need to be considered based on data collected from nonclinical studies, early phase clinical trials, and/or other clinical development programs. The FDA may grant deferrals for submission of data or full or partial waivers. Unless otherwise required by regulation, PREA does not apply to any product for an indication for which orphan designation has been granted. However, if only one indication for a product has orphan designation, a pediatric assessment may still be required for any applications to market that same product for the non-orphan indications.

One of the performance goals agreed to by the FDA under the PDUFA is to review 90% of standard BLAs in 10 months and 90% of priority BLAs in six months, whereupon a review decision is to be made. The FDA does not always meet its PDUFA goal

dates for standard and priority BLAs and its review goals are subject to change from time to time. The review process and the PDUFA goal date may be extended by three months if the FDA requests or the BLA sponsor otherwise provides additional information or clarification regarding information already provided in the submission within the last three months before the PDUFA goal date.

Orphan Drug Designation

Under the Orphan Drug Act, a sponsor may request and the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, which is generally a disease or condition that affects fewer than 200,000 individuals in the United States, or if it affects more than 200,000 individuals in the United States and there is no reasonable expectation that the cost of developing and making available in the United States drug or biologic for this type of disease or condition will be recovered from sales in the United States for that product. Orphan drug designation must be requested before submitting a BLA. After the FDA grants orphan drug designation, the generic and trade name, if any, of the drug or biologic and the rare disease or condition for which orphan-drug designation was granted are disclosed publicly by the FDA. The orphan drug designation does not convey any advantage during, or shorten the duration of, the regulatory review or approval process.

If a product that has orphan drug designation subsequently receives the first FDA approval for the disease or condition for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications, including a full BLA, to market the same drug or biologic for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity. Orphan drug exclusivity does not prevent FDA from approving a different drug or biologic for the same disease or condition, or the same drug or biologic for a different disease or condition. Among the other benefits of orphan drug designation are tax credits for certain research and a waiver of the BLA application user fee.

A designated orphan drug may not receive orphan drug exclusivity if it is approved for a use that is broader than the indication for which it received orphan designation. Orphan exclusivity also could block the approval of one of our products for seven years if a competitor obtains approval of the same drug or biologic as defined by the FDA or if our product candidate is determined to be contained within the competitor's product for the same indication or disease. In addition, exclusive marketing rights in the United States may be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition.

The criteria for designating an "orphan medicinal product" in the EU are similar to those in the United States. Such designation can be requested in the case of products that are intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition and either (a) such condition affects no more than five in 10,000 persons in the EU when the application is made, or (b) the product, without the benefits derived from orphan status, would unlikely generate sufficient return in the EU to justify the necessary investment. Moreover, in order to obtain orphan designation it is necessary to demonstrate that there exists no satisfactory method of diagnosis, prevention or treatment of such condition authorized for marketing in the EU, or if such a method exists, the product will be of significant benefit to those affected by the condition.

In the EU, orphan medicinal products are eligible for financial incentives as well as specific regulatory assistance and scientific advice. Products receiving orphan status in the EU can receive ten years of market exclusivity, during which time no similar medicinal product for the same indication may be placed on the market. An orphan product can also obtain an additional two years of market exclusivity in the EU for pediatric studies. No extension to any supplementary protection certificate can be granted on the basis of pediatric studies for orphan indications.

However, the 10-year market exclusivity may be reduced to six years in certain circumstances, including for example if, at the end of the fifth year, it is established that the product is sufficiently profitable not to justify maintenance of market exclusivity.

There can be no assurance that we will receive orphan drug designation for any product candidates in the United States, in the EU or in any other market. There can be no assurance that an Orphan exclusivity from a competitor could not block the approval of one of our products for a certain period of time, in the United States, in the EU or in any other market.

Expedited Development and Review Programs

The FDA has a Fast Track program that is intended to expedite or facilitate the process for reviewing new drugs and biological products that meet certain criteria. Specifically, new products are eligible for Fast Track designation if they are intended to treat a serious or life-threatening disease or condition and demonstrate the potential to address unmet medical needs for the disease or condition. Fast Track designation applies to the combination of the product and the specific indication for which it is being studied. The sponsor of a new drug or biologic may request the FDA to designate the drug or biologic as a Fast Track

product candidate at any time during the clinical development of the product candidate. Unique to a Fast Track product, the FDA may consider the review of sections of the BLA on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the BLA, the FDA agrees to accept sections of the BLA and determines that the schedule is acceptable, and the sponsor pays any required user fees upon submission of the first section of the BLA.

Any product candidate, submitted to the FDA for approval, including a product with a Fast Track designation, may also be eligible for other types of FDA programs intended to expedite development and review, such as priority review and accelerated approval. A product candidate is eligible for priority review if it has the potential to provide safe and effective therapy where no satisfactory alternative therapy exists or a significant improvement in the treatment, diagnosis or prevention of a disease compared to marketed products. The FDA will attempt to direct additional resources to the evaluation of an application for a new product candidate designated for priority review in an effort to facilitate the review, and aims to review such applications within six months as opposed to ten months for standard review. Additionally, a product candidate may be eligible for accelerated approval. Product candidates studied for their safety and effectiveness in treating serious or life-threatening illnesses and that provide meaningful therapeutic benefit over existing treatments may receive accelerated approval which means that they may be approved on the basis of adequate and well-controlled clinical trials establishing that the product candidate has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit, or on the basis of an effect on a clinical endpoint other than irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. As a condition of approval, the FDA may require that a sponsor of a drug or biological product candidate receiving accelerated approval perform adequate and well-controlled post-marketing clinical trials. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials, which could adversely impact the timing of the commercial launch of the product. Fast Track designation, priority review and accelerated approval do not change the standards for approval but may expedite the development or approval process.

Breakthrough Therapy / Regenerative Medicine Advanced Therapy Designation

Under the provisions of the Food and Drug Administration Safety and Innovation Act, or FDASIA, enacted in 2012, the FDA established a Breakthrough Therapy Designation which is intended to expedite the development and review of products that treat serious or life-threatening conditions. A breakthrough therapy is defined as a drug that is intended, alone or in combination with one or more other drugs, to treat a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. The designation includes all of the features of Fast Track designation, as well as more intensive FDA interaction and guidance. The Breakthrough Therapy Designation is a distinct status from both accelerated approval and priority review, but these can also be granted to the same product candidate if the relevant criteria are met.

The FDA must take certain actions, such as holding timely meetings and providing advice, intended to expedite the development and review of an application for approval of a breakthrough therapy. All requests for breakthrough therapy designation will be reviewed within 60 days of receipt, and FDA will either grant or deny the request.

In addition, as described in Section 3033 of the 21st Century Cures Act, signed into law in December 2016, a drug is eligible for Regenerative Medicine Advanced Therapy (RMAT) Designation if:

- the drug is a regenerative medicine therapy, which is defined as a cell therapy, therapeutic tissue engineering product, human cell and tissue product, or any combination product using such therapies or products, except for those regulated solely under Section 361 of the Public Health Service Act and part 1271 of Title 21, Code of Federal Regulations;
- the drug is intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition; and
- preliminary clinical evidence indicates that the drug has the potential to address unmet medical needs for such disease or condition.

The RMAT designation carries all of benefits of Breakthrough and Fast Track therapy designations, including: intensive interaction with FDA on an efficient drug development program beginning as early as phase 1, organizational commitment involving senior FDA personnel, and rolling BLA review. RMAT designees are also eligible for *accelerated approval and priority review if relevant criteria are met.*

Where applicable, we plan to request Fast Track and/or Breakthrough Therapy Designation for our product candidates. Even if we receive one of these designations for our product candidates, the FDA may later decide that our product candidates no longer meet the conditions for qualification. In addition, these designations may not provide us with a material commercial advantage.

Post-Approval Requirements

Maintaining compliance with applicable federal, state, and local statutes and regulations requires the expenditure of substantial time and financial resources. Rigorous and extensive FDA regulation of biological products continues after approval, particularly with respect to cGMP and pharmacovigilance requirements as well as post marketing commitments. Any products for which we receive FDA approval will be subject to continuing regulation by the FDA, including, among other things, record-keeping requirements, reporting of adverse experiences with the product, providing the FDA with updated safety and efficacy information, product sampling and distribution requirements, and complying with FDA promotion and advertising requirements, which include, among others, standards for direct-to-consumer advertising, restrictions on promoting products for uses or in patient populations that are not described in the product's approved uses (known as off-label use), limitations on industry-sponsored scientific and educational activities, and requirements for promotional activities involving the internet. Although physicians may prescribe legally available products for off-label use that they deem to be appropriate in their professional medical judgment, manufacturers may not market or promote such off-label uses.

Other post-approval requirements applicable to biological products include reporting of cGMP deviations that may affect the identity, potency, purity and overall safety of a distributed product, record-keeping requirements, reporting of adverse effects, reporting updated safety and efficacy information, and complying with electronic record and signature requirements. After a BLA is approved, the product may also be subject to official lot release. In this case, as part of the manufacturing process, the manufacturer is required to perform certain tests on each lot of the product before it is released for distribution. If the product is subject to official release by the FDA, the manufacturer submits samples of each lot of product to the FDA together with a release protocol showing a summary of the history of manufacture of the lot and the results of all of the manufacturer's tests performed on the lot. The FDA also may perform certain confirmatory tests on lots of some products before releasing the lots for distribution by the manufacturer. In addition, the FDA conducts laboratory research related to the regulatory standards on the safety, purity, potency, and effectiveness of biological products.

In addition, we and any third-party manufacturers of our products will be required to comply with applicable requirements in the cGMP regulations, including quality control and quality assurance and maintenance of records and documentation. We rely, and expect to continue to rely, on third parties for the production of clinical and commercial quantities of our products in accordance with cGMP regulations. cGMP regulations require among other things, quality control and quality assurance as well as the corresponding maintenance of records and documentation and the obligation to investigate and correct any deviations from cGMP. Manufacturers and other entities involved in the manufacture and distribution of approved products are required to register their establishments with the FDA and certain state agencies, and are subject to periodic announced and unannounced inspections by the FDA and certain state agencies for compliance with cGMP and other The FDA also may require post-marketing studies, known as Phase 4 studies, and surveillance to monitor the effects of an approved product. laws. Accordingly, manufacturers must continue to expend time, money, and effort in the area of production and quality control to maintain cGMP compliance. Discovery of problems with a product after approval may result in restrictions on a product, manufacturer, or holder of an approved BLA, including, among other things, recall or withdrawal of the product from the market. In addition, changes to the manufacturing process are strictly regulated, and depending on the significance of the change, may require prior FDA approval before being implemented. Other types of changes to the approved product, such as adding new indications and claims, are also subject to further FDA review and approval.

Discovery of previously unknown problems with a product or the failure to comply with applicable FDA requirements can have negative consequences, including adverse publicity, judicial or administrative enforcement, warning letters from the FDA, mandated corrective advertising or communications with doctors, and civil or criminal penalties, among others. Newly discovered or developed safety or effectiveness data may require changes to a product's approved labeling, including the addition of new warnings and contraindications, and also may require the implementation of other risk management measures. Also, new government requirements, including those resulting from new legislation, may be established, or the FDA's policies may change, which could delay or prevent regulatory approval of our products under development.

U.S. Patent Term Restoration and Marketing Exclusivity

The Biologics Price Competition and Innovation Act, or BPCIA, amended the PHSA to authorize the FDA to approve similar versions of innovative biologics, commonly known as biosimilars. A competitor seeking approval of a biosimilar must file an application to establish its molecule as highly similar to an approved innovator biologic, among other requirements. The BPCIA, however, bars the FDA from approving biosimilar applications for 12 years after an innovator biological product receives initial marketing approval. This 12-year period of data exclusivity may be extended by six months, for a total of 12.5 years, if the FDA requests that the innovator company conduct pediatric clinical investigations of the product.

The first biological product submitted under the abbreviated approval pathway that is determined to be interchangeable with the reference product has exclusivity against other biologics submitting applications under the abbreviated approval pathway for the lesser of (1) one year after the first commercial marketing, (2) 18 months after approval if there is no legal challenge, (3) 18 months after the resolution in the applicant's favor of a lawsuit challenging the biologic's patents if an application has been submitted, or (4) 42 months after the application has been approved if a lawsuit is ongoing within the 42-month period.

Depending upon the timing, duration and specifics of the FDA approval of the use of our product candidates, some of our U.S. patents, if granted, may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, commonly referred to as the Hatch-Waxman Act. The Hatch-Waxman Act permits a patent restoration term of up to five years, as compensation for patent term lost during product development and the FDA regulatory review process. However, patent term restoration cannot extend the remaining term of a patent beyond a total of 14 years from the product's approval date. The patent term restoration period is generally one-half the time between the effective date of an IND and the submission date of a BLA plus the time between the submission date of a BLA and the approval of that application. Only one patent applicable to an approved product is eligible for the extension and the application for the extension must be submitted prior to the expiration of the patent. The U.S. Patent and Trademark Office, in consultation with the FDA, reviews and approves the application for any patent term extension or restoration. In the future as applicable, we may apply for restoration of patent term for one of our currently owned or licensed patents seeking restored patent life beyond its current expiration date, depending on the expected length of the clinical trials and other factors involved in the filing of the relevant BLA.

Pediatric exclusivity is another type of regulatory market exclusivity in the United States. Pediatric exclusivity, if granted, adds six months to existing exclusivity periods and patent terms. This six-month exclusivity, which attaches to and runs from the end of other exclusivity protection or patent term, may be granted based on the voluntary completion of a pediatric trial in accordance with an FDA-issued "Written Request" for such a trial.

Other U.S. Healthcare Laws and Compliance Requirements

In the United States, our activities are subject to regulation by various federal, state and local authorities in addition to the FDA, including but not limited to, the Centers for Medicare and Medicaid Services, or CMS, other divisions of the U.S. Department of Health and Human Services (e.g., the Office of Inspector General), the U.S. Department of Justice, or DOJ, and individual U.S. Attorney offices within the DOJ, and state and local governments. For example, sales, marketing and scientific/educational grant programs must comply with the anti-fraud and abuse provisions of the Social Security Act, the false claims laws, the privacy provisions of the Health Insurance Portability and Accountability Act, or HIPAA, and similar state laws, each as amended.

The federal Anti-Kickback Statute prohibits, among other things, any person or entity, from knowingly and willfully offering, paying, soliciting or receiving any remuneration, directly or indirectly, overtly or covertly, in cash or in kind, to induce or in return for purchasing, leasing, ordering or arranging for the purchase, lease or order of any item or service reimbursable under Medicare, Medicaid or other federal healthcare programs. The term remuneration has been interpreted broadly to include anything of value. The Anti-Kickback Statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on one hand and prescribers, purchasers, and formulary managers on the other. There are a number of statutory exceptions and regulatory safe harbors protecting some common activities from prosecution. The exceptions and safe harbors are drawn narrowly and practices that involve remuneration that may be alleged to be intended to induce prescribing, purchasing or recommending may be subject to scrutiny if they do not qualify for an exception or safe harbor. Failure to meet all of the requirements of a particular applicable statutory exception or regulatory safe harbor does not make the conduct per se illegal under the Anti-Kickback Statute. Instead, the legality of the arrangement will be evaluated on a case-by-case basis based on a cumulative review of all of its facts and circumstances. Our practices may not in all cases meet all of the criteria for protection under a statutory exception or regulatory safe harbor.

Additionally, the intent standard under the Anti-Kickback Statute was amended by the ACA to a stricter standard such that a person or entity no longer needs to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. In addition, the ACA codified case law that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal False Claims Act (discussed below).

The civil monetary penalties statute imposes penalties against any person or entity who, among other things, is determined to have presented or caused to be presented a claim to a federal health program that the person knows or should know is for an item or service that was not provided as claimed or is false or fraudulent.

The federal False Claims Act prohibits, among other things, any person or entity from knowingly presenting, or causing to be presented, a false claim for payment to, or approval by, the federal government or knowingly making, using, or causing to be made or used a false record or statement material to a false or fraudulent claim to the federal government. As a result of a modification made by the Fraud Enforcement and Recovery Act of 2009, a claim includes "any request or demand" for money or property presented to the U.S. government. Recently, several pharmaceutical and other healthcare companies have been prosecuted under these laws for allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product. Other companies have been prosecuted for causing false claims to be submitted because of the companies' marketing of the product for unapproved, and thus non-reimbursable, uses.

HIPAA created new federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud or to obtain, by means of false or fraudulent pretenses, representations or promises, any money or property owned by, or under the control or custody of, any healthcare benefit program, including private third-party payors and knowingly and willfully falsifying, concealing or covering up by trick, scheme or device, a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items or services.

Also, many states have similar fraud and abuse statutes or regulations that apply to items and services reimbursed under Medicaid and other state programs, or, in several states, apply regardless of the payor.

We may also be subject to data privacy and security regulations by both the federal government and the states in which we conduct our business. HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, or HITECH, and its implementing regulations, imposes requirements relating to the privacy, security and transmission of individually identifiable health information. Among other things, HITECH makes HIPAA's privacy and security standards directly applicable to business associates independent contractors or agents of covered entities that receive or obtain protected health information in connection with providing a service on behalf of a covered entity. HITECH also created four new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorneys' fees and costs associated with pursuing federal civil actions.

In addition, state laws govern the privacy and security of health information in specified circumstances, many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts.

Additionally, the federal Physician Payments Sunshine Act, enacted as part of the ACA, and its implementing regulations, require certain manufacturers of drugs, devices, biological and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report information related to certain payments or other transfers of value made or distributed to physicians and teaching hospitals, or to entities or individuals at the request of, or designated on behalf of, the physicians and teaching hospitals and to report annually certain ownership and investment interests held by physicians and their immediate family members.

In order to distribute products commercially, we will need to comply with state laws that require the registration of manufacturers and wholesale distributors of drug and biological products in a state, including, in certain states, manufacturers and distributors who ship products into the state even if such manufacturers or distributors have no place of business within the state. Some states also impose requirements on manufacturers and distributors to establish the pedigree of product in the chain of distribution, including some states that require manufacturers and others to adopt new technology capable of tracking and tracing product as it moves through the distribution chain. Several states have enacted legislation requiring pharmaceutical and biotechnology companies to establish marketing compliance programs, file periodic reports with the state, make periodic public disclosures on sales, marketing, pricing, clinical trials and other activities, and/or register their sales representatives, as well as to prohibit pharmacies and other healthcare entities from providing certain physician prescribing data to pharmaceutical and biotechnology companies for use in sales and marketing, and to prohibit certain other sales and marketing practices. All of our activities are also potentially subject to federal and state consumer protection and unfair competition laws.

If our operations are found to be in violation of any of the federal and state healthcare laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including without limitation, civil, criminal and/or administrative penalties, damages, fines, disgorgement, exclusion from participation in government programs, such as Medicare and Medicaid, injunctions, private "*qui tam*" actions brought by individual whistleblowers in the name of the government, or refusal to allow us to enter into government contracts, contractual damages, reputational harm, administrative burdens, diminished profits and future earnings, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

Coverage, Pricing and Reimbursement

Sales of our products will depend, in part, on the extent to which our products, if approved, will be covered and reimbursed by third-party payors, such as government health programs, commercial insurance and managed healthcare organizations. These third-party payors are increasingly reducing reimbursements for medical products and services. The process for determining whether a third-party payor will provide coverage for a drug product typically is separate from the process for setting the price of a drug product or for establishing the reimbursement rate that a payor will pay for the drug product once coverage is approved. Third-party payors may limit coverage to specific drug products on an approved list, also known as a formulary, which might not include all of the approved drugs for a particular indication.

In order to secure coverage and reimbursement for any product candidate that might be approved for sale, we may need to conduct expensive pharmacoeconomic studies in order to demonstrate the medical necessity and cost-effectiveness of the product candidate, in addition to the costs required to obtain FDA or other comparable regulatory approvals. Whether or not we conduct such studies, our product candidates may not be considered medically necessary or cost-effective. A third-party payor's decision to provide coverage for a drug product does not imply that an adequate reimbursement rate will be approved. Further, one payor's determination to provide coverage for a product does not assure that other payors will also provide coverage for the product. Even if coverage is obtained from third party payors, reimbursement may not be sufficient to enable us to maintain price levels high enough to realize an appropriate return on our investment in product development.

The containment of healthcare costs has become a priority of federal, state and foreign governments, and the prices of drugs have been a focus in this effort. The U.S. government, state legislatures and foreign governments have shown significant interest in implementing cost-containment programs, including price controls, restrictions on reimbursement and requirements for substitution of generic products. Similar policies and laws have been adopted by many EU Member States. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit our net revenue and results. Decreases in third-party reimbursement for our product candidate or a decision by a third-party payor to not cover our product candidate could reduce physician usage of the product candidate and have a material adverse effect on our sales, results of operations and financial condition.

In addition, in some foreign countries, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing vary widely from country to country. For example, the EU provides options for its Member States to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. A Member State may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. For example, in France, effective access to the market assumes that our future products will be supported by the hospital (through an agreement for local communities) or reimbursed by social security. The price of medications is negotiated with the Economic Committee for Health Products, or CEPS. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our product candidates. Historically, products launched in the EU do not follow price structures of the United States and generally tend to be significantly lower.

Healthcare Reform and Subsequent Legislation

In March 2010, President Obama enacted the ACA, which has the potential to substantially change healthcare financing and delivery by both governmental and private insurers, and significantly impact the pharmaceutical and biotechnology industry. The ACA will impact existing government healthcare programs and will result in the development of new programs.

Among the ACA's provisions of importance to the pharmaceutical and biotechnology industries, in addition to those otherwise described above, are the following:

- an annual, nondeductible fee on any entity that manufactures or imports certain specified branded prescription drugs and biologic agents apportioned among these entities according to their market share in some government healthcare programs;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program to 23.1% and 13% of the average manufacturer price for most branded and generic drugs, respectively and a cap on the total rebate amount for innovator drugs at 100% of the Average Manufacturer Price, or AMP;
- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturers' outpatient drugs to be covered under Medicare Part D;
- extension of manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for individuals with income at or below 133% of the federal poverty level, thereby potentially increasing manufacturers' Medicaid rebate liability;
- expansion of the entities eligible for discounts under the Public Health Service pharmaceutical pricing program; and

- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

We anticipate that, absent to further legislative changes, the ACA will result in additional downward pressure on coverage and the price that we receive for any approved product in the United States, and could seriously harm our business. Any reduction in reimbursement from Medicare and other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability, or commercialize our product candidates, if approved. In addition, it is possible that there will be further legislation or regulation that could change parts of the ACA that affect public and private healthcare coverage. Those changes could harm our business, financial condition, and results of operations.

Other legislative changes have been proposed and adopted in the United States since the ACA was enacted. On August 2, 2011, the Budget Control Act of 2011 among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions to Medicare payments to providers of 2% per fiscal year, which started in April 2013. On January 2, 2013, President Obama signed into law the American Taxpayer Relief Act of 2012, or the ATRA, which, among other things, also reduced Medicare payments to several providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. Further, in January 2017, President Trump signed an Executive Order directing federal agencies with authorities and responsibilities under the ACA to waive, defer, grant exemptions from, or delay the implementation of any provisions of the ACA that would impose a fiscal or regulatory burden on states, individuals, healthcare providers, health insurers, or manufacturer of pharmaceutical products. Congress may also consider subsequent legislation to replace elements of the ACA that are repealed. As a result, the full impact of the ACA, any law repealing and/or replacing elements of it, and the political uncertainty surrounding any repeal or replacement legislation remains unclear.

Additional Regulation

In addition to the foregoing, state and federal laws regarding environmental protection and hazardous substances, including the Occupational Safety and Health Act, the Resource Conservancy and Recovery Act and the Toxic Substances Control Act, affect our business. These and other laws govern our use, handling and disposal of various biological, chemical and radioactive substances used in, and wastes generated by, our operations. If our operations result in contamination of the environment or expose individuals to hazardous substances, we could be liable for damages and governmental fines. We believe that we are in material compliance with applicable environmental laws and that continued compliance therewith will not have a material adverse effect on our business. We cannot predict, however, how changes in these laws may affect our future operations.

European Union Drug Development

In the EU, our future product candidates may also be subject to extensive regulatory requirements. As in the United States, medicinal products can only be marketed if a marketing authorization from the competent regulatory agencies has been obtained.

Similar to the United States, the various phases of pre-clinical and clinical research in the European Union are subject to significant regulatory controls. Although the EU Clinical Trials Directive 2001/20/EC has sought to harmonize the EU clinical trials regulatory framework, setting out common rules for the control and authorization of clinical trials in the EU, the EU Member States have transposed and applied the provisions of the Directive differently. This has led to significant variations in the Member State regimes. To improve the current system, a new Regulation No. 536/2014 on clinical trials on medicinal product candidates for human use, which will repeal Directive 2001/20/EC, was adopted on April 16, 2014 and published in the European Official Journal on May 27, 2014. The new Regulation aims at harmonizing and streamlining the clinical trials authorization process, simplifying adverse event reporting procedures, improving the supervision of clinical trials, and increasing their transparency. The new Regulation entered into force on June 16, 2014 and was set to apply not earlier than May 28, 2016. Based on announcements of the European Medicines Agency, it is now expected that the mentioned Regulation will not enter into force before 2020. Until then the Clinical Trials Directive 2001/20/EC will continue to apply. In addition, the transitional provisions of the new Regulation offer, under certain conditions, the clinical trial sponsors the possibility to choose between the requirements of the Directive and the Regulation for a limited amount of time.

Under the current regime, before a clinical trial can be initiated it must be approved in each of the EU Member States where the trial is to be conducted by two distinct sets of bodies: the National Competent Authority, or NCA, and one or more Ethics Committees, or ECs. Under the current regime all suspected unexpected serious adverse reactions, or SUSARs, to the investigational product that occur during the clinical trial have to be reported to the NCA and ECs of the Member State where they occurred as well as in the European safety database, EudraVigilance.

In the EU, medicinal products can only be commercialized after obtaining a Marketing Authorization, or MA. The same rules also apply in the EFTA Member States (Norway, Iceland and Liechtenstein). There are two types of marketing authorizations:

The Community MA, which is issued by the European Commission through the Centralized Procedure, based on the opinion of the Committee for Medicinal Products for Human Use, or CHMP, of the European Medicines Agency, or EMA, and which is valid throughout the entire territory of the EU. The Centralized Procedure is mandatory for certain types of products, such as biotechnology medicinal products, orphan medicinal products, and medicinal products containing a new active substance indicated for the treatment of AIDS, cancer, neurodegenerative disorders, diabetes, auto-immune and viral diseases. The Centralized Procedure is also mandatory for so-called Advance Therapy Medicinal Products (or ATMPs). ATMPs comprise gene therapy, somatic cell and tissue engineered products. In this regard, on May 28, 2014, the EMA issued a recommendation that Cellectis' UCART19 be considered a gene therapy product under Regulation (EC) No 1394/2007 on ATMPs. The Centralized Procedure is optional for products containing a new active substance not yet authorized in the EEA, or for products that constitute a significant therapeutic, scientific or technical innovation or which are in the interest of public health in the EU. Under the Centralized Procedure, the CHMP serves as the scientific committee that renders opinions about the safety, efficacy and quality of human products on behalf of the EMA. The CHMP is composed of experts nominated by each Member State's national drug authority, with one of them appointed to act as Rapporteur for the co-ordination of the evaluation with the possible assistance of a further member of the Committee acting as a Co-Rapporteur. The CHMP has 210 days to adopt an opinion as to whether a marketing authorization should be granted. The process usually takes longer as additional information is requested, which triggers clock-stops in the procedural timelines. Based on the CHMP's opinion the European Commission will adopt a decision on the granting of the marketing authorization. In case of ATMPs, the EMA's Committee for Advanced Therapies, a multidisciplinary committee of experts on ATMPs, will prepare a draft opinion which will be submitted to the CHMP before the latter adopts its final opinion.

Under the above-described procedure, before granting the MA, the EMA makes an assessment of the risk-benefit balance of the product on the basis of scientific criteria concerning its quality, safety and efficacy.

In the EU, new products authorized for marketing (i.e., reference products) qualify for eight years of data exclusivity and an additional two years of market exclusivity upon marketing authorization. The data exclusivity period prevents generic applicants from relying on the pre-clinical and clinical trial data contained in the dossier of the reference product when applying for a generic marketing authorization in the EU during a period of eight years from the date on which the reference product was first authorized in the EU. The market exclusivity period prevents a successful generic applicant from commercializing its product in the EU until ten years have elapsed from the initial authorization of the reference product in the EU. The ten-year market exclusivity period can be extended to a maximum of eleven years if, during the first eight years of those ten years, the marketing authorization holder obtains an authorization for one or more new therapeutic indications which, during the scientific evaluation prior to their authorization, are held to bring a significant clinical benefit in comparison with existing therapies.

The EU also provides opportunities for market exclusivity. For example, products receiving orphan designation in the EU can receive ten years of market exclusivity, during which time no similar medicinal product for the same indication may be placed on the market. An orphan product can also obtain an additional two years of market exclusivity in the EU for pediatric studies. No extension to any supplementary protection certificate can be granted on the basis of pediatric studies for orphan indications.

The criteria for designating an "orphan medicinal product" in the EU are similar in principle to those in the United States. Under Article 3 of Regulation (EC) 141/2000, a medicinal product may be designated as orphan if (1) it is intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition; (2) either (a) such condition affects no more than five in 10,000 persons in the EU when the application is made, or (b) the product, without the benefits derived from orphan status, would not generate sufficient return in the EU to justify investment; and (3) there exists no satisfactory method of diagnosis, prevention or treatment of such condition authorized for marketing in the EU, or if such a method exists, the product will be of significant benefit to those affected by the condition, as defined in Regulation (EC) 847/2000. Orphan medicinal products are eligible for financial incentives such as reduction of fees or fee waivers and are, upon grant of a marketing authorization, entitled to ten years of market exclusivity for the approved therapeutic indication. The application for orphan drug designation must be submitted before the application for marketing authorization. The applicant will receive a fee reduction for the marketing authorization application if the orphan drug designation has been granted, but not if the designation is still pending at the time the marketing authorization is submitted. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process.

The 10-year market exclusivity may be reduced to six years if, at the end of the fifth year, it is established that the product no longer meets the criteria for orphan designation, for example, if the product is sufficiently profitable not to justify maintenance

of market exclusivity. Additionally, marketing authorization may be granted to a similar product for the same indication at any time if:

- The second applicant can establish that its product, although similar, is safer, more effective or otherwise clinically superior;
- The applicant consents to a second orphan medicinal product application; or
- The applicant cannot supply enough orphan medicinal product.

Food Oversight Responsibilities Between USDA and FDA, Including Transgenic or Genetically Modified Organisms

In the United States, the FDA and the USDA Food Safety Inspection Service, or FSIS, are primarily responsible for overseeing food regulation and safety, although as many as fifteen federal agencies also play a role in U.S. food regulation, including several other agencies within USDA.

FSIS is responsible for ensuring the safety, wholesomeness, and correct packaging and labeling of the nation's commercial supply of meat, poultry, egg products, and catfish. The agency's main authorizing statutes are the Poultry Products Inspection Act, Federal Meat Inspection Act, Agricultural Marketing Act, and the Egg Products Inspection Act. To carry out its mission, FSIS deploys almost 8,000 inspection program personnel to the more than 6,000 establishments around the country to ensure food manufactures are following the proper procedures to reduce the risks of food borne illnesses such as *Salmonella, Escherichia coli, Listeria monocytogenes*, and *Campylobacter*.

USDA has regulatory jurisdiction over transgenic crops through the Animal and Plant Health Inspection Service, or APHIS. Under the Plant Protection Act, USDA requires anyone who wishes to import, transport interstate, or plant a "regulated article" to apply for a permit or notify APHIS that the introduction will be made. Regulated articles are defined as "any organism which has been altered or produced through genetic engineering [...] which USDA determines is a plant pest or has reason to believe is a plant pest." The petition process can be a multi-year process that varies based on a number of factors, including APHIS' familiarity with similar products, the type and scope of the environmental review conducted, and the number and types of public comments received. APHIS conducts a comprehensive science-based review of the petition to assess, among other things, plant pest risk, environmental considerations pursuant to the National Environmental Policy Act of 1969, or NEPA, and any potential impact on endangered species. If, upon the completion of the review, APHIS grants the petition, the product is no longer deemed a "regulated article" and the petitioner may commercialize the product, subject to any conditions set forth in the decision. If APHIS does not determine the product to be non-regulated, the product may be subject to extensive regulation, including permitting requirements for import, handling, interstate movement, and release into the environment, and inspections.

Calyxt has submitted petition to APHIS for seven of its product candidates to date: High Fiber Wheat, High Oleic Soybean, High Oleic/low Linolenic Soybean, Cold Storable Potato, Reduced Browning Potato, Powdery Mildew Resistant Wheat, and Improved Quality Alfalfa. Calyxt has received confirmation from APHIS for all seven product candidates that APHIS does not consider such product candidate to be a "regulated article" under the Plant Protection Act. There can be no guarantee of the timing or success in obtaining nonregulated status from APHIS for other crops developed by Calyxt or that the governing regulations will not change. Government regulations, regulatory systems, and the policies that influence them vary widely among jurisdictions and change often.

As part of its National Organic Program, USDA also regulates GMOs, or genetically modified ("GM") foods, to the extent that food manufacturers can use the "USDA Organic" label on their products. The use of genetic engineering, or GMOs, is prohibited in USDA organic products. According to USDA, this means, for example, that an organic farmer cannot plant GMO seeds, an organic cow cannot eat GMO alfalfa or corn, and an organic soup producer cannot put any GM ingredients into its soup. To label products with the USDA organic seal, farmers and food processors must show they are not using GMOs and that they are protecting their products from contact with GMOs (along with other prohibited substances) from farm to table.

FDA has jurisdiction to regulate more than 80 percent of the U.S. food supply. It derives its regulatory power from the Federal Food, Drug, and Cosmetic Act ("FDCA"), which has been amended over time by several subsequent laws. FDA's oversight of food safety and security is primarily carried out by its Center for Food Safety and Applied Nutrition ("CFSAN"). To execute its responsibilities, FDA has a team of 900 investigators and 450 analysts in the foods program who conduct inspections and collect and analyze product samples. FDA typically does not perform pre-market inspection for foods. FDA also regulates ingredients, packaging, and labeling of foods, including nutrition and health claims and the nutrition facts panel. Foods are typically not subject to premarket review and approval requirements, with limited exceptions.

For its part, FDA regulates foods made with GMOs under its 1992 "Statement of Policy: Foods Derived from New Plant Varieties." Under this policy, FDA regulates foods derived from GM plant varieties consistent with the framework for non-GM foods. In most cases, foods derived from GM plant varieties are not subject to premarket review and approval. In some cases,

however, such foods will be considered to contain "food additives" that require premarket review and approval. FDA offers a voluntary consultation process to determine whether foods derived from GM plant varieties will be subject to these more stringent regulatory requirements.

FDA does not currently require manufacturers to label foods made with GMOs as such, but permits voluntary labeling pursuant to a guidance document finalized in November 2015. The topic of GMO use and labeling has been of significant public interest; as political forces continue to work, and there can be no guaranty that it will not change in the future. Additionally, three states have passed, and nearly half of U.S. states have considered, mandatory GMO labeling laws to date.

FDA is currently evaluating its approach to the regulation of gene-edited plants. The FDA's thinking on the use of genome editing techniques to produce new plant varieties that are used for human or animal food continues to evolve. To that end, in January 2017 FDA announced a Request for Comments ("RFC") seeking public input to help inform its thinking about human and animal foods derived from new plant varieties produced using genome editing techniques. Among other things, the RFC asks for data and information in response to questions about the safety of foods from gene-edited plants, such as whether categories of gene-edited plants present food safety risks different from other plants produced through traditional plant breeding. If FDA enacts new regulations or policies with respect to gene-edited plants, such policies could result in additional compliance costs and/or delay the commercialization of Calyxt's product candidates.

EU Regulation of GMOs and Genetically Modified Food and Feed Products

In the EU, genetically modified organisms ("GMOs") and genetically modified food and feed products can only be sold in the market once they have been properly authorized. The procedures for evaluation and authorization of GMOs and genetically modified food and feed products are established by Regulation (EC) 1829/2003 on genetically modified food and feed (''Regulation (EC) 1829/2003'') and Directive 2001/18/EC on the release of GMOs into the environment (''Directive 2001/18/EC''). An application for authorization must be submitted under Directive 2001/18/EC if a company seeks to release GMOs for experimental purposes (e.g., field tests) and/or to sell GMOs, as such or in products, in the market (e.g., cultivation, importation or processing). In turn, an application for authorization must be submitted under Regulation (EC) 1829/2003 if a company seeks to sell GMOs in the market for food and feed use and/or food and feed products containing or produced from GMOs. At the national level, EU member states have the ability to restrict or prohibit GMO cultivation in their territories by invoking grounds such as environmental or agricultural policy objectives, town and country-planning, land use, coexistence, socio-economic impacts or public policy.

In addition, Directive 2001/18/EC, Regulation (EC) 1829/2003 and Regulation (EC) 1830/2003 establish specific labeling and traceability requirements for GMOs and products that contain or are produced from GMOs. Finally, Directives 2002/53/EC and 2002/55/EC require genetically modified varieties to be authorized in accordance with Directive 2001/18/EC and/or Regulation (EC) 1829/2003, as applicable, before they can be included in a ''Common Catalogue of Varieties,'' which would permit the seeds of such genetically modified varieties to be marketed in the EU.

A recent ruling of the European Court of Justice (''ECJ'') in July 2018 concluded that organisms obtained by new mutagenesis plant breeding techniques involving the use of genetic engineering are GMOs and therefore fall, in principle, under Directive 2001/18/EC described above. The ECJ found further that varieties obtained by modern forms of mutagenesis are genetically modified varieties covered by Directive 2002/53/EC, and are therefore subject to the obligations of such directive. The ECJ clarified that only mutagenesis techniques which (a) have been used in a number of applications and (b) have a long safety record, can be exempted from these requirements, although EU member states remain free to subject even such exempted organisms to the obligations under Directive 2001/18/EC, or to other obligations.

Other Regulatory Matters

French Pharmaceutical Company Status

To date, we do not have the status of pharmaceutical establishment, and therefore, cannot either manufacture the product candidates we develop or directly consider their marketing. Obtaining the pharmaceutical establishment license, either as distributor, operator, importer or as manufacturer, requires the submission of a request file specific to each of the mentioned qualifications with the *Agence nationale de sécurité du médicament et des produits de santé* (ANSM), which only grants it after review of this file and evaluation, usually after verification that the company has adequate premises, the necessary personnel and an adapted structure with satisfactory procedures for carrying out the proposed pharmaceutical activities.

We currently entrust CMOs with the manufacturing of clinical batches and intend to continue relying on CMOs for the production of the first commercial batches. We may consider internalizing production once our first product candidate is approved by regulatory authorities.

Legal Proceedings

From time to time, we may be involved in various claims and legal proceedings relating to claims arising out of our operations. We are not currently a party to any legal proceedings that, in the opinion of our management, are likely to have a material adverse effect on our business. Regardless of outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

C. Organizational Structure

In 2015, Cellectis S.A. had two French subsidiaries (Cellectis Bioresearch and Ectycell) and three U.S. subsidiaries (Calyxt, Inc., Cellectis, Inc. and Cellectis Bioresearch Inc.). Non-controlling shareholders held a 24.5% interest in Cellectis Bioresearch, Cellectis Bioresearch Inc. and Ectycell until May 18, 2015.

The following internal reorganization was completed in 2015:

- Ectycell was merged into, and absorbed by Cellectis Bioresearch in August 2015 with retroactive effect as at January 1, 2015 for French tax purposes;
- Cellectis Bioresearch was merged into, and absorbed by, Cellectis S.A. in December 2015 with retroactive effect as at January 1, 2015 for French tax purposes;
- Cellectis Bioresearch Inc. was merged into Cellectis Inc. in September 2015.

Following the reorganization and as of December 31, 2016, the two remaining subsidiaries, Cellectis, Inc. and Calyxt, Inc., were wholly-owned by Cellectis.

Until July 25, 2017, Cellectis S.A. fully owned Calyxt, Inc. On July 25, 2017, Calyxt closed its IPO with $64.4 million in gross proceeds to Calyxt from the sale of 8,050,000 shares at $8 per share, including the full exercise of the underwriter's over-allotment option and Cellectis' purchase of $20.0 million of shares in the IPO. On May 22, 2018, Calyxt, Inc completed a follow-on offering of its common stock. Calyxt, Inc. sold an aggregate of 4,057,500 shares of common stock at a price of $15.00 per share, including 457,500 shares of common stock pursuant to the exercise of the underwriters' option to purchase additional shares. In the aggregate, Calyxt, Inc. received net proceeds from the follow-on offering and exercise of the overallotment option of approximately $57.0 million, after deducting underwriting discounts and commissions of $3.2 million and offering expenses totaling approximately $0.7 million. As part of the follow-on offering, Cellectis SA purchased 550,000 shares of common stock for a value of $8.3 million, the proceeds of which are included in the net proceeds of approximately $57.0 million.

As of December 31, 2018, Cellectis S.A. owns 100% of Cellectis, Inc. and approximately 69.5% of Calyxt's outstanding shares of common stock. As of December 31, 2017, Cellectis S.A. owns 100% of Cellectis, Inc. and approximately 79.7% of Calyxt's outstanding shares of common stock.

D. Property, Plant and Equipment

Cellectis S.A. leases a 3,820 square-meter facility in Paris for administrative and research and development activities. The lease commenced on April 1, 2011 and was amended on December 1, 2018 with a 9-year initial term expiring on November 30, 2027.

Cellectis, Inc. leases a 15,532 square-foot facility in New York, New York for administrative and research and development activities, which commenced on March 30, 2015 and was amended on December 1, 2018 with a 60-month initial term expiring on December 31, 2023. In addition, in March 2016, Cellectis Inc. entered into a lease agreement for a 26,928 square-foot facility in Montvale, New Jersey. As of December 31, 2018, Montvale facility is not operational and we have the willingness to discontinue this lease before its termination (September 2026).

In March 2019, we entered into a lease agreement for a 82,000 square foot commercial-scale manufacturing facility, called the IMPACT site, which stands for "Innovative Manufacturing Plant for Allogeneic Cellular Therapies". The IMPACT facility is located in Raleigh, North Carolina. The new manufacturing facility is being designed to provide GMP manufacturing for clinical supply and commercial product upon potential regulatory approval. The facility is planned to be operational by 2021.

Calyxt, Inc. entered into a sale-leaseback transaction on September 6, 2017 with a third party for its corporate headquarters and lab facility in Roseville, Minnesota. Calyxt, Inc. committed to an initial lease term of twenty years, with four options to extend the term of the Lease Agreement for five years each. The transaction also included a construction contract for Calyxt, Inc. 40,000 square-foot corporate headquarters which includes office, research laboratory space and outdoor growing plots. During the construction period, which ended in June 2018, Calyxt, Inc. initially paid annual base rent of $490 thousand until the property was substantially completed in May, at which time, the lease commenced. Under the lease, Calyxt, Inc. now pays an annual base rent of approximately $1.4 million. Calyxt, Inc. is responsible for the other costs and expenses associated with the use of the property. Cellectis entered into a Lease Guaranty with the landlord for the facilities, whereby Cellectis has guaranteed Calyxt, Inc.'s obligations under the Lease Agreement. Cellectis' guarantee of Calyxt's obligations under the sale-leaseback transaction will terminate at the end of the second consecutive calendar year in which Calyxt, Inc.'s tangible net worth exceeds $300 million, as determined in accordance with generally accepted accounting principles. Calyxt, Inc. agreed to indemnify Cellectis for any obligations incurred by Cellectis under the Lease Guaranty. This indemnification agreement takes effect when Cellectis owns 50% or less of Calyxt, Inc.'s outstanding common stock.

In December 2018 Calyxt, Inc. consummated a sale-leaseback transaction with a third party to finance equipment. The lease has a term of four years and Calyxt, Inc. may add up to $1.1 million of future purchases to the financing agreement. Calyxt, Inc. was required to deposit cash into a restricted account in an amount equal to the future rent payments required by the lease.

ITEM 4A. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 5. OPERATING AND FINANCIAL REVIEW AND PROSPECTS

The following Operating and Financial Review and Prospects should be read in conjunction with our audited consolidated financial statements and related notes included elsewhere in this Annual Report. In addition to historical consolidated financial information, this discussion also contains forward-looking statements, based on current expectations and related to future events and our future financial performance, that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of certain factors, including but not limited to those set forth under "Risk Factors" and elsewhere in this Annual Report.

Overview

We are a clinical stage biotechnological company, employing our core proprietary technologies to develop best-in-class products in the field of immuno-oncology. Our product candidates, based on gene-edited T-cells that express chimeric antigen receptors, or CARs, seek to harness the power of the immune system to target and eradicate cancers. We believe that CAR-based immunotherapy is one of the most promising areas of cancer research, representing a new paradigm for cancer treatment. We are designing next-generation immunotherapies that are based on gene-edited CAR T-cells. Our gene-editing technologies allow us to create allogeneic CAR T-cells, meaning they are derived from healthy donors rather than the patients themselves. We believe that the allogeneic production of CAR T-cells will allow us to develop cost-effective, "off-the-shelf" products and are capable of being stored and distributed worldwide. Our gene-editing expertise also enables us to develop product candidates that feature additional safety and efficacy attributes, including control properties designed to prevent them from attacking healthy tissues, to enable them to tolerate standard oncology treatments, and to equip them to resist mechanisms that inhibit immune-system activity. In addition to our focus on immuno-oncology, we are exploring the use of our gene-editing technologies in other therapeutic applications, as well as to develop healthier food products for a growing population.

We currently conduct our operations through two business segments, Therapeutics and Plants. Our Therapeutics segment is mainly focused on the development of products in the field of immuno-oncology. Our Plants segment focuses on applying our gene-editing technologies to develop new generation plant products in the field of agricultural biotechnology through its own efforts or through alliances with other companies in the agricultural market.

Since our inception in early 2000, we have devoted substantially all of our financial resources to research and development efforts. Our current research and development focuses primarily on our CAR T-cell immunotherapy product candidates, including preparing to conduct clinical studies of our product candidates, providing general and administrative support for these operations and protecting our intellectual property. In addition, by leveraging our plant-engineering platform and the transformative potential of gene editing, we aim to create food products with consumer health benefits, adaptations for climate change or nutritional enhancements that address the needs of a growing population. We do not have any products approved for sale and have not generated any revenues from immunotherapy or agricultural biotechnology product sales.

In February 2014, we entered into an alliance with Servier for the development of UCART19 and other product candidates directed at four additional molecular targets. In November 2015, we entered into an amendment to our initial collaboration agreement with Servier, which allowed for an early exercise of Servier's option with respect to UCART19 and other product candidates. Pursuant to this amendment, Servier has exercised its option to acquire the exclusive worldwide rights to further develop and commercialize UCART19. In addition, Pfizer and Servier have entered into an exclusive global license and collaboration agreement under which Pfizer has obtained from Servier exclusive rights to develop and commercialize UCART19 in the United States. We entered into amendments to our collaboration agreements with each of Servier and Pfizer to facilitate this agreement between Servier and Pfizer. In connection with the entry into the amendment to the collaboration agreement, Servier made an upfront payment of $38.5 million, excluding taxes. As of December 31, 2018, Cellectis was eligible to receive up to $932.8 million in potential option exercise fees, development, clinical and sales milestones, in addition to royalties on sales and research and development costs reimbursements.

On March 6, 2019, we and Servier entered into the Servier License Agreement, which supersedes the prior collaboration agreement in order to modify the targets covered by the Servier License Agreement, to establishes the terms of our and Servier's collaboration and to reflect the status of products in development.

Our alliance with Pfizer, which commenced in June 2014, addressed the development of other CAR T-cell immunotherapies in the field of oncology. Pfizer also purchased 10% of our then-outstanding equity in connection with this collaboration for €25.8 million. On April 3, 2018, Pfizer announced that it had assigned the agreement they had signed with Cellectis on June 18, 2014 to a newly formed biotechnology company named Allogene.

On March 7, 2019, we and Allogene agreed to terminate the prior collaboration agreement and entered into a new license agreement to reflect the relationship between us and Allogene.

This strategic alliance with Allogene is potentially worth up to $2.9 billion in payments by Allogene to us, including an $80 million upfront payment and $2.8 billion in potential clinical and commercial milestone payments. In addition, we invoice research and development costs assigned to our projects in common with Allogene.

We believe that our strategic transactions with Allogene and Servier position us to compete in the promising field of immuno-oncology and add additional clinical and financial resources to our programs.

We have also entered into research and development alliances with each of Cornell University and the MD Anderson Cancer Center. Pursuant to these strategic alliances, we collaborate with these two centers to accelerate the development of our lead product candidates UCART123, UCARTCS1 and UCART22 in AML, BPDCN, multiple myeloma, and B-ALL, respectively. Under these agreements, we fund the research activities performed at Cornell University and the MD Anderson Cancer Center. In August 2018, we entered into a new clinical study agreement with Dana Farber Cancer Institute and H. Lee Moffitt Cancer Center in order to expand the performance of the UCART123 clinical study in AML to Dana Farber Cancer Institute and H. Lee Moffitt Cancer Center.

Our cash consumption is driven by our internal operational activities, as well as our outsourced activities, including the preclinical activities and the manufacturing activities of the requisite raw materials for the manufacturing of UCART123, UCART22 and UCARTCS1, the technology transfer to CELLforCURE and MolMed, and the GMP manufacturing of UCART123, UCART22 and UCARTCS1 at CELLforCURE and MolMed. In addition, we incurred significant annual payment and royalty expenses related to our in-licensing agreements with different parties including Institut Pasteur, LifeTechnologies and University of Minnesota. In addition, in 2017 and 2018, we initiated clinical studies at Weill Cornell and the MD Anderson Cancer Center, leading to additional cash burn through payments to the clinical research centers, the Contract Research Organisation involved and the companies involved in the logistics and testing of the clinical sample material.

In addition to our cash generated by operations (including payments under our strategic alliances), we have funded our operations primarily through private and public offerings of our equity securities, grant revenues, payments received under intellectual property licenses, and reimbursements of research tax credits. Our ordinary shares have traded on the Euronext Growth market of Euronext in Paris since February 7, 2007. In March 2015, we completed our U.S. initial public offering of 5,500,000 American Depositary Shares on the Nasdaq Global Market for gross proceeds of $228.2 million. On April 10, 2018, Cellectis closed a follow-on offering of 5,646,000 ADS at a public offering price of $31.00 per ADS resulting in gross proceeds of $175 million. On May 11, 2018, in connection with the exercise by the underwriters of the follow-on offering of their option to purchase additional shares, Cellectis closed the sale of an additional 500,000 ADS at the public offering price of $31.00 per ADS resulting in additional gross proceeds of $15.5 million.

On July 25, 2017, Calyxt completed an initial public offering of its common stock on the Nasdaq, selling an aggregate of 8,050,000 shares of common stock at a price of $8.00 per share (including 1,050,000 shares of common stock pursuant to the exercise by the underwriters of their option to purchase additional shares). Calyxt received net proceeds of approximately $58.0 million, after deducting underwriting discounts and commissions and offering expenses. As part of the Calyxt IPO, Cellectis purchased 2,500,000 shares of common stock for a value of $20.0 million, which is included in the net proceeds that Calyxt received. On May 22, 2018, Calyxt closed a follow-on offering with $60.9 million in gross proceeds, inclusive of $8.25 million from Cellectis' purchase of shares in the follow-on offering

In 2016, 2017 and 2018, we received respectively $27.3 million, $8.1 million and $4.7 million in payments pursuant to the Pfizer/Allogene and Servier collaborations.

Financial Operations Overview

We have incurred net losses in nearly each year since our inception. Substantially all of our net losses resulted from costs incurred in connection with our development programs and from selling, general and administrative expenses associated with our operations. As we continue our intensive research and development programs, we expect to continue to incur significant expenses and may again incur operating losses in future periods. We anticipate that such expenses will increase substantially if and as we:

- progress the clinical trial of our wholly-controlled UCART123 product candidate and initiate additional clinical trials for other wholly-controlled product candidates;
- continue to advance the research and development of our current and future immuno-oncology product candidates;
- continue, through Calyxt, to advance the research and development of our current and future agricultural product candidates;
- initiate additional clinical studies for, or additional pre-clinical development of, our immuno-oncology product candidates;
- conduct and multiply, though Calyxt, additional field trials of our agricultural product candidates;
- further develop and refine the manufacturing process for our immuno-oncology product candidates;
- change or add additional manufacturers or suppliers of biological materials;
- build-up, commission and operate our own manufacturing capacity;
- seek regulatory and marketing approvals for our product candidates, if any, that successfully complete development;
- establish a sales, marketing and distribution infrastructure to commercialize any products for which we may obtain marketing approval;
- seek to identify and validate additional product candidates;
- acquire or in-license other product candidates, technologies, germplasm or other biological material;
- make milestone or other payments under any in-license agreements;
- maintain, protect and expand our intellectual property portfolio;
- secure manufacturing arrangements for commercial production;
- seek to attract and retain new and existing skilled personnel;
- create additional infrastructure to support our operations as a public company; and
- experience any delays or encounter issues with any of the above.

We do not expect to generate material revenues from sales of our product candidates unless and until we successfully complete development of, and obtain marketing approval for, one or more of our product candidates, which we expect will take a number of years and is subject to significant uncertainty. Accordingly, we anticipate that we will need to raise additional capital prior to completing clinical development of any of our product candidates. Until such time that we can generate substantial revenues from sales of our product candidates, if ever, we expect to finance our operating activities through a combination of milestone payments received pursuant to our strategic alliances, equity offerings, debt financings, government or other third-party funding and collaborations, and licensing arrangements. However, we may be unable to raise additional funds or enter into such arrangements when needed on favorable terms, or at all, which would have a negative impact on our financial condition and could force us to delay, limit, reduce or terminate our development programs or commercialization efforts or grant to others rights to develop or market product candidates that we would otherwise prefer to develop and market ourselves. Failure to receive additional funding could cause us to cease operations, in part or in full.

Our consolidated financial statements for 2016, 2017 and 2018 have been prepared in accordance with International Financial Reporting Standards, or IFRS, as issued by the International Accounting Standards Board, or IASB.

Financial Operations Overview

Revenues and Other Income

Revenues

We currently derive all our revenues from payments pursuant to our collaboration agreements with Allogene and Servier, patent licensing arrangements and royalties on licensed technologies. Our collaboration agreements provide for non-refundable

upfront payments that we received upon execution of the relevant agreement, milestone payments that we are entitled to receive when the triggering event has occurred and the performance obligation is achieved, research and development cost reimbursements that are recognized over the period of these services and royalty payments. The triggering event for a milestone payment may be the receipt of favorable scientific results, regulatory approval, or marketing of products developed pursuant to the agreement. Royalties are based on sales of licensed products or technologies. Royalty revenues, if earned, will be recognized at the later of when (1) the subsequent sale or usage occurs; and (2) the performance obligation to which the sales-based or usage-based royalties relates has been satisfied.

Our ability to generate product revenues and become profitable depends upon our and our collaborators' ability to successfully develop and commercialize products. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and be forced to reduce our operations.

Other Income

Government Grants

Due to the innovative nature of our product candidate development programs, we have benefited from a certain number of sources of assistance from the French government or local public authorities, intended to finance our research and development efforts or the recruitment of specific personnel. Government grants that offset expenses that we incur for those research programs are recognized as other income in the period in which the expenses that are reimbursable pursuant to the grant have been incurred.

Research Tax Credit

The main research tax credit that we benefit from is the *Crédit d'Impôt Recherche*, or CIR, which is granted to companies by the French tax authorities in order to encourage them to conduct technical and scientific research. Companies demonstrating that they have research expenditures that meet the required CIR criteria receive a tax credit that may be used for the payment of their income tax due on the fiscal year in which the expenditures were incurred and during the next three fiscal years. If taxes due are not sufficient to cover the full amount of the tax credit at the end of the three-year period, the difference is repaid to us in cash by the French tax authorities. We also satisfy certain criteria that qualify us as a small/middle size company and permit us to request immediate payment of the CIR. The expenditures taken into account for the calculation of the CIR only involve research expenses.

The main characteristics of the CIR are the following:

- the CIR results in a cash inflow to us from the tax authorities;
- a company's corporate income tax liability does not limit the amount of the CIR; and
- the CIR is not included in the determination of the corporate income tax.

We have concluded that the CIR meets the definition of a government grant as defined in IAS 20, *Accounting for Government Grants and Disclosure of Government Assistance*, and that the classification as other income within operating loss in our statement of operations is appropriate.

In December 2018, the French Tax Authority has initiated an audit related to the 2014, 2015, 2016 and 2017 French research tax credits. We do not believe that a provision should be recorded at this stage of this audit. As a result of such audit, the reimbursement of the French research tax credit related to 2017 is currently pending.

Operating Expenses

Our operating expenses consist primarily of royalty expenses, research and development expenses and selling, general and administrative expenses.

Royalty Expenses

We have entered into several license agreements to obtain access to technology that we use in our product development efforts. Royalty expenses consist of in-licensing costs, which reflect royalties we pay to use rights granted to us. Depending on the contractual provisions, royalty expenses are either proportional to revenues generated by using the patents or fixed annual royalties or conditioned by milestones.

Research and Development Expenses

We engage in substantial research and development efforts to develop innovative CAR T-cell immunotherapy and agricultural product candidates.

Research and development expenses consist primarily of:

- personnel costs, including salaries, related benefits and share-based compensation, for our employees engaged in scientific research and development functions;
- cost of third-party contractors such as contract research organizations, or CROs, and academic institutions involved in pre-clinical or clinical trials that we may conduct, or third-party contractors involved in field trials;
- purchases and manufacturing of biological materials, real-estate leasing costs as well as conferences and travel costs; and
- certain other expenses, such as expenses for use of laboratories and facilities for our research and development activities.

We classify personnel and other costs related to information technology, human resources, business development, legal, intellectual property and general management in research and development expense based on the time that employees spent contributing to research and development activities versus general and administrative activities.

Our research and development efforts are focused on our existing product candidates, (i) UCART123 product candidate, which entered into clinical trials in the United States in February 2017, (ii) UCART22 product candidate, for which FDA granted in May 2018 Cellectis an IND approval to conduct a Phase I clinical study with UCART22 in ALL in the United States, (iii) UCARTCS1 product candidate, for which FDA granted in January 2019 Cellectis an IND approval to conduct a Phase I clinical study with UCARTCS1 in MM in the United States , and (iv) other undisclosed target which are in the development phases. We use our employee and infrastructure resources across multiple research and development programs directed toward developing our cell-based platform and for identifying and developing product candidates. We manage certain activities such as pre-clinical and clinical research and manufacture of product candidates through our partner institutions or other third-party vendors. Due to the number of ongoing projects and our ability to use resources across several projects, we do not record or maintain information regarding the costs incurred for our research and development programs on a program-specific basis.

Our research and development efforts are central to our business and account for a significant portion of our operating expenses. We expect that our research and development costs will increase in the foreseeable future as we continue to implement our new clinical trials, manufacture pre-commercial clinical trial and pre-clinical study materials, expand our research and development and process development efforts, seek regulatory approvals for our product candidates that successfully complete clinical trials, as well as access and develop additional technologies, and hire additional personnel to support our research and development efforts. This is because product candidates in later stages of clinical development generally have higher development costs than those in earlier stages of development, primarily due to the increased size and duration of later-stage clinical trials. Likewise, in our plant products business, we expect our research and development expenses will continue to increase over the next several years as we develop new agricultural product candidates and advance them through field trials toward commercial proof of concept.

We cannot determine with certainty the duration and completion costs of our future clinical trials of our product candidates or if, when, or to what extent we will generate revenues from the commercialization and sale of any of our product candidates, or those of our collaborators, that might obtain regulatory approval. We also cannot determine with certainty the duration and completion costs of our future field trials of our agricultural product candidates or if, when, or to what extent we will generate revenues from the commercialization and sale of any of our agricultural product candidates that might obtain regulatory approval. We may never succeed in achieving regulatory approval for any product candidates. The duration, costs and timing of clinical trials and development of our product candidates will depend on a variety of factors, including:

- the scope, rate of progress and expense of our ongoing as well as any additional pre-clinical studies, clinical trials and other research and development activities;
- clinical trial and early-stage results;
- the terms and timing of regulatory approvals;
- the expense of filing, prosecuting, defending and enforcing patent claims and other intellectual property rights;
- the ability to market, commercialize and achieve market acceptance for any product candidate that we may develop in the future; and

- the scope, rate of progress and expense of our ongoing as well as any additional studies for our agricultural product candidates, field trials and other research and development activities.

Selling, General and Administrative Expenses

Selling, general and administrative expenses consist primarily of employee-related expenses for executive, business development, intellectual property, finance, legal and human resource functions. Administrative expenses also include facility-related costs and service fees, other professional services and recruiting fees.

We classify personnel and other costs related to information technology, human resources, business development, legal, intellectual property and general management in research and development expense based on the time that employees spent contributing to research and development activities versus general and administrative activities.

We anticipate that our selling, general and administrative expenses will increase in the future as we increase our headcount to support the expected growth in our research and development activities and the potential commercialization of our product candidates. We also expect to continue to incur significant expenses associated with Cellectis S.A. and Calyxt, Inc. being a public company in the United States, including costs related to audit, legal, regulatory and tax-related services associated with maintaining compliance with U.S. exchange listing and SEC requirements, director and officer insurance premiums, and investor relations costs.

Financial Gain (Loss)

Financial gain (loss) mainly consists of interest income related to our savings accounts and bank deposits, exchange gains and losses associated with transactions in foreign currencies and fair value of our financial assets and derivative instruments. Significant transactions in foreign currencies are translated into euros at the exchange rates effective at the transaction dates, while the average rate for the previous month is used for non-significant transactions. Monetary assets and liabilities denominated in foreign currencies at the reporting date are translated into euros using the exchange rate effective at that date. The resulting exchange gains or losses are recorded in the consolidated statements of income as financial income or expense. Financial gain (loss) reflects the net impact of financial income and financial expenses.

Critical Accounting Policies and Estimates

Some of the accounting methods and policies used in preparing our financial statements under IFRS are based on complex and subjective assessments by our management or on estimates based on past experience and assumptions deemed realistic and reasonable based on the circumstances concerned. The actual value of our assets, liabilities and shareholders' equity and of our losses could differ from the value derived from these estimates if conditions changed and these changes had an impact on the assumptions adopted. We believe that the most significant management judgments and assumptions in the preparation of our financial statements are named below. For further details, see Notes to our consolidated financial statements.

- Revenue Recognition: Collaboration Agreements and Licenses, Sales of Products and Services (Note 3.1)
- Research Tax Credit (Note 3.1)
- Share-Based Compensation (Note 15)

A. Operating Results

The following table sets forth our selected consolidated statement of income data:

	For the year ended December 31,		
	2016	2017	2018
		($ in thousands)	
Revenues and other income			
Revenues	44,808	25,188	12,731
Other income	11,637	8,528	8,701
Total revenues and other income	**56,444**	**33,715**	**21,432**
Operating expenses			
Royalty expenses	(1,777)	(2,620)	(2,739)
Research and development expenses	(78,458)	(79,227)	(76,567)
Selling, general and administrative expenses	(43,413)	(44,750)	(47,248)
Other operating income (expenses)	(99)	232	31
Operating income (loss)	**(67,302)**	**(92,650)**	**(105,091)**
Financial income	7,147	7,262	20,572
Financial expenses	(7,101)	(18,294)	(3,813)
Financial gain (loss)	**46**	**(11,032)**	**16,758**
Income tax	—	—	—
Net income (loss)	**(67,255)**	**(103,683)**	**(88,333)**
Attributable to shareholders of Cellectis	(67,255)	(99,368)	(78,693)
Attributable to non-controlling interests	—	(4,315)	(9,640)

Years Ended December 31, 2016, 2017 and 2018

Revenues.

	For the year ended December 31,			% change	
	2016	2017	2018	2017 vs 2016	2018 vs 2017
Collaboration agreements	41,891	22,821	10,497	-45.5%	-54.0%
Other revenues	2,917	2,367	2,234	-18.8%	-5.6%
Revenues	**44,808**	**25,188**	**12,731**	**-43.8%**	**-49.5%**

The decrease in revenues of $12.5 million, or 49.5%, between the years ended December 31, 2017 and 2018 primarily reflects a decrease of $12.3 million in revenues under our collaboration agreements of which $7.8 million relates to a decrease in recognition of upfront fees already paid to Cellectis and $4.6 million relates to lower research and development cost reimbursements, and a decrease of $0.1 million of licensing revenues.

The decrease in revenues of $19.6 million, or 43.8%, between the years ended December 31, 2016 and 2017 primarily reflects a decrease of $19.1 million in revenues under our collaboration agreements, of which $8.5 million represents one-time milestone revenue received during the second quarter of 2016 with the first patient dosed in the Phase 1 clinical trial for UCART19, $6.0 million represents decreased recognition of upfront fees already paid to Cellectis, $1.9 million represents decreased research and development cost reimbursements (research services and costs incurred by Cellectis on Servier projects) and $2.8 million represents decreased revenue due to 2016 one-time payments by Servier for the supply of raw materials and batches of UCART19 products, partially offset by the increase of $0.1 million in other services and products provided to Pfizer, and a $0.5 million decrease in licensing revenues.

Other income.

	For the year ended December 31,			% change	
	2016	2017	2018	2017 vs 2016	2018 vs 2017
Research tax credit	10,038	8,327	8,561	-17.0%	2.8%
Other income	1,599	201	140	-87.4%	-30.4%
Other income	**11,637**	**8,528**	**8,701**	**-26.7%**	**2.0%**

The increase in other income of $0.2 million, or 2.0%, between the years ended December 31, 2017 and 2018 reflects an increase of $0.2 million in research tax credits, due to higher research and development purchases and external expenses that are eligible for the tax credit.

The decrease in other income of $3.1 million, or 26.7%, between the years ended December 31, 2016 and 2017 reflects a decrease of $1.7 million in research tax credit, and a decrease of $1.4 million in research subsidies, resulting from settlements received after termination of research programs during the last quarter of the year ended December 31, 2016.

Royalty expenses.

	For the year ended December 31,			% change	
	2016	2017	2018	2017 vs 2016	2018 vs 2017
Royalty expenses	(1,777)	(2,620)	(2,739)	47.5%	4.5%

The increase in royalty expenses of $0.1 million, or 4.5%, between the years ended December 31, 2017 and 2018 primarily reflects higher royalty expenses paid to our existing partners.

The increase in royalty expenses of $0.8 million, or 47.5%, between the years ended December 31, 2016 and 2017 primarily reflects higher payments to existing license providers.

Research and development expenses.

	For the year ended December 31,			% change	
	2016	2017	2018	2017 vs 2016	2018 vs 2017
Personnel expenses	(48,982)	(37,906)	(34,608)	-22.6%	-8.7%
Purchases, external expenses and other	(29,476)	(41,321)	(41,959)	40.2%	1.5%
Research and development expenses	**(78,458)**	**(79,227)**	**(76,567)**	**1.0%**	**-3.4%**

For the years ended December 31, 2017 and 2018 research and development expenses decreased by $2.6 million or 3.4%. Personnel expenses decreased by $3.3 million from $37.9 million in 2017 to $34.6 million in 2018 primarily due to a $5.8 million decrease in non-cash stock-based compensation expense and $1.0 million decrease in social charges on stock options offset by a $3.5 million increase in wages and salaries mainly explained by increase in R&D headcount in therapeutic activity. Purchases and external expenses increased by $2.0 million from $38.5 million in 2017 to $40.5 million in 2018, mainly due to an increase in costs to acquire grain prior to our achievement of commercial milestones at Calyxt. Other expenses, which relate to continuing leasing and other commitments, decreased by $1.4 million for the years ended December 31, 2017 and 2018.

During the years ended December 31, 2016 and 2017 research and development expenses increased by $0.8 million or 1.0%. Personnel expenses decreased by $11.1 million from $49.0 million in 2016 to $37.9 million in 2017, notably due to a $9.4 million decrease in non-cash stock-based compensation, a $2.8 million decrease in social charges on stock option grants, partly offset by a $1.1 million increase in wages and salaries. Purchases and external expenses increased by $10.7 million from $27.7 million in 2016 to $38.5 million in 2017 mainly due to increased expenses related to payments to third parties participating in product development, purchases of biological raw materials, expenses related to process development and expenses associated with the use of laboratories and other facilities. Research and development expenses in 2017 include manufacturing costs related to UCART123, UCART CS1 and UCART22 and expenses related to UCART123 clinical trials. Other expenses increased by $1.1 million mainly due to the impairment of assets for $0.8 million related to the vacant Montvale site recorded in 2017. Otherwise, other expenses include continuing leasing and other commitments.

Selling, general and administrative expenses.

	For the year ended December 31,			% change	
	2016	2017	2018	2017 vs 2016	2018 vs 2017
Personnel expenses	(33,523)	(34,486)	(30,563)	2.9%	-11.4%
Purchases, external expenses and other	(9,890)	(10,264)	(16,685)	3.8%	62.6%
Selling, general and administrative expenses	**(43,413)**	**(44,750)**	**(47,248)**	**3.1%**	**5.6%**

For the years ended December 31, 2017 and 2018, the increase in selling, general and administrative expenses of $2.5 million, or 5.6%, primarily reflects (i) a $5.1 million increase in purchases and external expenses from $9.1 million in 2017 to $14.3 million in 2018, particularly linked to Calyxt's increasing activity (from $4.3 million in 2017 to $7.8 million in 2018) explained by costs incurred to ramp up capabilities in advance of commercialization and increases in professional services expenses associated with being a public company, (ii) an increase of $1.3 million in other expenses related to taxes, various depreciation and amortization, and (iii) a decrease of $3.9 million in personnel expenses from $34.5 million to $30.6 million, attributable to a $7.4 million decrease in non-cash stock based compensation and $0.9 million decrease in social charges on stock options partially offset by a $4.4 million increase in wages and salaries, mainly explained by increase in SG&A headcount at Calyxt.

For the years ended December 31, 2016 and 2017 the increase in selling, general and administrative expenses of $1.3 million, or 3.1%, primarily reflects (i) an increase of $1.0 million in personnel expenses from $33.5 million to $34.5 million, attributable to a $2.0 million increase in wages and salaries, and an increase of $1.2 million of non-cash stock-based compensation expense, partly offset by a decrease of $2.2 million of social charges on stock options grants, and (ii) an increase of $0.3 million in purchases and external expenses. Other expenses relate to taxes, various depreciation and amortization and other commitments and increased by $0.1 million, due to higher business taxes and higher provisions.

Other operating income and expenses.

	For the year ended December 31,			% change	
	2016	2017	2018	2017 vs 2016	2018 vs 2017
Other operating income (expenses)	(99)	232	31	-334.2%	-86.6%

The decrease in other operating income and expenses between the years ended December 31, 2017 and 2018 amounted to $0.2 million. During the year ended December 31, 2018, other operating income and expenses primarily include reversal of commercial litigation provision for $0.6 million, partially offset by social charges paid on former employee compensation for $0.2 million, reversal of subsidy for $0.2 million and other immaterial variances.

The increase in other operating income and expenses between the years ended December 31, 2016 and 2017 amounted to $0.3 million. For the years ended December 31, 2017, other operating income primarily reflects (i) a receivable related to the refund of social charges paid on Cellectis free share grants that expired without being vested for $0.2 million, (ii) reversals of personnel litigation for a total amount of $0.1 million, and is partially offset by other operating expenses for $0.1 million related to social charges paid on former employee compensation.

Financial income.

	For the year ended December 31,			% change	
	2016	2017	2018	2017 vs 2016	2018 vs 2017
Financial income	7,147	7,262	20,572	1.6%	183.3%

The increase in financial income of $13.3 million, or 183.3%, between the years ended December 31 2017 and 2018 was mainly attributable to an increase in foreign exchange realized and unrealized gain of $12.4 million and an increase in interest income of $4.8 million and partly offset by a decrease in fair value of financial derivative instruments and current financial assets of $3.9 million.

The increase in financial income of $0.1 million, or 1.6%, between the years ended December 31 2016 and 2017 was mainly attributable to an increase in fair value of financial derivative instruments and current financial assets of $3.2 million and an increase in interest income of $0.5 million partly offset by a decrease in foreign exchange realized and unrealized gain of $3.6 million.

Financial expenses.

	For the year ended December 31,			% change	
	2016	2017	2018	2017 vs 2016	2018 vs 2017
Financial expenses	(7,101)	(18,294)	(3,813)	157.6%	-79.2%

The decrease in financial expense of $14.5 million, or 79.2%, between the years ended December 31 2017 and 2018 was mainly attributable to a decrease in foreign exchange realized and unrealized gain of $14.6 million and partly offset by an increase in other financial expense of $0.1 million.

The increase in financial expenses of $11.2 million, or 157.6%, between the years ended December 31 2016 and 2017 was mainly attributable to $13.5 million increase in foreign exchange realized and unrealized loss, partly offset by a decrease in fair value of financial derivative instruments and other current assets of $2.7 million.

Net Income / loss.

	For the year ended December 31,			% change	
	2016	2017	2018	2017 vs 2016	2018 vs 2017
Net income (loss)	(67,255)	(103,683)	(88,333)	54.2%	-14.8%

The decrease in net loss of $15.4 million between the years ended December 31, 2017 and 2018 was mainly due to (i) a $27.8 million increase in financial result, (ii) a $13.2 million decrease in non-cash stock-based compensation expense and (iii) a decrease of $1.8 million in social charges on stock options, partially offset by (a) a $12.3 million decrease in revenues and other income, (b) a $7.8 million increase in wages, (c) a $7.1 million increase in purchases, external expenses and other, (d) a $0.2 million decrease in other operating income and (e) a $0.1 increase in royalty expenses.

The increase in net loss of $36.4 million, or 54.2%, between the years ended December 31, 2016 and 2017 was mainly due to (i) a $22.7 million decrease in revenues and other income, (ii) the $11.1 million decrease in financial gain (loss), (iii) a $11.0 million increase in purchases and external expenses, (iv) a $3.1 million increase in wages, (v) a $1.1 million increase in other selling, general and administrative expenses and research and development expenses, (vi) a $0.8 million increase in royalty expenses, partially offset by (a) a $8.2 million decrease in non-cash stock-based compensation expense, and (b) a $5.5 million decrease in social charges on stock options and free share grants. The remaining difference is mainly due to the decrease in other operating expenses.

Gain/Loss attributable to non-controlling interests.

	For the year ended December 31,			% change	
	2016	2017	2018	2017 vs 2016	2018 vs 2017
Gain (loss) attributable to non-controlling interests	0	(4,315)	(9,640)	n.a.	123.4%

During the year ended December 31, 2018, we recorded $9.6 million in loss attributable to non-controlling interests. The increase in net loss attributable to non-controlling interests of $5.3 million is a result of increase in Calyxt's net loss and an increase in % of Calyxt common shares being owned by minority shareholders after the follow-on offering in May 2018.

During the year ended December 31, 2017, we recorded $4.3 million in loss attributable to non-controlling interests. The change in net loss attributable to non-controlling interests is a result of 20.3% of Calyxt common shares being owned by minority shareholders after its initial public offering.

Segment Results

Information related to each of our reportable segments is set out below. Segment revenues and Other income, Research and development expenses, Selling, general and administrative expenses, and Royalties and other operating income and expenses, and Adjusted net income (loss) attributable to shareholders of Cellectis (which does not include non-cash stock-based expense) are used by the CODM to measure performance. The CODM does not review any asset or liability information by segment or by region.

Adjusted Net Income (Loss) attributable to shareholders of Cellectis is not a measure calculated in accordance with IFRS. Because Adjusted Net Income (Loss) attributable to shareholders of Cellectis excludes Non-cash stock based compensation expense—a non-cash expense, we believe that this financial measure, when considered together with our IFRS financial statements, can enhance an overall understanding of Cellectis' financial performance. Moreover, our management views the Company's operations, and manages its business, based, in part, on this financial measure.

There are inter-segment transactions between the two reportable segments, including the allocation of corporate general and administrative expenses by Cellectis S.A. and the allocation of research and development expenses among the reportable segments. With respect to corporate general and administrative expenses, Cellectis S.A. provides Calyxt, Inc. with general sales and administrative functions, accounting and finance functions, investor relations, intellectual property, legal advice, human resources, communication and information technology pursuant to a management agreement. Under the management agreement, Cellectis S.A. charges Calyxt, Inc. in euros at cost plus a mark-up ranging between zero to 10%, depending on the nature of the service. Amounts due to Cellectis S.A. pursuant to inter-segment transactions bear interest at a rate of 12-month Euribor plus 5% per annum.

The intersegment revenues represent the transactions between segments. Intra-segment transactions are eliminated within a segment's results and intersegment transactions are eliminated in consolidation as well as in key performance indicators by reportable segment.

Years Ended December 31, 2016, 2017 and 2018

The following table summarizes segment revenues and segment operating profit (loss) for the years ended December 2016, 2017 and 2018:

	For the year ended December 31, 2016			For the year ended December 31, 2017			For the year ended December 31, 2018		
$ in thousands	Plants	Therapeutics	Total reportable segments	Plants	Therapeutics	Total reportable segments	Plants	Therapeutics	Total reportable segments
External revenues	399	44,409	44,808	508	24,680	25,188	236	12,495	12,731
External other income	186	11,450	11,637	239	8,290	8,528	178	8,523	8,701
External revenues and other income	**585**	**55,859**	**56,444**	**747**	**32,969**	**33,715**	**414**	**21,018**	**21,432**
Royalty expenses	(468)	(1,309)	(1,777)	(390)	(2,230)	(2,620)	(595)	(2,144)	(2,739)
Research and development expenses	(4,112)	(74,345)	(78,458)	(6,057)	(73,170)	(79,227)	(8,638)	(67,929)	(76,567)
Selling, general and administrative expenses	(4,809)	(38,603)	(43,413)	(13,143)	(31,607)	(44,750)	(21,067)	(26,180)	(47,248)
Other operating income and expenses	(6)	(93)	(99)	6	225	232	(50)	81	31
Total operating expenses	**(9,395)**	**(114,351)**	**(123,746)**	**(19,584)**	**(106,782)**	**(126,366)**	**(30,351)**	**(96,172)**	**(126,523)**
Operating income (loss) before tax	**(8,810)**	**(58,492)**	**(67,302)**	**(18,837)**	**(73,813)**	**(92,650)**	**(29,937)**	**(75,154)**	**(105,091)**
Financial gain (loss)	87	(41)	46	—	(11,032)	(11,032)	1,420	15,339	16,758
Net income (loss)	**(8,722)**	**(58,533)**	**(67,255)**	**(18,837)**	**(84,846)**	**(103,683)**	**(28,517)**	**(59,816)**	**(88,333)**
Net income (loss) from discontinued operations	—	—	—	—	—	—	—	—	—
Non controlling interests	—	—	—	4,315	—	4,315	9,640	—	9,640
Net income (loss) attributable to shareholders of Cellectis	**(8,722)**	**(58,533)**	**(67,255)**	**(14,522)**	**(84,846)**	**(99,368)**	**(18,877)**	**(59,816)**	**(78,693)**
R&D non-cash stock-based expense attributable to shareholder of Cellectis	477	32,731	33,208	967	22,623	23,590	838	16,852	17,689
SG&A non-cash stock-based expense attributable to shareholder of Cellectis	621	24,793	25,414	4,990	20,345	25,335	5,218	11,655	16,873
Adjustment of share-based compensation attributable to shareholders of Cellectis	**1,098**	**57,524**	**58,622**	**5,957**	**42,968**	**48,925**	**6,056**	**28,507**	**34,563**
Adjusted net income (loss) attributable to shareholders of Cellectis	**(7,625)**	**(1,009)**	**(8,633)**	**(8,565)**	**(41,877)**	**(50,442)**	**(12,821)**	**(31,309)**	**(44,130)**
Depreciation and amortization	(345)	(1,866)	(2,211)	(551)	(2,820)	(3,371)	(637)	(1,740)	(2,377)
Additions to tangible and intangible assets	10,410	4,164	14,573	792	1,849	2,642	1,871	3,040	4,911
Impairment of tangible assets	—	—	—	—	(798)	(798)	—	—	—

Therapeutics segment—2017 vs. 2018

External revenues and other income in our Therapeutics segment decreased by $12.0 million, from $33.0 million for the year ended December 31, 2017 to $21.0 million for the year ended December 31, 2018. The decrease was primarily due to a decrease of $12.3 million in collaboration agreement revenues, partially offset by a $0.2 million increase in research tax credit, as described in sections “Revenues” and “Other income” under “Results of Operation” for the consolidated Group.

The decrease in total operating expenses of $10.6 million, from $106.8 million for the year ended December 31, 2017 to $96.2 million for the year ended December 31, 2018 resulted primarily from (i) lower personnel expenses, attributable, to a decrease of $14.5 million in non-cash stock-based compensation expenses and a decrease of $1.8 million in social charges on stock options, lower other operating expenses for $0.7 million partly offset by an increase of $4.7 million in personnel wages and salaries, and higher purchases, external expenses for $1.7 million.

Operating loss before tax for our Therapeutics segment increased by $1.4 million from $73.8 million for year ended December 31, 2017, to $75.2 million for year ended December 31, 2018.

Adjusted net loss attributable to shareholders of Cellectis for our Therapeutics segment decreased by $10.6 million from $41.9 million for year period ended December 31, 2017 to $31.3 million for the year ended December 31, 2018.

Therapeutics segment—2016 vs. 2017

External revenues in our Therapeutics segment decreased by $22.9 million, or 41.0%, from $55.9 million for the year ended December 31, 2016 to $33.0 million for the year ended December 31, 2017. The decrease was primarily due to a decrease of $19.1 million in collaboration agreement revenues and lower subsidies revenue and research tax credit, as described in sections "Revenues" and "Other income" of the Group's operating result analysis.

The decrease in total operating expenses of $7.6 million, or 6.6%, from the year ended December 31, 2016, to the year ended December 31, 2017 resulted primarily from lower personnel expenses, mainly attributable to the decrease in non-cash stock-based compensation expenses and social charges on stock options grants, and is partially offset by the increase in purchases and external expenses for product development.

Operating loss before tax for our Therapeutics segment decreased by $15.3 million from $58.5 million for year ended December 31, 2016, to $73.8 million for year ended December 31, 2017.

Adjusted net loss attributable to shareholders of Cellectis for our Therapeutics segment increased by $40.9 million from $1.0 million for year period ended December 31, 2016 to $41.9 million for the year ended December 31, 2018.

Plants segment—2017 vs. 2018

External revenues and other income in our Plants segment decreased by $333 thousand from $747 thousand for the year ended December 31, 2017 to $414 thousand for the year ended December 31, 2018, the decrease was attributable to a strategic decision to focus on in-house development of product candidates and to reduce the amount of subcontracted R&D that we were performing for third parties.

The increase in total operating expenses of $10.8 million from $19.6 million for the year ended December 31, 2017 to $30.4 for the year ended December 31, 2018 resulted primarily from a significant increase in Calyxt's activities, which contributed to (i) an increase of $4.4 million in personnel expenses, that includes an increase of $1.3 million in non-cash stock-based compensation expenses and an increase of $3.1 million in personnel wages and salaries, (ii) an increase of $6.1 million in purchases, external expenses and other. Increase in these costs is mainly explained to acquire grain prior to our achievement of commercial milestones and to ramp up our capabilities in advance of commercialization and increases in professional services expenses associated with being a public company.

Operating loss before tax for our Plants segment increased by $11.2 million from $18.8 million for the year ended December 31, 2017 to $30.0 million for the year ended December 31, 2018.

Adjusted net loss attributable to shareholders of Cellectis for our Plants segment increased by $4.2 million from $8.6 million for the year ended December 31, 2017 to $12.8 million for the year ended December 31, 2017.

Plants segment—2016 vs. 2017

External revenues in our Plants segment increased by $0.2 million, or 27.6%, from $0.6 million for the year ended December 31, 2016 to $0.7 million for the year ended December 31, 2017.

The increase in operating expenses of $10.2 million, or 108.4%, from the year ended December 31, 2016 to the year ended December 31, 2017 resulted primarily from a significant increase in Calyxt, Inc. activities, higher professional fees related to the cost of becoming a Nasdaq listed company, as well as an increase in non-cash stock-based compensation expenses.

Segment operating loss before tax increased by $10.0 million, or 113.8%, from $8.8 million for the year ended December 31, 2016 to $18.8 million for the year ended December 31, 2017.

B. Liquidity and Capital Resources

Introduction

We have incurred losses and cumulative negative cash flows from operations since our inception in 2000, and we anticipate that we will continue to incur losses for at least the next several years. We expect that our research and development and selling, general and administrative expenses will continue to increase and, as a result, we will need additional capital to fund our operations, which we may raise through a combination of equity offerings, debt financings, other third-party funding, marketing and distribution arrangements and other collaborations, strategic alliances and licensing arrangements.

We have funded our operations since inception primarily through private and public offerings of our equity securities, grant revenues, payments received under patent licenses, reimbursements of research tax credit claims and payments under our strategic alliances with Pfizer and Servier. Our ordinary shares have been traded on the Euronext Growth market of Euronext in Paris since February 7, 2007 and our ADSs have traded on the Nasdaq Global Market in New York since March 30, 2015.

Key Financing Events

- 2014—In March 2014, we completed a private placement of 4,000,000 ordinary shares to institutional investors for gross proceeds of €20.5 million. In July 2014, in connection with our collaboration agreement with Pfizer, we issued 2,786,924 ordinary shares, representing 10% of our then-outstanding ordinary shares, to Pfizer for gross proceeds of €25.8 million. In November 2014, we issued shares in connection with the exercise of non-employee warrants for gross proceeds of €13.4 million.
- 2015—In March 2015, we completed our U.S. initial public offering of ADSs on the Nasdaq for gross of $228 million of gross proceeds, of which we received net proceeds of $209.6 million.
- 2017—In July 2017, Calyxt completed an initial public offering of its common stock on the Nasdaq, selling an aggregate of 8,050,000 shares of common stock at a price of $8.00 per share (including 1,050,000 shares of common stock pursuant to the exercise by the underwriters of their option to purchase additional shares). Calyxt received net proceeds of approximately $58.0 million, after deducting underwriting discounts and commissions and offering expenses. As part of the IPO, Cellectis purchased 2,500,000 shares of common stock for a value of $20.0 million, which is included in the net proceeds that Calyxt received. Then, the net proceeds amounted to $38 million at the Group level.
- On April 10, 2018, Cellectis closed a follow-on offering of 5,646,000 ADS at a public offering price of $31.00 per ADS resulting in gross proceeds of $175 million. On May 11, 2018, in connection with the exercise by the underwriters of the follow-on offering of their option to purchase additional shares, Cellectis closed the sale of an additional 500,000 ADS at the public offering price of $31.00 per ADS resulting in additional gross proceeds of $15.5 million.
- On May 22, 2018, Calyxt, Inc. completed a follow-on offering of its common stock. Calyxt, Inc. sold an aggregate of 4,057,500 shares of common stock at a price of $15.00 per share, including 457,500 shares of common stock pursuant to the exercise of the underwriters' option to purchase additional shares. In the aggregate, Calyxt, Inc. received net proceeds from the follow-on offering and exercise of the overallotment option of approximately $57.0 million, after deducting underwriting discounts and commissions of $3.2 million and offering expenses totaling approximately $0.7 million. As part of the follow-on offering, Cellectis SA purchased 550,000 shares of common stock for a value of $8.3 million, the proceeds of which are included in the net proceeds of approximately $57.0 million.

Liquidity management

As of December 31, 2018 we had current financial assets and cash and cash equivalents of $451.9 million comprising cash and cash equivalents of $451.5 million and current financial assets of $0.4 million.

Cash in excess of immediate requirements is invested in accordance with our investment policy, primarily with a view to liquidity and capital preservation. Currently, our cash and cash equivalents are held in bank accounts, money market funds, fixed bank deposits primarily in France. The portion of cash and cash equivalent denominated in U.S. dollars is $298.1 million as of December 31, 2018. Current financial assets denominated in U.S. Dollars amounted to $0.4 million as of December 31, 2018.

Historical Changes in Cash Flows

The table below summarizes our sources and uses of cash for the years ended December 31, 2016, 2017 and 2018:

	For the year ended December 31,		
	2016	2017	2018
	$ in thousands		
Net cash flows provided by (used in) operating activities	(32,710)	(52,327)	(68,137)
Net cash flows provided by (used in) investing activities	(53,137)	1,784	35,623
Net cash flows provided by (used in) financing activities	485	41,266	236,494
Total	**(85,362)**	**(9,277)**	**203,981**
Effect of exchange rate changes on cash	(2,181)	11,089	(8,860)

Year Ended December 31, 2018

The net cash flows used in operating activities are mainly due to cash payments of $41.8 million to suppliers, wages and social expenses of $19.3 million, rent payments of $4.3 million and $20.3 million of other operating payments and payments to Calyxt suppliers, partially offset by $4.7 million of payments received from Servier and Pfizer/Allogene Therapeutics pursuant to our collaboration agreements, $1.5 million of payments received from licenses, $6.9 million of interest received and $4.5 million of VAT and other taxes reimbursement as well as other variances.

The net cash flows used in investing activities primarily reflects our investments in R&D equipment and building fittings in both the United States and France of $4.9 million included $0.2 million of intangible assets, offset by (i) the proceeds from disposal of $1.3 million included Calyxt's sale and leaseback agreement transaction for certain equipment for $1.2 million, (ii) the reimbursement of $0.2 million related to the termination of a liquidity contract that we were party to with Natixis Securities and by (iii) the proceeds from current financial assets of $39.0 million.

The net cash flows provided by financing activities mainly reflects (i) the net proceeds after deducting underwriting discounts and commissions and offering expenses of $178.6 million from the Cellectis follow-on offering, (ii) the net proceeds, after deducting underwriting discounts and commissions and offering expenses and the purchase price paid by Cellectis with respect to our purchase of 550,000 shares of Calyxt common stock purchased by Cellectis in the offering, of $48.8 million, (iii) the exercise of 322,068 Cellectis stock options during the period for $7.5 million, (iv) the exercise of 592,342 Calyxt stock options during the period for $2.4 million, (v) the subscription of non-employee warrants for $0.2 million and (vi) the reimbursement of $0.3 million related to the termination of our liquidity contract with Natixis Securities, partially offset by Cellectis' purchase on June 14, 2018 of 63,175 shares of Calyxt common stock from employees and nonemployees of Calyxt and Cellectis at a price of $19.49 per share (the closing price reported on the Nasdaq Global Market on June 14, 2018) for $1.2 million.

Year Ended December 31, 2017

The net cash flows used in operating activities are mainly due to cash payments of $53.9 million to suppliers, wages and social expenses of $19.8 million and rent payments of $3.7 million, partially offset by $8.4 million of payments received from Servier and Pfizer pursuant to our collaboration agreements and $8.1 million of research tax credit as well as other variances.

The net cash flows used in investing activities primarily reflects, the proceeds from disposal of $7.0 million related to Calyxt's sale and leaseback agreement, partially offset by our acquisition of $2.6 million of financial current assets at Cellectis and our investments in research and development equipment and intangible assets in both the United States and France of $2.7 million.

The net cash flows provided by financing activities mainly reflects the net proceeds of the Calyxt IPO of $38.1 million, on a consolidated basis, the subscription of non-employee warrants for $0.3 million, and exercises of 121,492 BSPCE warrants and 31 873 stock options by employees during the period for $2.7 million.

Year Ended December 31, 2016

The net cash flows used in operating activities are mainly due to our cash expenditures related to research and development efforts, including the advancement of UCART123, for which an IND was filed in the United States in 2016, plus several advance payments made for manufacturing activities, partially offset by the payments received from Servier and Pfizer pursuant to our collaboration agreements. Cash outflows for 2016 also include $7.0 million of social charges on stock options.

The net cash flows used in investing reflects our use of $10.0 million for the acquisition of land by Calyxt and the building of its greenhouse, and the acquisition of $37.5 million of current financial assets at Cellectis S.A.

The net cash flows provided by financing activities includes the exercise of non-employees warrants in January 2016 for $0.3 million and the subscription of non-employees warrants in September 2016 for $0.3 million partially offset by the decrease of financial lease debt for $0.1 million.

Operating capital requirements

To date, we have not generated any revenues from therapeutic or agricultural product sales. We do not know when, or if, we will generate any revenues from product sales. We do not expect to generate significant revenues from product sales unless and until we obtain regulatory approval of and commercialize one of our current or future product candidates. We anticipate that we will continue to generate losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek regulatory approvals for, our product candidates, and begin to commercialize any approved products. We are subject to

all risks incident in the development of new gene therapy products, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. We are also subject to all risks incident in the development of new agricultural products, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. We also anticipate substantial expenses related to audit, legal, regulatory and tax-related services associated with our public company obligations in the United States and our continued compliance with applicable U.S. exchange listing and SEC requirements. We anticipate that we will need additional funding in connection with our continuing operations, including for the further development of our existing product candidates and to pursue other development activities related to additional product candidates.

We believe our cash and cash equivalents, our cash flow from operations (including payments we expect to receive pursuant to our collaboration agreements) and government funding of research programs will be sufficient to fund our operations through 2021. However, we may require additional capital for the further development of our existing product candidates and may also need to raise additional funds sooner to pursue other development activities related to additional product candidates.

Until we can generate a sufficient amount of revenues from our products, if ever, we expect to finance a portion of future cash needs through public or private equity or debt offerings. Additional capital may not be available on reasonable terms, if at all. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the development or commercialization of one or more of our product candidates. If we raise additional funds through the issuance of additional debt or equity securities, it could result in dilution to our existing shareholders, increased fixed payment obligations and these securities may have rights senior to those of our ordinary shares. If we incur indebtedness, we could become subject to covenants that would restrict our operations and potentially impair our competitiveness, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. Any of these events could significantly harm our business, financial condition and prospects.

Our assessment of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement and involves risks and uncertainties, and actual results could vary as a result of a number of factors. We have based this estimate on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Our future funding requirements, both near and long-term, will depend on many factors, including, but not limited to:

- the initiation, progress, timing, costs and results of pre-clinical and clinical studies for our product candidates;
- the initiation, progress, timing, costs and results of field trials for our agricultural product candidates;
- the capacity of manufacturing our products in France and in United States;
- the outcome, timing and cost of regulatory approvals by U.S. and non-U.S. regulatory authorities, including the possibility that regulatory authorities will require that we perform more studies than those that we currently expect;
- the ability of our product candidates to progress through clinical development successfully;
- the ability of our agricultural product candidates to progress through late stage development successfully, including through field trials;
- the cost of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;
- our need to expand our research and development activities;
- our need and ability to hire additional personnel;
- our need to implement additional infrastructure and internal systems, including manufacturing processes for our product candidates;
- the effect of competing technological and market developments; and
- the cost of establishing sales, marketing and distribution capabilities for any products for which we may receive regulatory approval.

If we cannot expand our operations or otherwise capitalize on our business opportunities because we lack sufficient capital, our business, financial condition and results of operations could be materially adversely affected.

C. Research and Development, Patents and Licenses, etc.

Our research and development teams utilize our deep expertise to contribute to the growth of our business. As of December 31, 2018, we had 113 employees engaged in research and development activities. In the years ended December 31, 2016, 2017 and 2018 we spent $78.5 million, $79.2 million and $76.6 million, respectively, on research and development. For a discussion of our research and development activities, see "Item 4.B —Business Overview" and "Item 5.A—Operating Results."

D. Trend Information

For a discussion of trends, see "Item 4.B—Business Overview," "Item 5.A—Operating Results" and "Item 5.B—Liquidity and Capital Resources." Other than as disclosed in these sections, we are not aware of any trends, uncertainties, demands, commitments or events since December 31, 2015 that are reasonably likely to have a material adverse effect on our revenues, income, profitability, liquidity or capital resources, or that would cause the disclosed financial information to be not necessarily indicative of future operating results or financial condition.

E. Off-Balance Sheet Arrangements.

We entered into seed and grain production agreements with settlement value based on commodity market future pricing. Otherwise, we do not have any off-balance sheet arrangements as defined under SEC rules.

F. Tabular Disclosure of Contractual Obligations

The following table discloses aggregate information about material contractual obligations and periods in which payments were due as of December 31, 2018. Future events could cause actual payments to differ from these estimates.

As of December 31, 2018	Total	Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
			$ in thousands		
Sale and lease-back agreement	31,668	1,858	3,748	3,154	22,908
Facility lease agreements	28,230	2,290	7,814	8,193	9,933
License agreements	18,093	1,237	2,474	2,474	11,907
Manufacturing agreements	10,293	10,293	—	—	—
Other agreements	12,356	7,754	4,602	—	—
Total contractual obligations	**100,641**	**23,433**	**18,638**	**13,822**	**44,749**

The commitment amounts in the table above are associated with contracts that are enforceable and legally binding and that specify all significant terms, including fixed or minimum services to be used, fixed, minimum or variable price provisions, and the approximate timing of the actions under the contracts. The table does not include obligations under agreements that we can cancel without a significant penalty. We have collaboration agreements whereby we are obligated to pay royalties and milestones based on future events that are uncertain and therefore they are not included in the table above.

We also provided Letters of Credit to the landlords of our facilities in New York.

For further detail regarding license and manufacturing agreement, please see Note 18 – Commitments of our consolidated financial statements.

G. Safe Harbor

This Annual Report contains forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act and as defined in the Private Securities Litigation Reform Act of 1995. See "Special Note Regarding Forward-Looking Statements."

ITEM 6. DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES

A. Directors and Senior Management

The following table sets forth information regarding our executive officers and directors as of March 11, 2019. Unless otherwise stated, the address for our executive officers and directors is 8, rue de la Croix Jarry, 75013 Paris, France.

Name	Age	Position(s)
Executive Officers:		
André Choulika, Ph.D.	54	Chairman of the Board, Chief Executive Officer, and Co-Founder
Elsy Boglioli	37	Chief Operating Officer
Philippe Duchateau, Ph.D.	56	Chief Scientific Officer
Eric Dutang	45	Chief Financial Officer
Stephan Reynier	50	Chief Regulatory Officer
David Sourdive, Ph.D.	52	Director, Executive Vice President, Technical Operations and Co-Founder
Marie-Bleuenn Terrier	37	General Counsel
Non-Employee Directors:		
Laurent Arthaud	56	Director
Pierre Bastid	64	Director
Rainer Boehm, M.D.	58	Director
Alain Godard	73	Director
Hervé Hoppenot	59	Director
Annick Schwebig, M.D.	68	Director

André Choulika, Ph.D., is one of the founders of Cellectis and served as Chief Executive Officer since the company's inception in 1999. He is Chairman of the Board of Directors since 2011 and President and Chairman of the board of directors of Calyxt, Inc. since August 2010. From 1997 to 1999, Dr. Choulika worked as a post-doctoral fellow in the Division of Molecular Medicine at Boston Children's Hospital, where he was one of the inventors of nuclease-based genome editing technologies and a pioneer in the analysis and use of meganucleases to modify complex genomes. After receiving his Ph.D. in molecular virology from the University of Paris VI (Pierre et Marie Curie), he completed a research fellowship in the Harvard Medical School Department of Genetics. His management training is from HEC (Challenge +). Based on Dr. Choulika's deep knowledge of the company and scientific experience, we believe Dr. Choulika has the appropriate set of skills to serve as our chief executive officer and a member of our board of directors.

Elsy Boglioli, joined Cellectis in December 2017 as Executive Vice President, Strategy and Corporate Development. She was named Chief Operating Officer in March 2018. Prior to joining Cellectis, she worked at Boston Consulting Group (BCG) where she served as Partner and Managing Director, and leader of BCG's biotech-focused business in Europe. At BCG, she was also a member of the global biopharma leadership team and global strategy practice management team and served as regional head of the strategy practice for Europe. Ms. Boglioli graduated from Ecole Polytechnique in Paris, France and holds a master's degree in economy and management from Pompeu Fabra University in Barcelona, Spain.

Philippe Duchateau, Ph.D., joined Cellectis in 2001 to pioneer the field of genome engineering and has served as Chief Scientific Officer since 2012. After receiving his PhD in 1993 in biochemistry and molecular biology at the Institut Pasteur (Lille, France), he completed a research fellowship from 1993 to 2001 at the University of California, San Francisco (United States) within the Cardiovascular Research Institute. He is co-inventor of numerous patents in the field of nucleases and genome engineering and co-authors on more than 50 scientific publications and co-editor of one book entitled "Site-directed Insertion of Transgenes." As head of Cellectis's Research department since 2004, he helped to the development of the Cellectis Technologies.

Eric Dutang joined us as Deputy Chief Financial Officer in May 2015 and was appointed Chief Financial Officer in 2016. Eric began his career as financial auditor with KPMG, first in Paris for five years and then in New York for two years. He worked for listed companies in France and the United States such as Vivendi, Veolia Environnement or Cablevision. He then became a member of the transactions and advisory teams in Paris for seven years where he carried out acquisitions / disposals for listed companies and private equity funds. After serving at KPMG, he worked on international business developments for French public listed groups, including Air Liquide and Thales. Eric holds a Master of Finance and Executive MBA from HEC Paris (France)/Babson Massachusetts (USA).

Stephan Reynier, MSc, joined Cellectis in April 2011. He serves as Chief Regulatory and Compliance Officer after holding the position of Head of Programs at Ectycell, a former subsidiary of Cellectis, from April 2011 to 2014 with the mission of managing and coordinating internal and external collaborative programs. As Chief Regulatory and Compliance Officer, Mr. Reynier is in charge of ensuring a speedy and successful development of the UCART product family by establishing close interactions with regulatory agencies such as EMA and FDA, while securing compliance to applicable regulations, regulatory guidelines and quality assurance standards. Mr. Reynier has extensive experience, from his previous positions as Senior Director at Voisin Consulting Life Sciences and European Associate Director Medical Affairs at Gilead Sciences, in the design and implementation of regulatory strategies for the development of drugs and biologics, with a strong focus on cell and gene therapy. Mr Reynier graduated as Agro-Engineer in France and received a Master of Science in Chemical Engineering from the University of Toronto, Canada.

David Sourdive, Ph.D., is a co-founder of Cellectis and has held the position of Executive Vice President, Technical Operations since 2017. Prior to that date, Dr. Sourdive served as Executive Vice President, Corporate Development since 2008. Dr. Sourdive has also been a member of our board of directors since 2000. From 2009 to 2012, he served as President of Ectycell SAS, and since 2012, he has served on its supervisory committee. Since February 2014, Dr. Sourdive has also served on the board of directors of Mediterranean Institute for Life Sciences. Since June 2015, he has served on the board of directors of Eukarÿs SAS, and since 2017 Dr. Sourdive serves on the Board of Omics SAS. Since December 2018, he has served on the board of directors of Enobraq SAS. He previously served on the boards of directors of Cellectis AB, Medicen Paris Region and Seine Saint Denis Avenir. From 1998 to 2000, he directed the biotechnologies laboratory of the Centre d'Etudes du Bouchet for the French Ministry of Defense. From 1997 to 1998, Dr. Sourdive worked at one of the leading laboratories in viral immunology at Emory University in Atlanta, Georgia. His work there was focused on immunological T-cell memory. Dr. Sourdive graduated from the École Polytechnique and received his PhD in molecular virology at the Institut Pasteur. He also has management training from the HEC (Challenge +). We believe Dr. Sourdive's extensive experience in business and the biotechnology industry qualifies him to serve on our board of directors.

Marie-Bleuenn Terrier joined Cellectis as Legal Counsel in 2008, and was appointed General Counsel in 2013. Prior to joining Cellectis, she worked as Legal Counsel for Pfizer from 2004 to 2006, and for Boehringer-Ingelheim from 2006 to 2008. Marie-Bleuenn Terrier has also served as Secretary of our board of directors since 2015. She holds a Master's degree in Law from the Panthéon La Sorbonne University in Paris.

Laurent Arthaud has served as a member of our board of directors since October 28, 2011. Mr. Arthaud has been the Managing Director of Life Sciences and Ecotechnologies for Bpifrance Investissement (formerly CDC Enterprises, a subsidiary of Caisse des Dépôts) since 2012. He currently serves on the boards of directors of Calyxt, Inc., Kurma Life Sciences Partners, Adocia, Sparinvision, Aledia and Ribogenics, Inc.. He served on the board of directors of TxCell from 2012 to 2018, on the board of directors of Emertee Gestion from 2006 to 2016, and on the board of directors of Scynexis, Inc. from 200 to 2015. From 2006 to 2012, Mr. Arthaud held the position of Deputy CEO at CDC Entreprises. Since 2009 Mr. Arthaud has also directed InnoBio, an investment fund managed by Bpifrance Investissement as part of the FSI France Investissement program. From 1999 to 2004 he served as Vice President of Aventis Capital, an investment subsidiary of the pharmaceuticals group Aventis, and as President of Pharmavent Partners from 2004 to 2006. Mr. Arthaud is a graduate of the École Polytechnique and the École Nationale de Statistique et d'Administration Économique. We believe Mr. Arthaud's extensive investment experience in the biotechnology industry qualifies him to serve as a member on our board of directors.

Pierre Bastid has served as a member of Cellectis' board of directors since 2011. Mr. Bastid has 25 years experience in turning around, developing and running technology businesses in Asia, Europe and the United States. In addition to Cellectis, Mr. Bastid is currently serving on the board of directors of Pharnext (a biotechnology company), and DCTV Center New-York, and of a series of his owned investment and private equity companies. Mr. Bastid also advises a number of investment and private equity firms. Mr. Bastid is a trustee of the Juilliard School of Music and other non-profit organizations based in the United States. We believe Mr. Bastid's extensive business experience qualifies him to serve as a member on our board of directors.

Rainer Boehm, M.D., has served as a member of Cellectis' board of directors since 2017. In addition, Mr. Boehm is currently serving on the board of directors of Humanigen, Inc. and Nordic Nanovector ASA since 2018. Mr. Boehm spent 29 years at Novartis, working locally, regionally and globally in various Senior Management roles, after building his career in Marketing & Sales and Medical Affairs. He led all emerging markets regions as well as the United States and Canada, either for Oncology or the Pharmaceuticals division. His most recent assignments were Chief Commercial and Medical Affairs Officer globally for Novartis Pharma, as well as ad interim CEO and Division Head Pharma. Rainer launched and oversaw the commercialization of many brands during his career, amongst them Femara, Zometa and Glivec, as well as Cosentyx and Entresto. Rainer has a medical degree from the University of Ulm in Germany, and a Master of Business Administration from Schiller University in France. We believe Mr. Boehm's extensive business and medical experience in pharmaceutical industry qualifies him to serve as a member on our board of directors.

Alain Godard has served as a member of Cellectis' board of directors since 2007. In addition, Mr. Godard is currently serving on the board of directors of Calyxt, Inc. He is a graduate of the Ecole Nationale Supérieure Agronomique de Toulouse and began his agronomy career in 1967 in Africa as a researcher at the *Institut de Recherche pour les Huiles et Oléagineux*. He joined the French chemical group Rhône-Poulenc in 1975 where he held various management positions in France and abroad before becoming CEO of the agrochemical subsidiary in 1991. In 1999 he was directly involved in the merger of Rhône-Poulenc and Hoechst to create Aventis and was appointed CEO of the Aventis CropScience subsidiary with a significant involvement in seeds and agricultural biotechnology. He left Aventis in 2002 to create a consulting company, SARL Godard & Co., specialized in agriculture and biotechnology, where he has served as Chief Executive Officer since 2009. Until 2016, Mr. Godard also served on the board of directors of Fermentalg S.A. We believe Mr. Godard's leadership and management expertise in the plant biotechnology field qualifies him to serve as a member of our board of directors.

Hervé Hoppenot has served as a member of Cellectis' board of directors since 2017. He serves as President and Chief Executive Officer of Incyte Corporation since 2014, and was appointed Chairman of the Board of Directors in 2015. Incyte is one of the fastest growing biopharmaceutical companies in the U.S. Prior to joining Incyte, Mr. Hoppenot was the President of Novartis Oncology, which included $11 billion in global sales, the largest oncology pipeline in the industry and 8000 employees in 50 countries. Prior to joining Novartis in 2003, Mr. Hoppenot started his career in 1983 with Rhone Poulenc, later known as Aventis, where he served in several senior roles of increasing responsibility, including Vice President of Oncology and Head of the US Oncology business unit. He and his family are dual citizens of France and the United States, having moved to the U.S. in 1991. We believe Mr. Hoppenot's business experience in the biotechnology industry qualifies him to serve as a member of our board of directors.

Annick Schwebig, M.D., has served as a member of our board of directors since October 28, 2011. In 2000, she founded the French subsidiary of Actelion, of which she is a Senior Advisor. She formerly served as the General Manager of Actelion from 2000 to 2015. Actelion is a biopharmaceutical company specializing in innovative treatments to serve unmet medical needs. She is also a director of Inventiva Pharma, a biopharmaceutical company, and B Cell Design, a biotechnologies company. A graduate of the University of Paris medical school, Dr. Schwebig worked as a senior manager at the biopharmaceuticals company Bristol-Myers Squibb for 17 years from 1983 to 2000. We believe Dr. Schwebig's extensive experience in the biopharmaceutical industry qualifies her to serve as a member on our board of directors.

Family Relationships

There are no family relationships among any of our executive officers or directors.

B. Compensation

Compensation of Directors and Executive Officers

The aggregate cash compensation paid and benefits in kind granted by us to our current executive officers and directors, for the year ended December 31, 2018, was $5.7 million. For the year ended December 31, 2018, 50,000 stock options with an exercise price of €24.80 per ordinary share were issued to executive officers as compensation under the 2018 Stock Option Plan and 40,000 free shares were issued to executive officers as compensation under the Second Free Shares 2018 Plan. The total amount set aside or accrued to provide pension, retirement or similar benefits was $38,135 for the year ended December 31, 2018.

In connection with the vesting on June 14, 2018 of Restricted Stock Units (RSU) granted to certain employees and non-employees of Calyxt Inc. and Cellectis SA, Cellectis SA purchased 2,352 common shares of Calyxt and 1,470 Calyxt shares at a price of $19.49 per share (the closing price reported on the Nasdaq Global Market on June 14, 2018) directly from Mr. André Choulika and Mr. Jean Marie Messier respectively in connection with share purchase transactions dated June 13 2018.

Service Agreements

Mr. Godard, a member of our board of directors, entered into a service agreement with us and provided consultancy services in the area of global development strategy. We paid €56 thousand (or $66 thousand) in compensation for those services in fiscal year 2018.

Change of Control Benefits

We seek to balance the potential costs of change of control provisions with the costs that would arise from fear of job loss and other distractions that may result from potential, rumored or actual changes of control. As a result, after careful evaluation of the implications and economics of a change of control plan, on September 4, 2014, our board of directors adopted a change of control plan. As amended on December 11, 2014, the change of control plan provides benefits for certain of our executive officers and several other senior employees of our company.

Pursuant to the change of control plan, the severance package shall be paid if, within the 36-month period following a change of control of our company, one of the following events occurs:

- non-renewal or dismissal other than for gross misconduct (*faute lourde*) of the employees or executives concerned; and
- for Drs. Choulika and Sourdive only, resignation as a result of a significant reduction of their duties or compensation, or end or non-renewal of their corporate appointments.

The severance package shall be equal to 24 months of compensation increased by an amount equal to the maximum target bonus to which the employees or executives concerned may be entitled for the year of their departure (or for Dr. Choulika only, two times such target bonus), or, in the absence of such a target bonus, 1.5 times the last annual bonus paid to them during the 12 months prior to their departure.

The severance package shall be in addition to any legal and conventional severance payments owed to the employees or executives concerned.

A "change of control" is defined by reference to Article L.233-3 of the French Commercial Code, which provides that one or more persons acting alone or in concert are considered to control a company if (1) they have direct or indirect ownership of a majority of the voting rights or a proportion of the voting rights allowing de facto control of the decisions made by the shareholders, provided that such control is presumed if no shareholder holds a greater proportion of the voting rights; or (2) they have the power to appoint or dismiss a majority of the board of directors

Limitations on Liability and Indemnification Matters

Under French law, provisions of By-laws that limit the liability of directors and officers are prohibited. However, French law allows *sociétés anonymes* to contract for and maintain liability insurance against civil liabilities incurred by any of their directors and officers involved in a third-party action, provided that they acted in good faith and within their capacities as directors or officers of the company. Criminal liability cannot be indemnified under French law, whether directly by the company or through liability insurance.

We expect to maintain customary liability insurance coverage for our directors and executive officers, including insurance against liability under the Securities Act. With certain exceptions and subject to limitations on indemnification under French law,

this insurance coverage will provide for indemnification for damages and expenses including, among other things, attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding arising out of his or her actions in that capacity. We believe that this insurance coverage is necessary to attract qualified directors and executive officers.

This insurance coverage may discourage shareholders from bringing a lawsuit against our directors and executive officers for breach of their fiduciary duty. It also may have the effect of reducing the likelihood of derivative litigation against directors and executive officers, even though such an action, if successful, might otherwise benefit us and our shareholders. Furthermore, a shareholder's investment may be adversely affected to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to this insurance coverage.

Certain of our non-employee directors may, through their relationships with their employers or partnerships, be insured against certain liabilities in their capacity as members of our board of directors.

Equity Incentives

We believe that our ability to grant equity awards is a valuable and necessary compensation tool that allows us to attract and retain the best available personnel for positions of substantial responsibility, provides additional incentives to employees and promotes the success of our business. In accordance with French corporate law and tax considerations, we have granted several different equity incentive instruments to our directors, executive officers, employees and other service providers. These are:

- employee warrants (otherwise known as *bons de souscription de parts de créateur d'entreprise* or BSPCE), granted only to employees of Cellectis;
- non-employee warrants (otherwise known as *bons de souscription d'actions* or BSA), granted only to non-employee directors and other service providers or consultants not eligible for employee warrants;
- restricted, or free, shares (otherwise known as *actions gratuites*); and
- stock options (otherwise known as *options de souscription d'actions*).

Our board of directors' authority to grant these equity incentive instruments and the aggregate number of shares authorized to be granted under these instruments must be approved by a two-thirds majority of the shares held by our shareholders present, represented or voting by mail at the relevant extraordinary shareholders' meeting. Such extraordinary general meeting shall determine the aggregate amount of equity incentive instruments to be granted and the period during which such authorization may be used by our board of directors, which cannot exceed 18 months for non-employee warrants and employee warrants and 38 months for stock option and restricted (free) shares, in each case beginning from the date of the applicable shareholders' approval. The authority of our board of directors to grant equity incentives may be extended or increased only by extraordinary shareholders' meetings. As a result, we typically request that our shareholders authorize new pools of equity incentive instruments at every annual shareholders' meeting.

Employee warrants and non-employee warrants are usually granted under similar terms. They expire ten years after the date of grant if not exercised earlier according to their vesting schedule (see below). In general, employee warrants (BSPCE) and non-employee warrants (BSA) no longer continue to vest following termination of the employment, office or service of the holder and all vested shares must be exercised within post-termination exercise periods set forth in the applicable equity award grant documents. In the event of certain changes in our share capital structure, such as a consolidation or share split or dividend, French law and applicable equity award grant documentation provide for appropriate adjustments of the numbers of shares issuable and/or the exercise price of the outstanding warrants or share options.

Employee Warrants (BSPCE)

Employee warrants were granted only to employees of Cellectis who are French tax residents, since these employee warrants carry favorable tax and social security treatment for French tax residents. Employee warrants may also be granted to corporate officers of the company having an employee tax status (chairman, general manager or deputy general manager). Similar to stock options, they entitle a holder to exercise the warrant for the underlying vested shares at an exercise price per share determined by our board of directors equal to the higher of (1) the fair market value of an ordinary share on the date of grant and (2) if the company has carried out a capital increase within six months prior to the attribution of employee warrants, the issue price of such capital increase.

Employee warrants may only be issued by growth companies meeting certain criteria, which we no longer meet. Most significantly, the issuer must have been registered for less than 15 years and 25% of the issuer's share capital must have been continuously held since the company's formation by natural persons or by holding companies, of which 75% of such holding company's share capital is held by natural persons. The calculation of such threshold does not include venture capital mutual

investment fund (*fonds commun de placement à risques*), specialized professional funds (*fonds professionnels spécialisés*), private equity funds (*fonds professionnels de capital investissement*), local investment funds (*fonds d'investissement de proximité*) and innovation-focused mutual funds (*fonds commun de placement dans l'innovation*).

We are no longer eligible to issue employee warrants since we no longer satisfy the legal conditions necessary to issue such employee warrants.

Our outstanding employee warrants were generally granted (1) either subject to a three-year vesting schedule under which one-third (1/3) of the employee warrants vest upon the first anniversary of grant and one-third (1/3) at the expiration of each year thereafter, subject to continued service, or (2) subject to a five-year vesting schedule under which 40% of the employee warrants vest upon the second anniversary of grant and 20% at the expiration of each year thereafter, subject to continued service. In each case, any warrant which is not exercised before the tenth anniversary of the date of grant will automatically lapse. Some of our employee warrants provide that in the event of a change in control, as defined in the relevant grant documents, unvested warrants will automatically vest in full.

The term of each employee warrant is 10 years from the date of grant or, in the case of death or disability of the beneficiary during such ten-year period, 6 or 9 months respectively from the death or disability of the beneficiary. An employee warrant shall remain exercisable for three months following a beneficiary's termination of continuous status with the company.

Employee warrants are not transferable and may not be sold, pledged, assigned, hypothecated, transferred or disposed of in any manner other than by will or by laws of descent or distribution and may be exercised, during the lifetime of the warrant holder, only by the warrant holder.

As of December 31, 2018, 19,702 employee warrants exercisable for an aggregate of 19,702 ordinary shares at a weighted average exercise price of €7.97 per share, were outstanding.

Non-Employee Warrants (BSA)

Non-employee warrants are granted by our board of directors to third-party service providers, consultants and directors who are not eligible for employee warrants. In addition to any exercise price payable by a holder upon the exercise of any non-employee warrant, non-employee warrants need to be subscribed for at a price at least equal to five percent (5%) of the average price for a company share weighted by volume on the market or markets on which the company shares are listed during the five (5) trading days prior to the date of the grant of said non-employee warrant by the board of directors (rounded up to the next euro cent, if necessary).

Pursuant to delegations granted at our annual shareholders' meeting, our board of directors determines the recipients, dates of grant and exercise price of non-employee warrants, the number of non-employee warrants to be granted and the terms and conditions thereof, including their vesting schedule. The term of each non-employee warrant is generally 10 years from the date of grant.

Our non-employee warrants are generally granted subject to a three-year vesting, subject to continued service.

As of December 31, 2018, 899,225 non-employee warrants exercisable for an aggregate of 899,225 ordinary shares at a weighted average exercise price of €28.32 per share, were outstanding, all of which are held by certain of our directors and some of our consultants and exercisable at the date hereof.

Free Shares

Under our 2012, 2013, 2014, 2015, 2018 and Second 2018 Free Share Plans, we have granted free shares to certain of our employees and officers. Our current plan, the Second 2018 Free Share Plan, was adopted by our board of directors on August 1, 2018.

Free shares may be granted to any individual employed by us or by any affiliated company. Free shares may also be granted to our Chairman, and our Chief Executive Officer. However, no free share may be granted to a beneficiary holding more than 10% of our share capital or to a beneficiary who would hold more than 10% of our share capital as a result of such grant.

Our board of directors has the authority to administer the 2012, 2013, 2014, 2015, 2018 and Second 2018 Free Share Plans. Subject to the terms of these Free Share Plans, our board of directors determines the recipients, the dates of grant, the number of free shares to be granted and the terms and conditions of the free shares, including the length of their vesting period (starting on the grant date, during which the beneficiary holds a right to acquire shares for free but has not yet acquired any shares) and

holding period (starting when the shares are issued and definitively acquired but may not be transferred by the recipient) within the limits determined by the shareholders. Our shareholders have determined that the vesting period must be at least two years from the date of grant and the holding period must be two years from the end of the vesting period, with no holding period applicable to beneficiaries for whom the vesting period was four years or longer for the 2012, 2013, 2014 and 2015 Free Shares Plans. For the 2018 Free Share Plans, our shareholders have determined that the vesting period must be at least one year from the date of grant and the holding period must be one year from the end of the vesting period, with no holding period applicable to beneficiaries for whom the vesting period was two years or longer.

The board of directors has the authority to modify awards outstanding under our Free Share Plans, subject to the consent of the beneficiary for any modification adverse to such beneficiary. For example, the board has the authority to release a beneficiary from the continued service condition during the vesting period after the termination of the employment.

The free shares granted under the Free Share Plans will be definitively acquired at the end of the vesting period as set by our board of directors subject to continued service during the vesting period, except if the board releases a given beneficiary from this condition upon termination of his/her employment contract. At the end of the vesting period, the beneficiary will be the owner of the shares. However, the shares may not be sold, transferred or pledged during the holding period. In the event of disability before the end of the vesting period, the free shares shall be definitively acquired by the beneficiary on the date of disability. In the event the beneficiary dies during the vesting period, the free shares shall be definitively acquired at the date of the request of allocation made by his or her beneficiaries in the framework of the inheritance provided that such request is made within six months from the date of death. 15,600 free shares granted in 2015 under the 2015 Free Share Plan will be acquired on May 18, 2019 for the Non-French residents subject to the continued service of the beneficiaries.

Stock Options

On March 24, 2015, according to the authorization granted by our shareholders meeting held on February 16, 2015, our board of directors adopted the 2015 Stock Option Plan, on October 28, 2016, according to the authorization granted by our shareholders meeting held on May 17, 2018, our board of directors adopted the 2016 Stock Option Plan, on October 11, 2017, according to the authorization granted by our shareholders meeting held on June 26, 2017, our board of directors adopted our 2017 Stock Option Plan; and on August 1, 2018, according to the authorization granted by our shareholders meeting held on June 26, 2018, our board of directors adopted our current 2018 Stock Options Plan. The 2015 Stock Option Plan, the 2016 Stock Option Plan, the 2017 Stock Option Plan and the 2018 Stock Option Plan (collectively, the "Stock Option Plans") follow the same rules. Stock Options issued pursuant to the Stock Option Plans provide the holder with the right to purchase a specified number of ordinary shares from the Company at a fixed exercise price payable at the time the Stock Option is exercised, as determined by our board of directors. The Stock Option Plans generally provides that the exercise price for any Stock Option will be no less than ninety-five percent (95%) of the average selling prices of a share at close of trading on said market quoted during the twenty trading days immediately preceding the day of the board of directors decision to grant the options. The maximum number of ordinary shares, which may be subject to stock options issued is 8,938,106, provided that our board of directors may decide of new grant of options only under our current 2018 Stock Option Plan with a maximum of 2,890,546 additional ordinary shares. Incentive Stock Options and Non-qualified stock options may be granted under the Stock Option Plans.

Stock Options may be granted to any individual employed by us or by any affiliated company. Stock Options may also be granted to our Chairman, our general manager and to our deputy general managers. Incentive Stock Options granted to owners of shares possessing 10% or more of the total voting power in the Company will be subject to limitations on their exercise price and term.

Our board of directors has the authority to administer and interpret the Stock Option Plans. Subject to the terms of the Stock Option Plans, our board of directors determines the recipients, the dates of grant, the exercise price of the stock options, the number of stock options to be granted and the terms and conditions of the stock options, including the length of their vesting period. Our board of directors is not required to grant stock options with vesting and exercise terms that are the same for every participant. The term of each stock option granted under the Stock Option Plans will generally be 10 years from the date of grant. Further, Stock Options will generally terminate on the earlier of when the beneficiary ceases to be an employee or the Company or upon certain transactions involving the Company.

The board of directors has the authority to modify awards outstanding under our Stock Option Plans, subject to the written consent of the beneficiary for any modification adverse to such beneficiary. For example, the board has the authority to extend a post-termination exercise period.

Stock Options granted under the Stock Option plans generally may not be sold, transferred or pledged in any manner other than by will or by the laws of descent or distribution. In the event of disability, unless otherwise resolved by our board of directors, the beneficiary's right to exercise the vested portion of his or her option generally terminates six months after the last day of such

beneficiary's service, but in any event no later than the expiration of the maximum term of the applicable stock options. In the event the beneficiary dies during the vesting period, then, unless otherwise resolved by our board of directors, the beneficiary's estate or any recipient by inheritance or bequest may exercise any vested portion within the six months following the date of death, but in any event no later than the expiration of the maximum term of the applicable stock options.

During the year ended December 31, 2018:

Cellectis S.A.

- 43,000 free shares have been granted in October, 2018 under the Second 2018 Free Share Plan and are under the vesting period of one year and a holding period of one year for the French residents and vesting period of two years for the US residents, of which 40,000 free shares have been granted to our officers;
- 100,000 stock options have been granted in October, 2018 under the 2018 Stock Option Plan and are under the vesting period of four year.

Calyxt, Inc.

During the year ended December 31, 2018, our subsidiary Calyxt granted options and restricted stock unit representing a 3.1% interest to a group of its employees, directors, executive officers and consultants.

C. Board Practices

Board Composition

Under French law and our By-laws, our board of directors must be composed of between three and eighteen members. Within this limit, the number of directors is determined by our shareholders. Directors are elected, re-elected and may be removed at a shareholders' general meeting with a simple majority vote of our shareholders. Pursuant to our By-laws, our directors are elected for three-year terms. In accordance with French law, our By-laws also provide that our directors may be removed with or without cause by the affirmative vote of the holders of at least a majority of the votes of the shareholders present, represented by a proxy or voting by mail at the relevant ordinary shareholders' meeting, and that any vacancy on our board of directors resulting from the death or resignation of a director, provided there are at least three directors remaining, may be filled by vote of a majority of our directors then in office provided that there has been no shareholders meeting since such death or resignation. Directors chosen or appointed to fill a vacancy shall be elected by the board for the remaining duration of the current term of the replaced director. The appointment must then be ratified at the next shareholders' general meeting. In the event the board would be composed of less than three directors as a result of a vacancy, the remaining directors shall immediately convene a shareholders' general meeting to elect one or several new directors so there are at least three directors serving on the board, in accordance with French law.

We currently have eight directors. The following table sets forth the names of our directors, the years of their initial appointment as directors and the expiration dates of their current term.

Name	Current Position	Year of Initial Appointment	Term Expiration Year
André Choulika, Ph.D.	Chairman	2000	2021
David Sourdive, Ph.D.	Director	2000	2021
Alain Godard	Director	2007	2021
Pierre Bastid	Director	2011	2020
Laurent Arthaud	Director	2011	2020
Annick Schwebig, M.D.	Director	2011	2020
Hervé Hoppenot	Director	2017	2020
Rainer Boehm, M.D.	Director	2017	2020

Pursuant to new French regulations, which entered into effect on January 1, 2018, any company having more than 10 employees must, on or before January 1st, 2020, implement a *Comité Social et Économique* or Social and Economic Committee, which replaces and regroups the various employee representative bodies, including the *Délégation Unique du Personnel* initially in place at Cellectis. We proceeded with the election, for a two-year term, of this Social and Economic Committee in September 21, 2018.

Director Independence

As a foreign private issuer, under the listing requirements and rules of Nasdaq, we are not required to have independent directors on our board of directors, except with respect to our audit and finance committee, for which the Nasdaq listing requirements permit specified phase-in schedules.

Our board of directors has determined that, applying the applicable rules and regulations of the SEC and the Nasdaq listing standards, all of our directors, except Drs. Choulika and Sourdive, qualify as "independent directors." In making such determination, our board of directors considered the relationships that each non-employee director has with us and all other facts and circumstances our board of directors deemed relevant in determining the director's independence, including the number of ordinary shares beneficially owned by the director and his or her affiliated entities.

Role of the Board in Risk Oversight

Our board of directors is primarily responsible for the oversight of our risk management activities and has delegated to the audit and finance committee the responsibility to assist our board of directors in this task. While our board of directors oversees our risk management, our management is responsible for day-to-day risk management processes. We believe this division of responsibilities is the most effective approach for addressing the risks we face. Our board of directors expects our management to consider risk and risk management in each business decision, to proactively develop and monitor risk management strategies and processes for day-to-day activities and to effectively implement risk management strategies adopted by the board.

Corporate Governance Practices

As a French *société anonyme*, we are subject to various corporate governance requirements under French law. In addition, as a foreign private issuer listed on the Nasdaq Global Market, we will be subject to the Nasdaq corporate governance listing standards. However, the Nasdaq Global Market's listing standards provide that foreign private issuers are permitted to follow home country corporate governance practices in lieu of the Nasdaq rules, with certain exceptions. Certain corporate governance practices in France may differ significantly from corporate governance listing standards. For example, neither the corporate laws of France nor our By-laws require that (i) a majority of our directors be independent, (ii) our compensation committee include only independent directors, or (iii) our independent directors hold regularly scheduled meetings at which only independent directors are present. Other than as set forth below, we currently intend to comply with the corporate governance listing standards of Nasdaq to the extent possible under French law. However, we may choose to change such practices to follow home country practice in the future.

Although we are a foreign private issuer, we are required to comply with Rule 10A-3 of the Exchange Act, relating to audit committee composition and responsibilities. Rule 10A-3 provides that the audit committee must have direct responsibility for the nomination, compensation and choice of our auditors, as well as control over the performance of their duties, management of complaints made, and selection of consultants. Under Rule 10A-3, if the laws of a foreign private issuer's home country require that any such matter be approved by the board of directors or the shareholders of the Company, the audit committee's responsibilities or powers with respect to such matter may instead be advisory. Under French law, the audit committee may only have an advisory role and appointment of our statutory auditors, in particular, must be decided by our shareholders at our annual meeting.

In addition, Nasdaq rules require that a listed company specify that the quorum for any meeting of the holders of share capital be at least 33 1/3% of the outstanding shares of the company's common voting stock. We follow our French home country practice, rather than complying with this Nasdaq rule. Consistent with French Law, our By-laws provide that when first convened, general meetings of shareholders may validly convene only if the shareholders present or represented hold at least (1) 20% of the voting shares in the case of an ordinary general meeting or of an extraordinary general meeting where shareholders are voting on a capital increase by capitalization of reserves, profits or share premium, or (2) 25% of the voting shares in the case of any other extraordinary general meeting. If such quorum required by French law is not met, the meeting is adjourned. There is no quorum requirement under French law when an ordinary general meeting or an extraordinary general meeting where shareholders are voting on a capital increase by capitalization of reserves, profits or share premium is reconvened, but the reconvened meeting may consider only questions that were on the agenda of the adjourned meeting. When any other extraordinary general meeting is reconvened, the required quorum under French law is 20% of the shares entitled to vote. If a quorum is not met at a reconvened meeting requiring a quorum, then the meeting may be adjourned for a maximum of two months.

Further, Nasdaq rules require that listed companies have a nominations committee comprised solely of independent directors. We follow our French home country practice rather than complying with this Nasdaq rule.

Finally, Nasdaq rules require shareholder approval when a plan or other equity compensation arrangement is established or materially amended. While the Company may, from time to time, obtain shareholder approval of an equity compensation arrangement in order to obtain advantageous tax treatment or otherwise, as a general matter, we intend to follow our French home country practice, which does not require shareholder approval of such plans or arrangements, rather than complying with this Nasdaq rule.

Board Committees

The board of directors has established an audit and finance committee and a compensation committee, each of which operates pursuant to a separate charter adopted by our board of directors. The board of directors has also established a scientific committee. The composition and functioning of all of our committees will comply with all applicable requirements of the French Commercial Code, the Exchange Act, the Nasdaq Global Market, and the rules and regulations of the SEC.

In accordance with French law, committees of our board of directors will only have an advisory role and can only make recommendations to our board of directors. As a result, decisions will be made by our board of directors taking into account non-binding recommendations of the relevant board committee.

Audit and Finance Committee. Our audit and finance committee reviews our internal accounting procedures, consults with and reviews the services provided by our independent registered public accountants and assists our board of directors in its oversight of our corporate accounting and financial reporting. Currently, our audit and finance committee is comprised of three members of the board of directors: Messrs. Bastid, Arthaud, and Hoppenot.

The duties specifically assigned to the audit and finance committee by our board of directors include, but are not limited to:

with regard to our financial statements:

- review on a preliminary basis and express its opinion on the draft annual and quarterly financial statements prior to the board of directors officially receiving the financial statements;
- examine the critical accounting policies and practices of the Company, including their relevance and consistency used for the preparation of the Company's consolidated financial statements and rectify any failure to comply with these policies and practices;
- monitor the scope of consolidation and review, where necessary, any explanations in connection thereto;
- interview, when necessary, the statutory auditors, the chairman of the board of directors, the chief executive officer, the chief financial officer, the employees in charge of our internal controls or any other management personnel; these discussions may take place, where required, without the presence of the chairman of our board of directors and the chief executive officer; and
- examine—prior to their publication—the draft annual and interim financial statements, the draft annual report and any other draft financial statements (including projected financial statements) prepared for the needs of upcoming material transactions together with the related press releases;

with regard to internal controls:

- assess the efficiency and quality of internal control systems and procedures within the consolidated Company;
- examine, with the persons in charge of the internal audit, and, if necessary, outside of the presence of the chairman of the board of directors and the chief executive officer, the contingency and action plans with respect to internal audit, the findings following the implementation of these actions and the recommendations and follow-up actions in connection therewith; and
- entrust the internal audit department with any mission which the committee deems necessary;

with regard to external controls:

- examine any question relating to the appointment, renewal or dismissal of our statutory auditors and their fees regarding the performance of their control review functions;

- oversee the rules relating to the use of the statutory auditors for assignments other than the audit of the financial statements and, more generally, ensure that we comply with the principles guaranteeing the statutory auditors' independence;
- at least annually, review and discuss the information provided by management and the auditors relating to the independence of the audit firm;
- pre-approve any services entrusted to the statutory auditors which is outside of the scope of the annual audit;
- review every year with the statutory auditors all fees paid to by the Company and its subsidiaries to any networks to which the auditors belong, their work plan, their findings and recommendations, as well as actions taken by us following such recommendations;
- review and discuss with the statutory auditors their comments on internal controls over financial reporting and any matters that have come to the attention of the statutory auditors that lead them to believe that modification to our disclosures about changes in internal control over financial reporting is necessary for management's certifications pursuant to Section 302 of the Sarbanes-Oxley Act;
- discuss if necessary any points of disagreement between the statutory auditors and the officers of the Company that may arise within the scope of these operations; and
- review and discuss with the statutory auditors the plans for, and the scope of, the annual audit and other examinations; and

with regard to risks:

- review on a regular basis the financial situation, the cash position and the material risks and undertakings of the Company and its subsidiaries; and
- review the risk management policy and the process implemented to evaluate and manage these risks.

Compensation Committee. Our compensation committee assists our board of directors in reviewing the compensation of our executive officers and directors and makes recommendations in respect thereof. Currently, our compensation committee is comprised of two members of the board of directors: Mr. Godard and Dr. Schwebig. The principal duties and responsibilities of our compensation committee include, but are not limited to:

- review the compensation of our employees and managers of the Company and its subsidiaries (fixed and variable compensations, bonus, etc.) and make any recommendation to our board of directors in connection therewith;
- review equity incentive plans (non-employee warrants, stock options, restricted (free) shares, etc.) and make recommendations to our board of directors in connection therewith;
- make recommendations to our board of directors regarding the compensation, pension and insurance plans, benefits in kind and other various pecuniary rights, of officers, as well as the allocation of equity incentive instruments granted to executive officers and directors of the Company;
- evaluate and make recommendations on the compensation policies and programs of executive officers and on the compensation of directors;
- recommend the approval, adoption and amendment of all cash- and equity-based incentive compensation plans in which any of our executive officers or directors participate and all other equity-based plans;
- review any proposed employment agreement with, and any proposed severance or retention plans or agreements applicable to, any of our executive officers;
- review, at least annually, corporate goals and objectives relevant to the compensation of our executive officers; and
- evaluate the performance of the executive officers in light of corporate goals and objectives and recommend compensation levels for these executive officers based on those evaluations and any other factors the compensation committee deems appropriate.

Code of Business Conduct and Ethics

We have adopted a Code of Business Conduct and Ethics, or the Code of Conduct, that is applicable to all of our employees, executive officers and directors. The Code of Conduct is available on our website at *www.cellectis.com*. Our board of directors will be responsible for overseeing the Code of Conduct and will be required to approve any waivers of the Code of Conduct for employees, executive officers and directors. We expect that any amendments to the Code of Conduct, or any waivers of its requirements, will be disclosed on our website.

D. Employees

As of December 31, 2018, we had 171 employees, 161 of whom are full-time, 62 of whom hold Ph.D. or M.D. degrees, 113 of whom were engaged in research and development activities and 58 of whom were engaged in business development, legal, finance, information systems, facilities, human resources or administrative support. As of December 31, 2018, 85 of our employees were located in France and 86 of our employees were located in the United States. None of our employees is subject to a collective bargaining agreement. We consider our relationship with our employees to be good.

E. Share Ownership

For information regarding the share ownership of our directors and executive officers, see "Item 6.B—Compensation" and "Item 7.A—Major Shareholders."

ITEM 7. MAJOR SHAREHOLDERS AND RELATED PARTY TRANSACTIONS

A. Major Shareholders.

The following table sets forth information with respect to the beneficial ownership of our ordinary shares as of December 31, 2018 for:

- each beneficial owner of more than 5% of our outstanding ordinary shares;
- each of our directors and executive officers; and
- all of our directors and executive officers as a group.

Beneficial ownership is determined in accordance with the rules of the SEC. These rules generally attribute beneficial ownership of securities to persons who possess sole or shared voting power or investment power with respect to those securities and include ordinary shares that can be acquired within 60 days of February 28, 2019. The percentage ownership information shown in the table is based upon 42,430,069 ordinary shares outstanding as of December 31, 2018.

Except as otherwise indicated, all of the shares reflected in the table are ordinary shares and all persons listed below have sole voting and investment power with respect to the shares beneficially owned by them, subject to applicable community property laws. The information is not necessarily indicative of beneficial ownership for any other purpose.

In computing the number of ordinary shares beneficially owned by a person and the percentage ownership of that person, we deemed outstanding ordinary shares subject to options and warrants held by that person that are immediately exercisable or exercisable within 60 days of February 28, 2019. We did not deem these shares outstanding, however, for the purpose of computing the percentage ownership of any other person. Beneficial ownership representing less than 1% is denoted with an asterisk (*). The information in the table below is based on information known to us or ascertained by us from public filings made by the shareholders in France. Except as otherwise indicated in the table below, addresses of the directors, executive officers and named beneficial owners are in care of Cellectis, 8, rue de la Croix Jarry, 75013 Paris, France.

Name of Beneficial Owner	Ordinary Shares Beneficially Owned	
	Number	Percentage
5% Shareholders:		
Bpifrance Participations	2,879,500	6.79%
Pfizer, Inc. (1)	2,789,252	6.57%
FMR LLC (2)	4,227,093	9.96%

Name of Beneficial Owner	Ordinary Shares Beneficially Owned	
	Number	Percentage
Directors and Executive Officers:		
André Choulika, Ph.D (3)	1,702,903	4.01%
David Sourdive, Ph.D. (4)	1,570,819	3.70%
Philippe Duchateau, Ph.D. (5)	509,197	*
Eric Dutang (6)	257,373	*
Marie-Bleuenn Terrier (7)	451,724	*
Stephan Reynier (8)	190,973	*
Elsy Boglioli (9)	45,000	*
Alain Godard (10)	201,724	*
Pierre Bastid (11)	3,479,119	8.20%
Laurent Arthaud	0	*
Annick Schwebig, M.D. (12)	162,115	*
Hervé Hoppenot (13)	13,333	*
Rainer Boehm, M.D. (14)	13,333	*
All directors and executive officers as a group (13 persons)	8,597,614	20.26%

* Represents beneficial ownership of less than one per cent.

(1) The address of Pfizer, Inc. is 235 East 42nd Street, New York, New York 10017. Shares beneficially owned by Pfizer, Inc. were acquired by Pfizer OTC B.V. on July 31, 2014 in the context of a share capital increase in connection with the Research and Collaboration Agreement between Pfizer Inc. and Cellectis S.A., dated June 17, 2014.

(2) Amounts beneficially owned by FMR LLC were reported pursuant to a Schedule 13G amendment filed with the SEC on February 13, 2018 by FMR LLC and Abigail P. Johnson. FMR LLC's address is 245 Summer Street, Boston, Massachusetts 02210. FMR LLC is the parent company of Fidelity Management & Research Company ("FMR Co."), which carries out the voting of shares owned by various Fidelity funds under written guidelines established by the Fidelity funds' boards of trustees.

(3) Includes 219,173 ordinary shares that Mr. Choulika has the right to acquire pursuant to stock options granted in March 2015 under the 2015 Stock Option Plan, 175,000 ordinary shares that Mr. Choulika has the right to acquire pursuant to stock options granted in September 2015 governed by the 2015 Stock Option Plan, 120,525 ordinary shares that Mr. Choulika has the right to acquire pursuant to stock options granted in March 2016 under the 2015 Stock Option Plan, 141,548 ordinary shares that Mr. Choulika has the right to acquire pursuant to stock options granted in October 2016 under the 2016 Stock Option Plan and 50,625 ordinary shares that Mr. Choulika has the right to acquire pursuant to stock options granted in October 2017 under the 2017 Stock Option Plan.

(4) Includes 175,343 ordinary shares that Mr. Sourdive has the right to acquire pursuant to stock options granted in March 2015 under the 2015 Stock Option Plan, 153,125 ordinary shares that Mr. Sourdive has the right to acquire pursuant to stock options granted in September 2015 governed by the 2015 Stock Option Plan and 105,460 ordinary shares that Mr. Sourdive has the right to acquire pursuant to stock options granted in March 2016 under the 2015 Stock Option Plan, 123,855 ordinary shares that Mr. Sourdive has the right to acquire pursuant to stock options granted in October 2016 under the 2016 Stock Option Plan and 30,000 ordinary shares that Mr. Sourdive has the right to acquire pursuant to stock options granted in October 2017 under the 2017 Stock Option Plan. Includes 703,041 shares held by Viveoo SARL.

(5) Includes131,508 ordinary shares that Dr. Duchateau has the right to acquire pursuant to stock options granted in March 2015 under the 2015 Stock Option Plan, 131,250 ordinary shares that Dr. Duchateau has the right to acquire pursuant to stock options granted in September 2015 governed by the 2015 Stock Option Plan and 90,394 ordinary shares that Dr. Duchateau has the right to acquire pursuant to stock options granted in March 2016 under the 2015 Stock Option Plan, 106,161 ordinary shares that Dr. Duchateau has the right to acquire pursuant to stock options granted in October 2016 under the 2016 Stock Option Plan and 11,250 ordinary shares that Dr. Duchateau has the right to acquire pursuant to stock options granted in October 2017 under the 2017 Stock Option Plan.

(6) Includes 13,125 ordinary shares that Mr. Dutang has the right to acquire pursuant to stock options granted in September 2015 governed by the 2015 Stock Option Plan, 90,394 ordinary shares that Mr. Dutang has the right to acquire pursuant to stock options granted in March 2016 under the 2015 Stock Option Plan, 123,855 ordinary shares that Mr. Dutang has the right to acquire pursuant to stock options granted in October 2016 under the 2016 Stock Option Plan and 30,000 ordinary shares that Mr. Dutang has the right to acquire pursuant to stock options granted in October 2017 under the 2017 Stock Option Plan.

(7) Includes 87,671 ordinary shares that Mrs. Terrier has the right to acquire pursuant to stock options granted in March 2015 under the 2015 Stock Option Plan, 78,750 ordinary shares that Mrs. Terrier has the right to acquire pursuant to stock options granted in September 2015 governed by the 2015 Stock Option Plan, 105,460 ordinary shares that Mrs. Terrier has the right

to acquire pursuant to stock options granted in March 2016 under the 2015 Stock Option Plan, 123,855 ordinary shares that Mrs. Terrier has the right to acquire pursuant to stock options granted in October 2016 under the 2016 Stock Option Plan and 30,000 ordinary shares that Mrs. Terrier has the right to acquire pursuant to stock options granted in October 2017 under the 2017 Stock Option Plan.

(8) Includes 39,452 ordinary shares that Mr. Reynier has the right to acquire pursuant to stock options granted in March 2015 under the 2015 Stock Option Plan, 35,000 ordinary shares that Mr. Reynier has the right to acquire pursuant to stock options granted in September 2015 governed by the 2015 Stock Option Plan, 44,142 ordinary shares that Mr. Reynier has the right to acquire pursuant to stock options granted in March 2016 under the 2015 Stock Option Plan, 42,256 ordinary shares that Mr. Reynier has the right to acquire pursuant to stock options granted in October 2016 under the 2016 Stock Option Plan and 15,000 ordinary shares that Mr. Reynier has the right to acquire pursuant to stock options granted in October 2017 under the 2017 Stock Option Plan.

(9) Includes 45,000 ordinary shares that Mrs. Boglioli has the right to acquire pursuant to stock options granted in October 2017 under the 2017 Stock Option Plan.

(10) The ordinary shares include 50,000 non-employee warrants which are exercisable since March 27, 2016, 50,000 non-employee warrants, which are exercisable since September 8, 2016, 40,175 non-employee warrants, which are exercisable since March 14, 2017, 26,667 non-employee warrants, which are exercisable since October 28, 2017 and 13,333 non-employee warrants, which are exercisable since October 10, 2018.

(11) The ordinary shares include 50,000 non-employee warrants which are exercisable since March 27, 2016, 50,000 non-employee warrants, which are exercisable since September 8, 2016, 40,175 non-employee warrants, which are exercisable since March 14, 2017, 26,667 non-employee warrants, which are exercisable since October 28, 2017, 13,333 non-employee warrants, which are exercisable since October 10, 2018 and includes 3,298,944 shares held by Lohas SARL.

(12) The ordinary shares include 30,000 non-employee warrants which are exercisable since March 27, 2016, 50,000 non-employee warrants, which are exercisable since September 8, 2016, 40,175 non-employee warrants, which are exercisable since March 14, 2017, 26,667 non-employee warrants, which are exercisable since October 28, 2017 and 13,333 non-employee warrants, which are exercisable since October 10, 2018.

(13) The ordinary shares include 13,333 non-employee warrants which are exercisable since October 10, 2018.

(14) The ordinary shares include 13,333 non-employee warrants which are exercisable since October 10, 2018.

The significant changes in the percentage ownership held by our principal shareholders since January 1, 2014 are as a result of the transactions described in our prospectus dated March 26, 2015, filed with the SEC pursuant to Rule 424(b), under the heading "Related Party Transactions—Transactions with Our Principal Shareholders, Directors and Executive Officers" and the dilution resulting from our public offering.

None of our principal shareholders has voting rights different than our other shareholders.

As of December 31, 2018, assuming that all of our ordinary shares represented by ADSs are held by residents of the United States, we estimate that approximately 52.10% of our outstanding ordinary shares were held in the United States by 114 holders of record.

B. Related Party Transactions

Since January 1, 2012, we have engaged in the following transactions with our directors, executive officers and holders of more than 5% of our outstanding voting securities and their affiliates, which we refer to as our related-parties.

Transactions with Our Principal Shareholders, Directors and Executive Officers

Alliance agreement

Pfizer purchased 10% of our then-outstanding ordinary shares on July 31, 2014. The revenues booked for Pfizer in the years ended December 31, 2016, 2017 and 2018 amount to $25.3 million, $19.7 million and $7.4 million respectively. As of December 31, 2018, there no outstanding receivables and Pfizer had a 6.57% ownership in Cellectis.

Conditional advances and subsidies

Bpifrance, which is a shareholder of Cellectis, has granted us conditional advances and subsidies. There was no outstanding conditional advances and subsidies since December 31, 2016.

Agreements with Our Directors and Executive Officers

Director and Executive Officer Compensation

See "Item 6.B—Compensation of Directors and Executive Officers" for information regarding compensation of directors and executive officers

Equity Awards

Since January 1, 2018, we have granted equity awards to certain of our directors and executive officers:

- On October 8, 2018, we granted 50,000 stock options to certain of our Executive Officers; and
- On October 8, 2018, we granted 40,000 free shares to our Executive Officers.

See "Item. 7A—Major Shareholders" for information regarding equity awards to certain of our executive officers.

Indemnification Agreements

See "Item. 6B—Limitations on Liability and Indemnification Matters."

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling us pursuant to the foregoing provisions, we have been informed that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Transactions with subsidiaries: Calyxt IPO and Key Arrangements

On July 25, 2017, Calyxt completed an initial public offering on the Nasdaq Global Market, selling an aggregate of 8,050,000 shares of common stock at a price of $8.00 per share (including the full exercise by the underwriters of their over-allotment option). The Company received net proceeds of approximately $58.0 million, after deducting underwriting discounts and commissions and offering expenses. As part of the IPO, Cellectis purchased 2,500,000 shares of common stock for a value of $20.0 million, which is included in the net proceeds that Calyxt received. Calyxt used $5.7 million of the proceeds from us to cover a portion of the outstanding obligations owed to Cellectis. Following the initial public offering, Cellectis owns approximately 79.6% of Calyxt's common stock.

In May, 2018, Calyxt closed a follow-on offering of 4,057,500 ADS at a public offering price of $15.00 per ADS resulting in gross proceeds of $60.9 million. Cellectis purchased 550,000 shares of common stock at the public offering price of $15.00. In addition, in connection with the vesting on June 14, 2018, of restricted stock units for certain employees and nonemployees of Calyxt and Cellectis, Cellectis purchased approximately 63,175 shares of common stock of Calyxt at a price of $19.49 per share (the closing price reported on the Nasdaq Global Market on June 14, 2018) directly from such employees and nonemployees in private transactions pursuant to share purchase agreements dated June 13, 2018.

In connection with Calyxt's IPO, we and Calyxt entered into certain agreements that relate to our relationship with Calyxt prior to the IPO or that provide a framework for our ongoing relationship with Calyxt. The summaries of the most significant provisions of these agreements. These summaries are qualified in their entirety by reference to the full text of such agreements.

Management Services Agreement

We are party to a management services agreement dated January 1, 2016 and amended July 25, 2017 that we entered into with Calyxt and Cellectis, Inc., a Delaware corporation and our wholly-owned subsidiary ("Cellectis, Inc."), pursuant to which we and Cellectis, Inc. provide certain services to Calyxt, including certain general management, finance, investor relations, communication, legal, intellectual property, human resources and information technology services. In consideration for such services, Calyxt pays to us and Cellectis, Inc. certain fees, consisting of reimbursement of all costs and expenses reasonably incurred by us in connection with the provision of such services, payment of a mark-up corresponding to a percentage of certain of the costs and expenses, which range from zero to 10%, and reimbursement of costs and expenses of services that are subcontracted by us on Calyxt's behalf.

The management services agreement is automatically renewed for one year periods starting on January 1st of each year. Either party has the right to terminate the agreement at the anniversary date of the agreement by giving three months prior notice. We also entered into an amendment to the agreement in connection with IPO to provide that the agreement may otherwise be terminated by us or by Calyxt in connection with certain material breaches by the other party upon prior written notice subject to limited cure periods, the sale of all or substantially all of the assets of either party, certain bankruptcy events or certain judgments.

During fiscal year 2018, Calyxt made payments to us for services provided under the management services agreement of $1,5 million, which excludes direct re-invoicing and royalties paid to us.

Stockholders Agreement

On July 25, 2017 we entered into a stockholders agreement with Calyxt, which we refer to as the stockholders agreement. Pursuant to our stockholders agreement with Calyxt, we have certain contractual rights for so long as we beneficially own at least 50% of the then outstanding shares of Calyxt's common stock, including:

- to approve any modification to Calyxt's or any future Calyxt subsidiary's share capital (e.g., share capital increase or decrease), the creation of any subsidiary by Calyxt, any grant of stock-based compensation, any distributions or initial public offering, merger, spin-off, liquidation, winding up or carve-out transactions;
- to approve Calyxt's annual business plan and annual budget and any modification thereto;
- to approve any external growth transactions of Calyxt exceeding $500,000 and not included in the approved annual business plan and annual budget;
- to approve any investment and disposition decisions by Calyxt exceeding $500,000 and not included in the approved annual business plan and annual budget (it being understood that this clause excludes the purchase and sale of inventory as a part of the normal course of business);
- to approve any related-party agreement and any agreement or transaction between the executives or shareholders of Calyxt, on the one hand, and Calyxt or any of its subsidiaries, on the other hand;
- to approve any decision by Calyxt pertaining to the recruitment, dismissal/removal, or increase of the compensation of executives and corporate officers;
- to approve any material decision by Calyxt relating to a material litigation;
- to approve any decision by Calyxt relating to the opening of a social or restructuring plan or pre-insolvency proceedings;
- to approve any buyback by Calyxt of its own shares;
- to approve any new borrowings or debts of Calyxt exceeding $500,000 and early repayment of loans, if any (it being understood that we will approve the entering into of contracts for revolving loans and other short-term loans and the repayment of such for financing general operating activities, such as revolving loans for inventory or factoring of receivables);
- to approve grants by Calyxt of any pledges on securities;
- to develop new activities and businesses not described in the annual business plan and annual budget;
- to approve entry into any material agreement or partnership; and
- to approve any offshore and relocation activities of Calyxt.

In addition, we have the following rights for so long as we beneficially own at least 15% of the then outstanding shares of Calyxt's common stock, including:

- to nominate the greater of three members of Calyxt's Board of Directors or a majority of the directors;
- to designate the Chairman of Calyxt's Board of Directors and one member to each of the audit committee of the Board of Directors, the compensation committee of the Board of Directors and the nominating and corporation governance committee of the Board of Directors;
- to approve any amendments to Calyxt' amended and restated certificate of incorporation or its amended and restated by-laws that would change the name of Calyxt, its jurisdiction of incorporation, the location of its principal executive offices, the purpose or purposes for which Calyxt is incorporated or the Cellectis approval items set forth in the stockholders agreement;
- to approve the payment of any regular or special dividends;
- to approve the commencement of any proceeding for the voluntary dissolution, winding up or bankruptcy of Calyxt or a material subsidiary;
- to approve any public or private offering, merger, amalgamation or consolidation of Calyxt or the spinoff of a business of Calyxt or any sale, conveyance, transfer or other disposition of Calyxt's assets; and
- to approve any appointment to Calyxt's Board of Directors contrary to the stockholders agreement or Calyxt's certificate of incorporation or Calyxt's by-laws.

In addition, for so long as we beneficially own at least 15% of the then outstanding shares of Calyxt's common stock, (i) we will be entitled to certain information rights, including the right to consult with and advise senior management, to receive quarterly and annual financial statements and to review Calyxt's books and records and (ii) Calyxt will also be required to cooperate with us in connection with certain sales and pledges of Calyxt's shares or grants of security interests in respect thereof, including in connection with margin loans.

The stockholders agreement will also provide us with certain registration rights, including certain demand and piggyback registration rights. The registration rights will remain in effect with respect to any shares covered by the Stockholders Agreement until (i) all of our Calyxt shares have been sold pursuant to an effective registration statement under the Securities Act; (ii) all of our Calyxt shares have been sold to the public pursuant to Rule 144 under the Securities Act; or (iii) we own less than 10% of the then outstanding shares of Calyxt's common stock.

Separation Agreement

On July 25, 2017, we entered into a separation agreement with Calyxt, which sets forth certain agreements between us and Calyxt that will govern the relationship between us and Calyxt following this offering, including with respect to the following matters:

- guarantees;
- insurance policies;
- mutual releases and indemnification matters;
- accounting, financial reporting and internal control issues;
- confidentiality;
- ability of the parties to compete with each other; and
- settlement of intercompany accounts.

The separation agreement will terminate upon the earlier of (i) mutual written consent of us and Calyxt and (ii) the date on which we and our affiliates cease to hold at least 15% of the then outstanding shares of Calyxt's common stock.

License Agreement with Calyxt

We are party to a license agreement with Calyxt pursuant to which Calyxt has been granted an exclusive, worldwide license (subject to existing licenses granted by us to third parties) to use, commercialize and exploit certain intellectual property in the field of researching, developing and commercializing agricultural and food products, including traits, seeds, and feed and food ingredients (excluding any application in connection with animals and animal cells), except that such license will be non-exclusive in such field for any activities relating to researching, developing or commercializing certain modified or mutated I-CreI homing endonucleases. Calyxt has also been granted a non-exclusive license to use the TALEN trademark in connection with its exploitation of licensed products under the agreement. Any improvements Calyxt makes to the licensed intellectual property will be owned by Calyxt but licensed back to us on an exclusive basis for any use outside of Calyxt's exclusive agricultural field of use.

In consideration for the license from us, Calyxt is required to pay to us, on a product-by-product and country-by-country basis, a royalty of 3% of net sales less costs for grain and seed of any products that are covered by the patents licensed from us. In addition, Calyxt will be required to pay us 30% of revenue Calyxt receives for sublicensing its rights under the agreement to third parties. Calyxt's payment obligations to us will expire upon the expiration of the last-to-expire valid claim of the patents licensed to Calyxt by us.

Under our license agreement with Calyxt, and as between the parties, we have the first right to control the prosecution, maintenance, defense and enforcement of the licensed intellectual property and Calyxt will have the right to step in and assume such control with respect to the patents owned by us and exclusively licensed to Calyxt under the agreement if we elect to not prosecute, maintain, defend or enforce such patents. In certain circumstances, if we elect to abandon any patents owned by us and exclusively licensed to Calyxt under the agreement, Calyxt will have the right to assume ownership of such patents. In addition, some of the intellectual property that will be licensed to Calyxt by us consists of an exclusive sublicense, subject to existing sublicenses granted by us to third parties, of intellectual property originally licensed to us by the University of Minnesota to exploit such intellectual property in Calyxt's exclusive agricultural field of use. Therefore, as to such sublicensed intellectual property, Calyxt's license from us will be subject to the terms and conditions of the license agreement between the University of Minnesota and us, and to the extent Calyxt's activities under such sublicense violate any terms and conditions of the license agreement between us and the University of Minnesota, Calyxt will be responsible for any damages that we may incur. In

addition, Calyxt is required to reimburse us for any and all payments made by us to the University of Minnesota pursuant to the license agreement between the University of Minnesota and us to the extent that any such payments are required to be made as a result of Calyxt's applicable activities. Under the license agreement between us and the University of Minnesota, the University of Minnesota has the first right to control the prosecution and maintenance of the licensed intellectual property.

Calyxt's license agreement with us is perpetual. However it may be terminated upon the mutual written agreement of both parties, either party's uncured material breach of the agreement, or upon certain bankruptcy and insolvency related events.

Related-Party Transactions Policy

We have adopted a related-party transaction policy that sets forth our procedures for the identification, review, consideration and approval or ratification of related-party transactions. The policy became effective immediately upon the completion of our initial public offering. For purposes of our policy only, a related-party transaction is a transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships, in which we and any related parties are, were or will be participants, which are not (1) in the ordinary course of business, (2) at arms' length and (3) in which the amount involved exceeds $120,000. Transactions involving compensation for services provided to us as an employee or director are not covered by this policy. For purposes of this policy, a related party is any executive officer, director (or nominee for director) or beneficial owner of more than five percent (5%) of any class of our voting securities, including any of their respective immediate family members and any entity owned or controlled by such persons.

Under the policy, related-party transactions must be reported to us by all related parties. If a transaction has been identified as a related-party transaction, our management must present information regarding the related-party transaction to our board of directors for review, consideration and approval. Certain transactions may be presented to the Audit and Finance Committee, which will determine whether the transaction is a related-party transaction, in which case the related-party transaction will be submitted to our board of directors. The presentation will include a description of, among other things, the material facts, the interests in the transaction, direct and indirect, of the related parties, the benefits to us of the transaction and whether the transaction is on terms that are comparable to the terms available to or from, as the case may be, an unrelated third-party or to or from employees generally. In addition, under our Code of Business Conduct and Ethics, our employees and directors have an affirmative responsibility to disclose any transaction or relationship that reasonably could be expected to give rise to a conflict of interest. In considering related-party transactions, our board of directors, or to the extent permitted by applicable law an independent committee of our board of directors, will take into account the relevant available facts and circumstances including, but not limited to:

- the benefits and perceived benefits to us;
- the opportunity costs of alternative transactions;
- the materiality and character of the related party's interest;
- the actual or apparent conflict of interest of the related party; and
- the terms available to or from, as the case may be, unrelated third parties or to or from employees generally.

The policy requires that, in determining whether to approve, ratify or reject a related-party transaction, our board of directors, or if permitted by applicable law an independent committee of our board of directors, must consider, in light of known circumstances, whether the transaction is in, or is not inconsistent with, our best interests and those of our shareholders, as our board of directors, or if permitted by applicable law an independent committee of our board of directors, determines in the good faith exercise of its discretion.

D. Interests of Experts and Counsel

Not applicable.

ITEM 8. FINANCIAL INFORMATION

A. Consolidated Statements and Other Financial Information

Our consolidated financial statements are appended at the end of this Annual Report starting at page F-1, and form a part hereof.

Legal Proceedings

From time to time, we may be involved in various claims and legal proceedings relating to claims arising out of our operations. We are not currently a party to any legal proceedings that, in the opinion of our management, are likely to have a material adverse effect on our business or our cash flows. Regardless of outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

Dividend Distribution

Approval of Dividends. Pursuant to French law, our board of directors may propose a dividend and/or reserve distribution for approval by the shareholders at the annual ordinary general meeting related to the statutory financial statements of Cellectis S.A.

Upon recommendation of our board of directors, our shareholders may decide to allocate all or part of any distributable profits to special or general reserves, to carry them forward to the next fiscal year as retained earnings or to allocate them to the shareholders as dividends. However, dividends may not be distributed when as a result of such distribution, our net assets are or would become lower than the amount of the share capital plus the amount of the legal reserves which, under French law, may not be distributed to shareholders (the amount of our share capital plus the amount of our legal and other reserves which may not be distributed was equal to $2.5 million on December 31, 2018). Moreover, the statutory accumulated deficit is $162.4 million as of December 31, 2018.

Our board of directors may distribute interim dividends after the end of the fiscal year but before the approval of the financial statements for the relevant fiscal year when the interim balance sheet, established during such year and certified by an auditor, reflects that we have earned distributable profits since the close of the last financial year, after recognizing the necessary depreciation and provisions and after deducting prior losses, if any, and the sums to be allocated to reserves, as required by law or the By-laws, and including any retained earnings. The amount of such interim dividends may not exceed the amount of the profit so defined.

Distribution of Dividends. Dividends are distributed to shareholders proportionally to their shareholding interests. In the case of interim dividends, distributions are made to shareholders on the date set by our board of directors during the meeting in which the distribution of interim dividends is approved. The actual dividend payment date is decided by the shareholders at an ordinary general shareholders' meeting or by our board of directors in the absence of such a decision by the shareholders. Shareholders that own shares on the actual payment date are entitled to the dividend.

Dividends may be paid in cash or, if the shareholders' meeting so decides, in kind, provided that all the shareholders receive a whole number of assets of the same nature paid in lieu of cash. Our By-laws provide that, subject to a decision of the shareholders' meeting taken by ordinary resolution, each shareholder may be given the choice to receive his dividend in cash or in shares.

B. Significant Changes

In March 2019, we entered into a lease agreement for a 82,000 square foot commercial-scale manufacturing facility, called the IMPACT site, which stands for "Innovative Manufacturing Plant for Allogeneic Cellular Therapies". The IMPACT facility is located in Raleigh, North Carolina. The new manufacturing facility is being designed to provide GMP manufacturing for clinical supply and commercial product upon potential regulatory approval. The facility is planned to be operational by 2021.

ITEM 9. THE OFFER AND LISTING

A. Offer and Listing Details

Our ADS have been listed on Nasdaq Global Market under the symbol "CLLS" since March 24, 2015. Prior to that date, there was no public trading market for ADSs. Our ordinary shares have been trading on Euronext Growth market of Euronext Paris under the symbol "ALCLS" since February 7, 2007. Prior to that date, there was no public trading market for ADSs or our ordinary shares.

B. Plan of Distribution

Not applicable.

C. Markets

The ADS have been listed on Nasdaq Global Market under the symbol "CLLS" since March 24, 2015 and our ordinary shares have been listed on the Euronext Growth market of Euronext in Paris under the symbol "ALCLS" since February 7, 2007.

D. Selling Shareholders

Not applicable.

E. Dilution

Not applicable.

F. Expenses of the Issue

Not applicable.

ITEM 10. ADDITIONAL INFORMATION

A. Share Capital

Not applicable.

B. Memorandum and Articles of Association

Key Provisions of Our By-laws and French Law

The description below reflects the terms of our By-laws, and summarizes the material rights of holders of our ordinary shares under French law. Please note that this is only a summary and is not intended to be exhaustive. For further information, please refer to the full version of our By-laws which is included as an exhibit to this Annual Report.

Corporate Purpose

Our corporate purpose, which is set forth in Article 3 of our Bylaws, in France and abroad includes:

- all activities related to genetics and more specifically to genome engineering, in particular, research, development and invention, filing and use of patents and trademarks, sale and marketing, advising and assisting, in all areas, in particular in the agro-food, pharmaceutical, textile and environmental sectors; and
- more generally, all industrial, commercial, financial and civil transactions and transactions involving real estate or movable property relating directly or indirectly to any of the aforementioned corporate purposes or any similar or related purpose.

Directors

Quorum and Voting. The board of directors may only deliberate if at least half of the directors attend the applicable meeting in the manner provided for in our By-laws. In particular, French law and the charter of the board of directors allow

directors to attend meetings of the board of directors in person or, to the extent permitted by applicable law, by videoconference or other telecommunications arrangements. In addition, our By-Laws allow a director to grant another director a proxy to represent him or her at a meeting of the board of directors, but no director can hold more than one proxy at any meeting. Decisions of the board of directors are adopted by the majority of the voting rights held by the directors present or represented, it being specified that in case of a vote-split, the Chairman of the board of directors shall have a deciding vote.

Directors' Voting Powers on Proposal, Arrangement or Contract in which any Director is Materially Interested. Under French law, any agreement entered into (directly or through an intermediary) between us and any director that is not entered into (1) in the ordinary course of business and (2) under standard terms and conditions is subject to the prior authorization of the board of directors, excluding the vote of the interested director.

The foregoing requirements also apply to agreements between us and another company, provided that the company is not one of our wholly-owned subsidiaries, if one of our directors is the owner or a general partner, manager, director, general manager or member of the executive or supervisory board of the other company, as well as to agreements in which one of our directors has an indirect interest.

Directors' Compensation. The aggregate amount of attendance fees (*jetons de présence*) of the board of directors is determined at the shareholders' annual ordinary general meeting. The board of directors then divides all or part (at the board's discretion) of this aggregate amount among some or all of its members by a simple majority vote. In addition, the board of directors may grant exceptional compensation (*rémunérations exceptionnelles*) to individual directors on a case-by-case basis for special and temporary assignments. The board of directors may also authorize the reimbursement of reasonable travel and accommodation expenses, as well as other expenses incurred by directors in the corporate interest.

Board of Directors' Borrowing Powers. There are currently no limits imposed by our By-laws on the amounts of loans or borrowings that the board of directors may approve.

Directors' Age Limits. The number of directors who are more than seventy (70) years old may not exceed one third of the directors in office.

Term of Director Office. Our By-laws provide that members of our board of directors are elected for a tenure of three years.

Employee Director Limits. The number of directors who are also party to employment contracts with the Company may not exceed one third of the directors in office.

Directors' Share Ownership Requirements. None.

Rights, Preferences and Restrictions Attaching to Ordinary Shares

Dividends. We may only distribute dividends out of our "*distributable profits*," plus any amounts held in our reserves that the shareholders decide to make available for distribution, other than those reserves that are specifically required to be maintained by law. "*Distributable profits*" consist of our unconsolidated net profit in each fiscal year, as increased or reduced by any profit or loss carried forward from prior years, less any contributions to the reserve accounts pursuant to French law (see below under "—Legal Reserve").

Legal Reserve. Pursuant to French law, we must allocate at least 5% of our unconsolidated net profit for each year to our legal reserve fund before dividends may be paid with respect to that year. Such allocation is compulsory until the amount in the legal reserve is equal to 10% of the aggregate par value of our issued and outstanding share capital. This restriction on the payment of dividends also applies to our French subsidiaries on an unconsolidated basis.

Approval of Dividends. Pursuant to French law, our board of directors may propose a dividend and/or reserve distribution for approval by the shareholders at the annual ordinary general meeting.

Upon recommendation of our board of directors, our shareholders may decide to allocate all or part of any distributable profits to special or general reserves, to carry them forward to the next fiscal year as retained earnings or to allocate them to the shareholders as dividends. However, dividends may not be distributed when as a result of such distribution our net assets are or would become lower than the amount of the share capital plus the amount of the legal reserves which, under French law, may not be distributed to shareholders.

Our board of directors may distribute interim dividends after the end of the fiscal year but before the approval of the financial statements for the relevant fiscal year when the interim balance sheet, established during such year and examined by an auditor, reflects that we have earned distributable profits since the close of the last financial year, after recognizing the necessary depreciation and provisions and after deducting prior losses, if any, and the sums to be allocated to reserves, as required by law or the By-laws, and including any retained earnings. The amount of such interim dividends may not exceed the amount of the profit so defined.

Distribution of Dividends. Dividends are distributed to shareholders proportionally to their shareholding interests. In the case of interim dividends, distributions are made to shareholders on the date set by our board of directors during the meeting in which the distribution of interim dividends is approved. The actual dividend payment date is decided by the shareholders at an ordinary general shareholders' meeting or by our board of directors in the absence of such a decision by the shareholders. Shareholders that own shares on the actual payment date are entitled to the dividend.

Dividends may be paid in cash or, if the shareholders' meeting so decides, in kind, provided that all the shareholders receive a whole number of assets of the same nature paid in lieu of cash. Our By-laws provide that, subject to a decision of the shareholders' meeting taken by ordinary resolution, each shareholder may be given the choice to receive his dividend in cash or in shares.

Timing of Payment. Pursuant to French law, dividends must be paid within a maximum period of nine months following the end of the relevant fiscal year. An extension of such timeframe may be granted by court order. Dividends that are not claimed within a period of five years after the payment date will be deemed to expire and revert to the French state.

Voting Rights. Each of our ordinary shares entitles its holder to vote and be represented in the shareholders' meetings in accordance with the provisions of French law and of our By-laws. The ownership of a share implies the acceptance of our By-laws and any decision of our shareholders.

In general, each shareholder is entitled to one vote per share at any general shareholders' meeting. However, our By-Laws provide that all shares held in registered form (*actions nominatives*) for more than two years will be granted double voting rights.

Under French law, treasury shares or shares held by entities controlled by us are not entitled to voting rights and are not taken into account for purposes of quorum calculation.

Rights to Share in Our Profit. Under French law, each ordinary share entitles its holder to a portion of the corporate profits and assets proportional to the amount of share capital represented thereby.

Rights to Share in the Surplus in the Event of Liquidation. If we are liquidated, any assets remaining after payment of our debts, liquidation expenses and all of our remaining obligations will first be used to repay in full the par value of our outstanding shares. Any surplus will then be distributed among shareholders proportionally to their shareholding in our company.

Repurchase and Redemption of Shares. Under French law, we may acquire our own shares. Such acquisition may be challenged on the ground of market abuse regulations. However, Regulation 596/2014 of April 16, 2014 and its related delegated regulations (MAR) provides for safe harbor exemptions when the acquisition is made (i) under a buy-back program to be authorized by the shareholders in accordance with the provisions of Article L. 225-209 of the French Commercial Code and with the General Regulations of the *Autorité des marchés financiers* or AMF and (ii) for one of the following purposes which shall be provided for in the buy-back program:

- to decrease our share capital;
- to meet our obligations arising from debt financial instruments issued by us that are exchangeable into shares;
- to meet our obligations arising from share option programs, or other allocations of shares, to our employees or to our managers or the employees or managers of our affiliate.

In addition, we benefit from a simple exemption when the acquisition is made under a liquidity contract complying with the general regulations of, and market practices accepted by, the AMF.

All other purposes, and especially share buy-backs made for external growth operations in pursuance of Article L. 225-209 of the French Commercial Code, while not forbidden, must be pursued in strict compliance of market manipulation and insider dealing rules.

Under the Market Abuse Regulation 596/2014 of April 16, 2014 (MAR) and in accordance with the General Regulations of the AMF, a corporation shall report to the AMF, no later than by the end of the seventh daily market session following the date of the execution of the transaction, all the transactions relating to the buy-back program, in a detailed form and in an aggregated form. In addition, we shall provide to the AMF, on a monthly basis, and to the public, on a quarterly basis, a summary report of the transactions made under a liquidity contract.

The decision to repurchase shares in order to decrease our share capital shall not be driven by losses and a purchase offer shall be made to all shareholders on a pro rata basis, with the approval of the shareholders at the extraordinary general meeting deciding the capital reduction; in this case, the shares repurchased must be cancelled within one month from their repurchase date.

When shares are repurchased in order to provide shares for distribution to employees or managers under a profit-sharing, free share or share option plan, the shares repurchased must be distributed within 12 months from their repurchase failing which they must be cancelled.

In any case, no such repurchase of shares may result in us holding, directly or through a person acting on our behalf, more than 10% of our issued share capital. Shares repurchased by us continue to be deemed "issued" under French law but are not entitled to dividends or voting rights so long as we hold them directly or indirectly, and we may not exercise the preemptive rights attached to them.

Sinking Fund Provisions. Our By-laws do not provide for any sinking fund provisions.

Liability to Further Capital Calls. Shareholders are liable for corporate liabilities only up to the par value of the shares they hold; they are not liable to further capital calls.

Requirements for Holdings Exceeding Certain Percentages. There are no such requirements, except as described under the section of this Annual Report titled "—Form, Holding and Transfer of Shares—Ownership of Shares and ADSs by Non-French Persons."

Actions Necessary to Modify Shareholders' Rights

Shareholders' rights may be modified as allowed by French law. Only the extraordinary shareholders' meeting is authorized to amend any and all provisions of our By-laws. It may not, however, increase any of the shareholders' commitments without the prior approval of each shareholder.

Special Voting Rights of Warrant Holders

Under French law, the holders of warrants of the same class (i.e., warrants that were issued at the same time and with the same rights), including founders' warrants, are entitled to vote as a separate class at a general meeting of that class of warrant holders under certain circumstances, principally in connection with any proposed modification of the terms and conditions of the class of warrants or any proposed issuance of preferred shares or any modification of the rights of any outstanding class or series of preferred shares.

Rules for Admission to and Calling Annual Shareholders' Meetings and Extraordinary Shareholders' Meetings

Access to, Participation in and Voting Rights at Shareholders' Meetings. The right to participate in a shareholders' meeting is granted to all the shareholders, regardless of the number of shares they hold, whose shares are fully paid up and for whom a right to attend shareholders' meetings has been established by registration of their shares in the names or names of the authorized intermediary acting on their behalf on the second business day prior to the shareholders' meeting at midnight (Paris time), either in the registered shares accounts held by the Company or in the bearer shares accounts held by the authorized intermediary.

Each shareholder may attend the meetings and vote (1) in person, or (2) by granting a proxy to his or her spouse, his or her partner with whom he or she has entered into a civil union, or another shareholder, for physical persons, or any person that they may choose, for legal entities, or (3) by sending a proxy to us without indication of the beneficiary (in which case such proxy shall be cast in favor of the resolutions supported by the board of directors), or (4) by correspondence, or (5) by videoconference or another means of telecommunication organized by the board of directors and allowing identification of the relevant shareholder in accordance with applicable laws.

Shareholders may, in accordance with legal and regulatory requirements, send their vote or proxy, either by hard copy or via telecommunications means. Such vote or proxy must be received (1) at least three days prior to the meeting, in the case of hard copies, (2) by 3:00 p.m. (Paris time) on the day before the meeting, in the case of, electronic votes by email, (3) by the date of the meeting, in the case of a proxy granted to a designated person, and (4) by 3:00 p.m. (Paris time) on the day before the meeting, in the case of proxies without a designated attorney and therefore granted to the chairman of the meeting.

Shareholders sending their vote within the applicable time limit, using the form provided to them by us for this purpose, are deemed present or represented at the shareholders' meeting for purposes of quorum and majority calculation.

The voting by correspondence form addressed by a shareholder is only valid for a single meeting or for successive meetings convened with the same agenda. To better understand the voting rights of the ADSs, you should carefully read the section of the accompanying prospectus "Description of American Depositary Shares".

Notice of Annual Shareholders' Meetings. Shareholders' meetings are convened by our board of directors, or, failing that, by our statutory auditors, or by a court appointed agent or liquidator in certain circumstances, or by the majority shareholder in capital or voting rights following a public tender offer or exchange offer or the transfer of a controlling block on the date decided by the board of directors or the relevant person. Meetings are held at our registered offices or at any other location indicated in the convening notice. A meeting notice (*avis de réunion*) is published in the French Journal of Mandatory Statutory Notices (BALO) at least 35 days prior to the date of the shareholders' meeting.

Additionally, a convening notice (*avis de convocation*) is published at least fifteen days prior to the date of the meeting in a legal gazette of the department in which the registered office of the company is located and in the French Journal of Mandatory Statutory Notices (BALO). Further, shareholders having held registered shares (*actions nominatives*) for at least one month at the time of the convening notice must be convened individually, by regular letter (or by registered letter if requested by the relevant shareholder) sent to their last known address.

When the shareholders' meeting cannot deliberate due to the lack of the required quorum, the second meeting must be called at least ten days in advance in the same manner as used for the first notice.

All notices to the shareholders must further specify the conditions under which the shareholders may vote by correspondence.

Agenda and Conduct of Annual Shareholders' Meetings. The agenda of the shareholders' meeting shall appear in the notice to convene the meeting. The shareholders' meeting may only deliberate on the items on the agenda except for the removal of directors and the appointment of their successors, which may be put to vote by any shareholder during any shareholders' meeting. One or more shareholders representing the percentage of share capital required by French law (currently 5%), and acting in accordance with legal requirements and within applicable time limits, may request the inclusion of items or proposed resolutions on the agenda.

Shareholders' meetings shall be chaired by the Chairman of the board of directors or, in his or her absence, by a director appointed for this purpose by the board of directors; failing which, the meeting itself shall elect a Chairman. Vote counting shall be performed by the two members of the meeting who are present and accept such duties, who represent, either on their own behalf or as proxies, the greatest number of votes.

Ordinary Shareholders' Meeting. Ordinary shareholders' meetings are those meetings called to make any and all decisions that do not result in a modification of our By-laws. An ordinary shareholders' meeting shall be convened at least once a year within six months of the end of each fiscal year in order to approve the annual and consolidated accounts for the relevant fiscal year or, in case of postponement, within the period established by court order. Upon first notice, the meeting may validly deliberate only if the shareholders present or represented by proxy or voting by mail represent at least one-fifth of the shares entitled to vote. Upon second notice, no quorum is required. Decisions are made by a majority of the votes held by the shareholders present, represented by proxy, or voting by mail. Abstentions will have the same effect as a "no" vote.

Extraordinary Shareholders' Meeting. Only an extraordinary shareholders' meeting is authorized to amend our By-laws. It may not, however, increase shareholders' commitments without the approval of each shareholder. Subject to the legal

provisions governing share capital increases from reserves, profits or share premiums, the resolutions of the extraordinary meeting will be valid only if the shareholders present, represented by proxy or voting by mail represent at least one-fourth of all shares entitled to vote upon first notice, or one-fifth upon second notice. If the latter quorum is not reached, the second meeting may be postponed to a date no later than two months after the date for which it was initially called. Decisions are made by a two-thirds majority vote of the shareholders present, represented by proxy, or voting by mail. Abstentions will have the same effect as a "no" vote.

In addition to the right to obtain certain information regarding us at any time, any shareholder may, from the date on which a shareholders' meeting is convened until the fourth business day preceding the date of the shareholders' meeting, submit written questions relating to the agenda for the meeting to our board of directors. Our board of directors is required to respond to these questions during the meeting, except if the answers of the board are posted on the website of the Company at the latest at the end of the shareholder's meeting.

Provisions Having the Effect of Delaying, Deferring or Preventing a Change in Control of the Company

Provisions contained in our By-laws and the corporate laws of France, the country in which we are incorporated, could make it more difficult for a third-party to acquire us, even if doing so might be beneficial to our shareholders. In addition, provisions of French law and our By-laws impose various procedural and other requirements which could make it more difficult for shareholders to effect certain corporate actions. These provisions include the following:

- a merger (i.e., in a French law context, a stock-for-stock exchange after which our company would be dissolved without being liquidated into the acquiring entity and our shareholders would become shareholders of the acquiring entity) of our company into a company incorporated in the European Union would require the approval of our board of directors as well as a two thirds majority of the votes held by the shareholders present, represented by proxy or voting by mail at the relevant meeting;
- a merger of our company into a company incorporated outside of the European Union would require the unanimous approval of our shareholders;
- under French law, a cash merger is treated as a share purchase and would require the consent of each participating shareholder;
- our shareholders have granted and may grant in the future our board of directors broad authorizations to increase our share capital or to issue additional ordinary shares or other securities (for example, warrants) to our shareholders, the public or qualified investors, including as a possible defence following the launching of a tender offer for our shares;
- our shareholders have preferential subscription rights proportional to their shareholding in our company on the issuance by us of any additional shares or securities giving the right, immediately or in the future, to new shares for cash or a set-off of cash debts, which rights may only be waived by the extraordinary general meeting (by a two-thirds majority vote) of our shareholders or on an individual basis by each shareholder;
- our board of directors has the right to appoint directors to fill a vacancy created by the resignation or death of a director, subject to the approval by the shareholders of such appointment at the next shareholders' meeting, which prevents shareholders from having the sole right to fill vacancies on our board of directors;
- our board of directors can only be convened by our chairman or our managing director, if any, or, when no board meeting has been held for more than two consecutive months, by directors representing at least one third of the total number of directors;
- our board of directors' meetings can only be regularly held if at least half of the directors attend either physically or by way of videoconference or teleconference enabling the directors' identification and ensuring their effective participation in the board of directors' decisions;
- our shares take the form of bearer securities or registered securities, if applicable legislation so permits, according to the shareholder's choice. Issued shares are registered in individual accounts opened by us or any authorized intermediary (depending on the form of such shares), in the name of each shareholder and kept according to the terms and conditions laid down by the legal and regulatory provisions;
- under French law, a non-French resident as well as any French entity controlled by non-French residents may have to file a declaration for statistical purposes with the Bank of France (*Banque de France*) following the date of certain foreign investments in us. Additionally, certain investments in a French

company relating to certain strategic industries by individual or entities not residents in a member State of the European Union are subject to the prior authorization of the French Ministry of Economy — see the section of this Annual Report titled "Ownership of Shares and ADSs by Non-French Persons";

- approval of at least a majority of the votes held by shareholders present, represented by a proxy, or voting by mail at the relevant ordinary shareholders' general meeting is required to remove directors with or without cause;
- advance notice is required for nominations to the board of directors or for proposing matters to be acted upon at a shareholders' meeting, except that a vote to remove and replace a director can be proposed at any shareholders' meeting without notice;
- in the event where certain ownership thresholds would be crossed, a number of disclosures should be made by the relevant shareholder in addition to certain obligations; see the section of this Annual Report titled "—Declaration of Crossing of Ownership Thresholds";
- transfers of shares shall comply with applicable insider trading rules;
- pursuant to French law, the sections of the By-laws relating to the number of directors and election and removal of a director from office may only be modified by a resolution adopted by a two-thirds majority vote of our shareholders present, represented by a proxy or voting by mail at the meeting.

Declaration of Crossing of Ownership Thresholds

Subject to requirements of French law, our By-laws do not require any specified disclosure by shareholders that cross ownership thresholds with respect to our share capital, except as described under the section of this Annual Report titled "—Form, Holding and Transfer of Shares—Ownership of Shares and ADSs by Non-French Persons."

The absence of specific requirement in our By-laws is without prejudice to the following disclosures which are applicable to us according to French legal and regulatory provisions, it being provided that the following is a summary which is therefore not intended to be a complete description of applicable rules under French law:

- Shareholders must make a declaration to us no later than the fourth trading day after such shareholder crosses the following thresholds: 5%, 10%, 15%, 20%, 25%, 30%, 33.33%, 50%, 66.66%, 90% and 95%.
- Shareholders must make a declaration to the AMF no later than the fourth trading day after such shareholder crosses the following thresholds: 50% and 95%.

The above obligations of declaration apply when crossing each of the above-mentioned thresholds in an upward or downward direction.

In case of failure to declare shares or voting rights exceeding the fraction that should have been declared, such shares shall be deprived of voting rights at shareholders' meetings for any meeting that would be held until the expiry of a period of two years from the date of regularization of the notification in accordance with Article L. 233-14 of the French Commercial Code. Additional sanctions may apply pursuant to Article L. 621-15 of the French Monetary and Financial Code.

- Subject to certain exemptions, any shareholder crossing, alone or acting in concert, the 50% threshold shall file a mandatory public tender offer.

Changes in Share Capital

Increases in Share Capital. Pursuant to French law, our share capital may be increased only with shareholders' approval at an extraordinary general shareholders' meeting following the recommendation of our board of directors. The shareholders may delegate to our board of directors either the authority *(délégation de compétence)* or the power *(délégation de pouvoir)* to carry out any increase in share capital in accordance with applicable laws.

Increases in our share capital may be effected by:

- issuing additional shares;
- increasing the par value of existing shares;
- creating a new class of equity securities; and

- exercising the rights attached to securities giving access to the share capital.

Increases in share capital by issuing additional securities may be effected through one or a combination of the following:

- issuances in consideration for cash;
- issuances in consideration for assets contributed in kind;
- issuances through an exchange offer;
- issuances by conversion of previously issued debt instruments;
- issuances by capitalization of profits, reserves or share premium; and
- subject to certain conditions, issuances by way of offset against debt incurred by us.

Decisions to increase the share capital through the capitalization of reserves, profits and/or share premium require shareholders' approval at an extraordinary general shareholders' meeting, acting under the quorum and majority requirements applicable to ordinary shareholders' meetings. Increases in share capital effected by an increase in the par value of shares require unanimous approval of the shareholders, unless effected by capitalization of reserves, profits or share premium. All other capital increases require shareholders' approval at an extraordinary general shareholders' meeting acting under the regular quorum and majority requirements for such meetings.

Reduction in Share Capital. Pursuant to French law, any reduction in our share capital requires shareholders' approval at an extraordinary general shareholders' meeting following the recommendation of our board of directors. The share capital may be reduced either by decreasing the par value of the outstanding shares or by reducing the number of outstanding shares. The number of outstanding shares may be reduced by the repurchase and cancellation of shares. Holders of each class of shares must be treated equally unless each affected shareholder agrees otherwise.

Preferential Subscription Right. According to French law, if we issue additional shares or securities giving right, immediately or in the future, to new shares for cash, current shareholders will have preferential subscription rights to these securities on a *pro rata* basis. Preferential subscription rights entitle the individual or entity that holds them to subscribe proportionally to the number of shares held by them to the issuance of any securities increasing, or that may result in an increase of, our share capital by means of a cash payment or a set-off of cash debts. The preferential subscription rights may be transferred and/or sold during the subscription period relating to a particular offering. Pursuant to French law, the preferential subscription rights will be transferable during a period starting two working days prior to the opening of the subscription period and ending two working days prior to the closing of the subscription period.

The preferential subscription rights with respect to any particular offering may be waived at an extraordinary general meeting by a two thirds vote of our shareholders or individually by each shareholder. Our board of directors and our independent auditors are required by French law to present reports to the shareholders' meeting that specifically address any proposal to waive the preferential subscription rights.

Further, to the extent permitted under French law, we may seek, during an extraordinary general shareholders' meeting, the approval of the shareholders to waive their preferential subscription rights in order to authorize the board of directors to issue additional shares and/or other securities convertible or exchangeable into shares.

Form, Holding and Transfer of Shares

Form of Shares. Pursuant to our By-laws, shares may be held in registered or bearer form, at each shareholder's discretion.

Further, in accordance with applicable legal and regulatory provisions, we may request at any time from the authorized intermediary responsible for holding our shares the name or, in the case of a legal entity, the corporate name, nationality and address of holders of securities, giving immediate or future access to voting rights at our shareholders' meetings, the number of securities they own and, where applicable, the restrictions attaching to such securities.

Holding of Shares. In accordance with French law concerning the "dematerialization" of securities, the ownership rights of shareholders are represented by book entries instead of share certificates. Shares are registered in individual accounts opened by us or any authorized intermediary, in the name of each shareholder and kept according to applicable legal and regulatory provisions.

Ownership of Shares and ADSs by Non-French Persons. Neither the French Commercial Code nor our By-laws presently impose any restrictions on the right of non-French residents or non-French shareholders to own and vote shares.

However, non-French residents must file a declaration for statistical purposes with the Bank of France (*Banque de France*) within twenty working days following the date of certain direct foreign investments in us, including any purchase of our ADSs. In particular, such filings are required in connection with investments exceeding €15,000,000 that lead to the acquisition of at least 10% of our Company's share capital or voting rights or cross such 10% threshold. Violation of this filing requirement may be sanctioned by five years of imprisonment and a fine of up to twice the amount of the relevant investment. This amount may be increased fivefold if the violation is made by a legal entity.

Further, any investment (i) by an individual or entity located in a country that is not a member State of the European Union or of a member State of the European Economic Area having entered into a convention on administrative assistance against tax evasion and fraud with France, or by a French citizen not residing in France, and (ii) that will result in the relevant investor acquiring the control of, all or part of a business of, or more than 33.33% of the share capital or voting rights of, a company registered in France and developing activities in certain strategic industries, such as, energy, public health, telecommunications, artificial intelligence, cybersecurity, robotics, data collection or dual-use goods and technology is subject to the prior authorization by the French Ministry of Economy. In the absence of such authorization, the relevant investment shall be deemed null and void.

Assignment and Transfer of Shares. Shares are freely negotiable, subject to applicable legal and regulatory provisions (including, in particular, the prohibition on insider trading).

Listing

Our ADSs have been listed on the Nasdaq Global Market under the symbol "CLLS" and our ordinary shares have been listed on the Euronext Growth market of Euronext in Paris under the symbol "ALCLS".

Transfer Agent and Registrar

The transfer agent and registrar for our ADSs is Citibank, N.A. The transfer agent and registrar for our ordinary shares is Société Générale Securities Services.

C. Material Contracts

We entered into an underwriting agreement among Merrill Lynch, Pierce, Fenner & Smith Incorporated and Jefferies LLC, as representatives of the underwriters, on March 24, 2015, with respect to the ADSs sold in our initial public offering. We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, and to contribute to payments the underwriters may be required to make in respect of such liabilities.

We entered into an underwriting agreement among Goldman Sachs & Co. LLC, Citigroup Global Markets Inc. and Barclays Capital, Inc. as representatives of the underwriters, on April 4, 2018, with respect to the ADSs sold in our follow-on offering. We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, and to contribute to payments the underwriters may be required to make in respect of such liabilities.

For additional information on our material contracts, please refer to items 4 and 6 of this Annual Report.

D. Exchange Controls

Under current French foreign exchange control regulations there are no limitations on the amount of cash payments that we may remit to residents of foreign countries. Laws and regulations concerning foreign exchange controls do, however, require that all payments or transfers of funds made by a French resident to a non-resident such as dividend payments be handled by an accredited intermediary. All registered banks and substantially all credit institutions in France are accredited intermediaries.

E. Taxation

Material U.S. Federal Income Tax Considerations

The following is a discussion of the material U.S. federal income tax consequences of owning and disposing of ADSs. This summary does not address any aspect of U.S. federal non-income tax laws, such as U.S. federal estate and gift tax laws, or state, local or non-U.S. tax laws, and does not purport to be a comprehensive description of all of the U.S. tax considerations that may be relevant to particular holders.

The discussion applies to you only if you hold the ADSs as capital assets for U.S. federal income tax purposes (generally, for investment). This section does not apply to you if you are a member of a special class of holders subject to special tax rules, including:

- a broker;
- a dealer in securities, commodities or foreign currencies;
- a trader in securities that elects to use a mark-to-market method of accounting for your securities holdings;
- a bank or other financial institution;
- a tax-exempt organization;
- an insurance company;
- a real estate investment trust;
- a controlled foreign corporation;
- a passive foreign investment company;
- a regulated investment company;
- an investor who is a U.S. expatriate, former U.S. citizen or former long term resident of the United States;
- a mutual fund;
- an individual retirement or other tax-deferred account;
- a holder liable for alternative minimum tax;
- a holder that actually or constructively owns 10% or more, by voting power, of our voting stock;
- a partnership or other pass-through entity for U.S. federal income tax purposes;
- a holder that holds ADSs as part of a straddle, hedging, constructive sale, conversion or other integrated transaction for U.S. federal income tax purposes; or
- a U.S. holder whose functional currency is not the U.S. Dollar.

This section is based on the Internal Revenue Code of 1986, as amended, or (the Code), existing and proposed income tax regulations issued under the Code, legislative history, and judicial and administrative interpretations thereof, all as of the date of this Annual Report. All of the foregoing are subject to change at any time, and any change could be retroactive and could affect the accuracy of this discussion. In addition, the application and interpretation of certain aspects of the passive foreign investment company, or PFIC, rules, referred to below, require the issuance of regulations which in many instances have not been promulgated and which may have retroactive effect. There can be no assurance that any of these regulations will be enacted or promulgated, and if so, the form they will take or the effect that they may have on this discussion. This discussion is not binding on the U.S. Internal Revenue Service, or IRS, or the courts. No ruling has been or will be sought from the IRS with respect to the positions and issues discussed herein, and there can be no assurance that the IRS or a court will not take a different position concerning the U.S. federal income tax consequences of an investment in the ADSs or that any such position would not be sustained.

YOU SHOULD CONSULT YOUR OWN TAX ADVISORS CONCERNING THE U.S. FEDERAL, STATE, LOCAL AND NON-U.S. TAX CONSEQUENCES OF OWNING AND DISPOSING OF THE ADSs IN YOUR PARTICULAR SITUATIONS, INCLUDING ANY CONSEQUENCES UNDER THE RECENTLY ENACTED LEGISLATION KNOWS AS THE TAX CUTS AND JOBS ACT.

You are a "U.S. holder" if you are a beneficial owner of ADSs and you are or are treated for U.S. federal income tax purposes as:

- a citizen or resident of the United States;
- a corporation created or organized under the laws of the United States, any state thereof, or the District of Columbia;
- an estate whose income is subject to U.S. federal income tax regardless of its source; or
- a trust if (1) a U.S. court can exercise primary supervision over the trust's administration and one or more U.S. persons are authorized to control all substantial decisions of the trust or (2) has a valid election in effect under applicable U.S. Treasury regulations to be treated as a U.S. person for U.S. federal income tax purposes.

In addition, this discussion is limited to U.S. holders who are not resident in France for purposes of the Income Tax Treaty between the United States and France.

If a partnership (including for this purpose any entity treated as a partnership for U.S. federal income tax purposes) is a beneficial owner of the ADSs, the U.S. tax treatment of a partner in the partnership generally will depend on the status of the partner and the activities of the partnership. A holder of the ADSs that is a partnership and partners in such a partnership should consult their own tax advisors concerning the U.S. federal income tax consequences of owning and disposing of ADSs.

A "non-U.S. holder" is a beneficial owner of ADSs that is neither a U.S. holder nor a partnership for U.S. federal income tax purposes.

Generally, holders of ADSs should be treated for U.S. federal income tax purposes as holding the ordinary shares represented by the ADSs. Accordingly, no gain or loss will be recognized upon an exchange of ordinary shares for ADSs or an exchange of ADSs for ordinary shares. The U.S. Treasury has expressed concerns that intermediaries in the chain of ownership between the holder of an ADS and the issuer of the security underlying the ADS may be taking actions that are inconsistent with the claiming of foreign tax credits for U.S. holders of ADSs. Accordingly, the credibility of foreign taxes, if any, as described below, could be affected by actions taken by intermediaries in the chain of ownership between the holder of an ADS and the company.

PFIC Considerations

The Code provides special rules regarding certain distributions received by U.S. persons with respect to, and sales, exchanges and other dispositions, including pledges, of, shares of stock (including ordinary shares represented by ADSs) in a PFIC. A non-U.S. corporation will be treated as a PFIC for any taxable year in which either: (1) at least 75 percent of its gross income is "passive income" or (2) at least 50 percent of its gross assets during the taxable year (based on the average of the fair market values of the assets determined at the end of each quarterly period) are "passive assets," which generally means that they produce passive income or are held for the production of passive income. Passive income for this purpose generally includes, among other things, dividends, interest, rents, royalties, gains from commodities and securities transactions, and gains from assets that produce passive income. In determining whether a foreign corporation is a PFIC, a pro rata portion of the income and assets of each corporation in which it owns, directly or indirectly, at least a 25% interest (by value) is taken into account.

Although the matter is not free from doubt, we do not believe that we were a PFIC for U.S. federal income tax purposes for the 2018 taxable year. No assurances may be given at this time as to our PFIC for 2019. However, our PFIC status must be determined annually and therefore is subject to change. Because this determination is made annually at the end of each taxable year and is dependent upon a number of factors, some of which are beyond our control, including the amount and nature of our income, as well as on the market valuation of our assets and our spending schedule for our cash balances, and because certain aspects of the PFIC rules are not entirely certain, there can be no assurance that we are or are not a PFIC or that the IRS will agree with our conclusion regarding our PFIC status. If we are not a PFIC during any taxable year in which you hold ADSs, then the remainder of the discussion under "Taxation—Material U.S. Federal Income Tax Considerations," outside of this "—PFIC Considerations" portion may be relevant to you. U.S. holders should consult their tax advisors as to the applicability of the PFIC rules.

A U.S. holder that holds ADSs during any taxable year in which we qualify as a PFIC is subject to special tax rules with respect to (a) any gain realized on the sale, exchange or other disposition of the ADSs and (b) any "excess distribution" by the corporation to the holder, unless the holder elects to treat the PFIC as a "qualified electing fund," or QEF, or makes a "mark-to-market" election, each as discussed below. An "excess distribution" is that portion of a distribution with respect to ADSs that exceeds 125% of the annual average of such distributions over the preceding three-year period or, if shorter, the U.S. holder's holding period for its ADSs. Excess distributions and gains on the sale, exchange or other disposition of ADSs of a corporation which was a PFIC at any time during the U.S. holder's holding period are allocated ratably to each day of the U.S. holder's holding period. Amounts allocated to the taxable year in which the disposition occurs and amounts allocated to any period in the shareholder's holding period before the first day of the first taxable year that the corporation was a PFIC will be taxed as ordinary income (rather than capital gain) earned in the taxable year of the disposition. Amounts allocated to each of the other taxable years in the U.S. holder's holding period are not included in gross income for the year of the disposition, but are subject to the highest ordinary income tax rates in effect for individuals or corporations, as applicable, for each such year and the interest charge

generally applicable to income tax deficiencies will be imposed on the resulting tax attributable to each year. The tax liability for amounts allocated to years before the year of disposition or "excess distribution" cannot be offset by any net operating losses for such years, and gains (but not losses) realized on the sale of the ADSs cannot be treated as capital, even if a U.S. holder held such ADSs as capital assets.

If we are a PFIC for any taxable year during which a U.S. holder holds ADSs, then we generally will continue to be treated as a PFIC with respect to the holder for all succeeding years during which such holder holds ADSs, even if we no longer satisfy either the passive income or passive asset tests described above, unless the U.S. holder terminates this deemed PFIC status by making a "deemed sale" election. If such election is made, a U.S. holder will be deemed to have sold the ADSs at their fair market value on the last day of the last taxable year for which we were a PFIC, and any gain from such deemed sale would be subject to the excess distribution rules as described above. After the deemed sale election, the ADSs with respect to which the deemed sale election was made will not be treated as shares in a PFIC unless we subsequently become a PFIC.

If we are or become a PFIC, the excess distribution rules may be avoided if a U.S. holder makes a QEF election effective beginning with the first taxable year in the holder's holding period in which we are treated as a PFIC with respect to such holder. A U.S. holder that makes a QEF election with respect to a PFIC is required to include in income its pro rata share of the PFIC's ordinary earnings and net capital gain as ordinary income and capital gain, respectively, subject to a separate election to defer payment of taxes, which deferral is subject to an interest charge. If a foreign corporation ceases to be a PFIC, the U.S. holder's QEF election would no longer require an annual income inclusion. However, cessation of a foreign corporation's status as a PFIC will not terminate a QEF election and if the corporation becomes a PFIC again, an annual income inclusion may be required.

In general, a U.S. holder makes a QEF election by attaching a completed IRS Form 8621 to a timely filed (taking into account any extensions) U.S. federal income tax return for the year beginning with which the QEF election is to be effective. In certain circumstances, a U.S. holder may be able to make a retroactive QEF election. A QEF election can be revoked only with the consent of the IRS. In order for a U.S. holder to make a valid QEF election, the corporation must annually provide or make available to the holder certain information. For any taxable year in which we are a PFIC, we will determine whether we will provide to U.S. holders the information required to make a QEF election.

As an alternative to making a QEF election, a U.S. holder may make a "mark-to-market" election with respect to its ADSs if the ADSs meet certain minimum trading requirements, as described below. If a U.S. holder makes a valid mark-to-market election for the first taxable year in which such holder holds (or is deemed to hold) ADSs in a corporation and for which such corporation is determined to be a PFIC, such holder generally will not be subject to the PFIC rules described above in respect of its ADSs. Instead, a U.S. holder that makes a mark-to-market election will be required to include in income each year an amount equal to the excess, if any, of the fair market value of the ADSs that the holder owns as of the close of the taxable year over the holder's adjusted tax basis in the ADSs. The U.S. holder will be entitled to a deduction for the excess, if any, of the holder's adjusted tax basis in the ADSs over the fair market value of the ADSs as of the close of the taxable year; provided, however, that the deduction will be limited to the extent of any net mark-to-market gains with respect to the ADSs included by the U.S. holder under the election for prior taxable years. The U.S. holder's basis in the ADSs will be adjusted to reflect the amounts included or deducted pursuant to the election. Amounts included in income pursuant to a mark-to-market election, as well as gain on the sale, exchange or other disposition of the ADSs, will be treated as ordinary income. The deductible portion of any mark-to-market loss, as well as loss on a sale, exchange or other disposition of ADSs to the extent that the amount of such loss does not exceed net mark-to-market gains previously included in income, will be treated as ordinary loss. If a U.S. holder makes a valid mark-to-market election, any distributions made by us in a year in which we are a PFIC would generally be subject to the rules discussed below under "—Taxation of Dividends," except the lower rate applicable to qualified dividend income would not apply. If we are not a PFIC when a U.S. holder has a mark-to-market election in effect, gain or loss realized by a U.S. holder on the sale of our ADSs will be a capital gain or loss and taxed in the manner described below under "—Taxation of Sale, Exchange or other Disposition of ADSs."

The mark-to-market election applies to the taxable year for which the election is made and all subsequent taxable years, unless the ADSs cease to meet applicable trading requirements (described below) or the IRS consents to its revocation. The excess distribution rules generally do not apply to a U.S. holder for taxable years for which a mark-to-market election is in effect. If we are a PFIC for any year in which the U.S. holder owns ADSs but before a mark-to-market election is made, the interest charge rules described above will apply to any mark-to-market gain recognized in the year the election is made. Generally, if a foreign corporation ceases to be a PFIC, the U.S. holder's mark-to-market election would no longer require the income inclusion described above. However, cessation of a foreign corporation's status as a PFIC will not terminate a mark-to-market election and if the corporation becomes a PFIC again, mark-to-market income inclusions may be required.

A mark-to-mark election is available only if the ADSs are considered "marketable" for these purposes. ADSs will be marketable if they are regularly traded on a national securities exchange that is registered with the SEC (such as the Nasdaq Global Market) or on a non-U.S. exchange or market that the IRS determines has rules sufficient to ensure that the market price

represents a legitimate and sound fair market value. For these purposes, ADSs will be considered regularly traded during any calendar year during which more than a de minimis quantity of the ADSs is traded on at least 15 days during each calendar quarter. Any trades that have as their principal purpose meeting this requirement will be disregarded. Each U.S. holder should ask its own tax advisor whether a mark-to-market election is available or desirable.

If we are a PFIC for any year in which a U.S. holder holds ADSs, such U.S. holder must generally file an IRS Form 8621 annually. A U.S. holder must also provide such other information as may be required by the U.S. Treasury Department if the U.S. holder (1) receives certain direct or indirect distributions from a PFIC, (2) recognizes gain on a direct or indirect disposition of ADSs, or (3) makes certain elections (including a QEF election or a mark-to-market election) reportable on IRS Form 8621.

Under attribution rules, if we are a PFIC, U.S. holders of our ADSs will be deemed to own their proportionate shares of our subsidiaries that are PFICs, if any. Like the determination of whether we are a PFIC, the determination of whether any of our subsidiaries is a PFIC is made annually at the end of each taxable year. Assuming a U.S. holder does not receive from a PFIC subsidiary the information that the U.S. holder needs to make a QEF election with respect to such a subsidiary, a U.S. holder generally will be deemed to own a portion of the shares of such lower-tier PFIC and may incur liability for a deferred tax and interest charge if we receive a distribution from, or dispose of all or part of our interest in, or the U.S. holder otherwise is deemed to have disposed of an interest in, the lower-tier PFIC, even though the U.S. holder has not received the proceeds of those distributions or dispositions directly. We currently do not have any non-U.S. subsidiaries that could be PFIC subsidiaries.

U.S. holders are urged to consult their tax advisors as to our status as a PFIC, and, if we are treated as a PFIC, as to the effect on them of, and the reporting requirements with respect to, the PFIC rules and the desirability of making, and the availability of, either a QEF election or a mark-to-market election with respect to our ADSs.

Taxation of Dividends

U.S. Holders. Subject to the PFIC rules described above under "—PFIC Considerations," if you are a U.S. holder, you must include in your gross income the gross amount of any distributions of cash or property (other than certain *pro rata* distributions of ADSs) with respect to ADSs, to the extent the distribution is paid out of our current or accumulated earnings and profits, as determined for U.S. federal income tax purposes. A U.S. holder must include the dividend as ordinary income at the time of actual or constructive receipt. The amount of any dividend income paid in Euro will be the U.S. dollar amount calculated by reference to the exchange rate in effect on the date of receipt, regardless of whether the payment is in fact converted into U.S. dollars. If the dividend is converted into U.S. dollars on the date of receipt, a U.S. holder should not be required to recognize foreign currency gain or loss in respect of the dividend income. A U.S. holder may have foreign currency gain or loss if the dividend is converted into U.S. dollars after the date of receipt. Distributions in excess of current and accumulated earnings and profits, as determined for U.S. federal income tax purposes, will be treated as a non-taxable return of capital to the extent of your basis in the ADSs and thereafter as capital gain from the sale or exchange of such ADSs. Notwithstanding the foregoing, we do not intend to maintain calculations of our earnings and profits as determined for U.S. federal income tax purposes. Consequently, distributions generally will be reported as dividend income for U.S. information reporting purposes. The dividend will not be eligible for the dividends-received deduction generally allowed to U.S. corporations in respect of dividends received from other U.S. corporations.

Subject to the PFIC rules described above under "—PFIC Considerations," dividends paid by a non-U.S. corporation generally will be taxed at the preferential tax rates applicable to long-term capital gain of non-corporate taxpayers if (a) such non-U.S. corporation is eligible for the benefits of certain U.S. treaties or the dividend is paid by such non-U.S. corporation with respect to stock that is readily tradable on an established securities market in the United States, (b) the U.S. holder receiving such dividend is an individual, estate, or trust, (c) such dividend is paid on shares that have been held by such U.S. holder for at least 61 days during the 121-day period beginning 60 days before the "ex-dividend date," and (d) we are not a PFIC in the year of the dividend or the immediately preceding year. If the requirements of the immediately preceding sentence are not satisfied, a dividend paid by a non-U.S. corporation to a U.S. holder, including a U.S. holder that is an individual, estate, or trust, generally will be taxed at ordinary income tax rates (and not at the preferential tax rates applicable to long-term capital gains). As discussed above under "PFIC Considerations," although the matter is not free from doubt (and while we can give no assurances as to our PFIC status for 2019 or future taxable years), we do not believe that we were a PFIC for U.S. federal income tax purposes for the 2018 taxable year. The dividend rules are complex, and each U.S. holder should consult its own tax advisor regarding the dividend rules.

The amount of dividend will include any amounts withheld by the Company in respect of French taxes. Subject to applicable limitations, some of which vary depending upon the U.S. holder's circumstances and subject to the discussion above regarding concerns expressed by the U.S. Treasury, French income taxes withheld from dividends on ADSs at a rate not exceeding the rate provided by the Treaty will be creditable against the U.S. holder's U.S. federal income tax liability.

Dividends received generally will be income from non-U.S. sources, which may be relevant in calculating your U.S. foreign tax credit limitation. Such non-U.S. source income generally will be "passive category income," or in certain cases "general

category income", which is treated separately from other types of income for purposes of computing the foreign tax credit allowable to you. The rules with respect to the foreign tax credit are complex and involve the application of rules that depend upon a U.S. holder's particular circumstances. You should consult your own tax advisor to determine the foreign tax credit implications of owning the ADSs. Instead of claiming a credit, a U.S. holder may, subject to generally applicable limitations, elect to deduct such French taxes, if any, in computing taxable income. An election to deduct foreign taxes instead of claiming foreign tax credits applies to all foreign taxes paid or accrued in the taxable year.

Non-U.S. Holders. If you are a non-U.S. holder, dividends paid to you generally will not be subject to U.S. income tax unless the dividends are "effectively connected" with your conduct of a trade or business within the United States, and the dividends are attributable to a permanent establishment (or in the case of an individual, a fixed place of business) that you maintain in the United States if that is required by an applicable income tax treaty as a condition for subjecting you to U.S. taxation on a net income basis. In such cases you generally will be taxed in the same manner as a U.S. holder (other than with respect to the Medicare Tax described below). If you are a corporate non-U.S. holder, "effectively connected" dividends may, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate or a lower rate if you are eligible for the benefits of an income tax treaty that provides for a lower rate.

Taxation of Sale, Exchange or other Disposition of ADSs

U.S. Holders. Subject to the PFIC rules described above under "—PFIC Considerations," if you are a U.S. holder and you sell, exchange or otherwise dispose of your ADSs, you generally will recognize capital gain or loss for U.S. federal income tax purposes equal to the difference between the value of the amount realized and your tax basis in your ADSs. Gain or loss recognized on such a sale, exchange or other disposition of ADSs generally will be long-term capital gain if the U.S. holder has held the ADSs for more than one year. Long-term capital gains of U.S. holders who are individuals (as well as certain trusts and estates) are generally taxed at preferential rates. The gain or loss will generally be income or loss from sources within the United States for foreign tax credit limitation purposes, unless it is attributable to an office or other fixed place of business outside the United States and certain other conditions are met. Your ability to deduct capital losses is subject to limitations. As discussed above under "—PFIC Considerations," although the matter is not free from doubt (and while we can give no assurances as to our PFIC status for 2019 or future taxable years), we do not believe that we were a PFIC for U.S. federal income tax purposes for the 2018 taxable year.

Non-U.S. Holders. If you are a non-U.S. holder, you will not be subject to U.S. federal income tax on gain recognized on the sale, exchange or other disposition of your ADSs unless:

- the gain is "effectively connected" with your conduct of a trade or business in the United States, and the gain is attributable to a permanent establishment (or in the case of an individual, a fixed place of business) that you maintain in the United States if that is required by an applicable income tax treaty as a condition for subjecting you to U.S. taxation on a net income basis; or
- you are an individual, you are present in the United States for 183 or more days in the taxable year of such sale, exchange or other disposition and certain other conditions are met.

In the first case, the non-U.S. holder will be taxed in the same manner as a U.S. holder (other than with respect to the Medicare Tax described below). In the second case, the non-U.S. holder will be subject to U.S. federal income tax at a rate of 30% on the amount by which such non-U.S. holder's U.S.-source capital gains exceed such non-U.S.-source capital losses.

If you are a corporate non-U.S. holder, "effectively connected" gains that you recognize may also, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate or at a lower rate if you are eligible for the benefits of an income tax treaty that provides for a lower rate.

Medicare Tax

Certain U.S. holders who are individuals, estates or trusts are required to pay a 3.8% Medicare surtax on all or part of that holder's "net investment income" (or, in the case of an estate or trust, undistributed "net investment income"), which includes, among other items, dividends on, and capital gains from the sale or other taxable disposition of, the ADSs, subject to certain limitations and exceptions. U.S. holders should consult their own tax advisors regarding the effect, if any, of this surtax on their ownership and disposition of the ADSs.

Information with Respect to Foreign Financial Assets

U.S. holders that are individuals (and, to the extent provided in regulations, certain entities) that own "specified foreign financial assets," including possibly the ADSs, with an aggregate value in excess of $50,000 are generally required to file IRS Form 8938 with information regarding such assets. Depending on the circumstances, higher threshold amounts may apply.

Specified foreign financial assets include any financial accounts maintained by foreign financial institutions, as well as any of the following, but only if they are not held in accounts maintained by financial institutions: (i) stocks and securities issued by non-U.S. persons, (ii) financial instruments and contracts held for investment that have non-U.S. issuers or counterparties and (iii) interests in non-U.S. entities. If a U.S. holder is subject to this information reporting regime, the failure to timely file IRS Form 8938 may subject the U.S. holder to penalties. In addition to these requirements, U.S. holders may be required to annually file FinCEN Report 114, Report of Foreign Bank and Financial Accounts with the U.S. Department of Treasury. U.S. holders are thus encouraged to consult their U.S. tax advisors with respect to these and other reporting requirements that may apply to their acquisition of the ADSs.

Backup Withholding and Information Reporting

In general, information reporting requirements will apply to distributions made on our ADSs within the United States to a non-corporate U.S. holder and to the proceeds from the sale, exchange, redemption or other disposition of ADSs by a non-corporate U.S. holder to or through a U.S. office of a broker. Payments made (and sales or other dispositions effected at an office) outside the U.S. will be subject to information reporting in limited circumstances.

In addition, backup withholding of U.S. federal income tax may apply to such amounts if the U.S. holder fails to provide an accurate taxpayer identification number (or otherwise establishes, in the manner provided by law, an exemption from backup withholding) or to report dividends required to be shown on the U.S. holder's U.S. federal income tax returns.

Backup withholding is not an additional income tax, and the amount of any backup withholding from a payment to a U.S. holder will be allowed as credit against the U.S. holder's U.S. federal income tax liability provided that the appropriate returns are timely filed.

A non-U.S. holder generally may eliminate the requirement for information reporting and backup withholding by providing a properly completed and duly executed certification of its foreign status to the payor, under penalties of perjury, on IRS Form W-8BEN, W-8BEN-E or other appropriate W-8, as applicable. You should consult your own tax advisor as to the qualifications for exemption from backup withholding and the procedures for obtaining the exemption.

The foregoing does not purport to be a complete analysis of the potential tax considerations relating to the ownership and disposition of the ADSs. Prospective investors should consult their own tax advisors as to the particular tax considerations applicable to them relating to the ownership and disposition of the ADSs, including the applicability of the U.S. federal, state and local tax laws or non-tax laws, foreign tax laws, and any changes in applicable tax laws and any pending or proposed legislation or regulations.

Material French Income Tax Considerations

The following describes the material French income tax consequences to U.S. Holders (as defined below) of purchasing, owning and disposing of the ADSs and, unless otherwise noted, this discussion is the opinion of Jones Day, our French tax counsel, insofar as it relates to matters of French tax law and legal conclusions with respect to those matters.

This discussion does not purport to be a complete analysis or listing of all potential tax effects of the acquisition, ownership or disposition of our securities to any particular investor, and does not discuss tax considerations that arise from rules of general application or that are generally assumed to be known by investors. All of the following is subject to change. Such changes could apply retroactively and could affect the consequences described below.

In 2011, France introduced a comprehensive set of new tax rules applicable to French assets that are held by or in foreign trusts. These rules, among other things, provide for the inclusion of trust assets in the settlor's net assets for purpose of applying the French wealth tax, for the application of French gift and death duties to French assets held in trust, for a specific tax on capital on the French assets of foreign trusts not already subject to the French wealth tax and for a number of French tax reporting and disclosure obligations. The following discussion does not address the French tax consequences applicable to securities (including ADSs) held in trusts. If securities are held in trust, the grantor, trustee and beneficiary are urged to consult their own tax advisor regarding the specific tax consequences of acquiring, owning and disposing of securities.

The description of the French income tax and wealth tax consequences set forth below is based on the Convention between the Government of the United States of America and the Government of the French Republic for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with Respect to Taxes on Income and Capital of August 31, 1994 which came into force on December 30, 1995 (as amended by any subsequent protocols, including the protocol of January 13, 2009), and the tax guidelines issued by the French tax authorities in force as of the date of this Annual Report, or the Treaty.

For the purposes of this discussion, the term "U.S. Holder" means a beneficial owner of securities that is (1) an individual who is a U.S. citizen or resident for U.S. federal income tax purposes, (2) a U.S. domestic corporation or certain other entities created or organized in or under the laws of the United States or any state thereof, including the District of Columbia, or (3) otherwise subject to U.S. federal income taxation on a net income basis in respect of securities.

If a partnership holds securities, the tax treatment of a partner generally will depend upon the status of the partner and the activities of the partnership. If a U.S. Holder is a partner in a partnership that holds securities, such holder is urged to consult its own tax advisor regarding the specific tax consequences of acquiring, owning and disposing of securities.

This discussion applies only to investors that hold our securities as capital assets that have the U.S. dollar as their functional currency, that are entitled to Treaty benefits under the "Limitation on Benefits" provision contained in the Treaty, and whose ownership of the securities is not effectively connected to a permanent establishment or a fixed base in France. Certain U.S. Holders (including, but not limited to, U.S. expatriates, partnerships or other entities classified as partnerships for U.S. federal income tax purposes, banks, insurance companies, regulated investment companies, tax-exempt organizations, financial institutions, persons subject to the alternative minimum tax, persons who acquired the securities pursuant to the exercise of employee share options or otherwise as compensation, persons that own (directly, indirectly or by attribution) 5% or more of our voting stock or 5% or more of our outstanding share capital, dealers in securities or currencies, persons that elect to mark their securities to market for U.S. federal income tax purposes and persons holding securities as a position in a synthetic security, straddle or conversion transaction) may be subject to special rules not discussed below.

U.S. Holders are urged to consult their own tax advisors regarding the tax consequences of the purchase, ownership and disposition of securities in light of their particular circumstances, especially with regard to the "Limitations on Benefits" provision.

Estate and Gift Taxes and Transfer Taxes

In general, a transfer of securities by gift or by reason of death of a U.S. Holder that would otherwise be subject to French gift or inheritance tax, respectively, will not be subject to such French tax by reason of the Convention between the Government of the United States of America and the Government of the French Republic for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with Respect to Taxes on Estates, Inheritances and Gifts, dated November 24, 1978, unless the donor or the transferor is domiciled in France at the time of making the gift or at the time of his or her death, or the securities were used in, or held for use in, the conduct of a business through a permanent establishment or a fixed base in France.

Financial Transactions Tax

Pursuant to Article 235 ter ZD of the French Tax Code (*Code général des impôts*), or the FTC, purchases of certain securities issued by a French company, including ordinary shares and ADSs, which are listed on a regulated market of the EU or an exchange market formally acknowledged by the AMF (in each case within the meaning of the French Monetary and Financial Code, or the FMFC) are subject in France to a 0.3% tax on financial transactions, or the TFT, provided inter alia that the issuer's market capitalization exceeds €1 billion as of December 1 of the year preceding the taxation year.

A list of relevant French companies whose market capitalization exceeds €1.0 billion as of December 1 of the year preceding the taxation year within the meaning of Article 235 ter ZD of the FTC is published by the French tax authorities, and could be amended at any time. Pursuant to Regulations BOI-ANNX-000467-20181217 issued on December 17, 2018, Cellectis is currently not included in such list. Please note that such list may be updated from time to time, or may not be published anymore in the future.

As a result, neither the ADSs nor the ordinary shares are currently within the scope of the TFT.

Purchases of Cellectis's securities may however become subject to the TFT if Cellectis's market capitalization exceeds €1.0 billion.

Registration Duties

In the case where the TFT is not applicable, (1) transfers of shares issued by a French company which are listed on a regulated or organized market within the meaning of the FMFC are subject to uncapped registration duties at the rate of 0.1% if the transfer is evidenced by a written statement (*acte*) executed either in France or outside France, whereas (2) transfers of shares issued by a French company which are not listed on a regulated or organized market within the meaning of the FMFC are subject to uncapped registration duties at the rate of 0.1% notwithstanding the existence of a written statement (*acte*).

As ordinary shares of Cellectis are listed on Euronext Growth market of Euronext in Paris, which is an organized market within the meaning of the FMFC, their transfer should be subject to uncapped registration duties at the rate of 0.1% subject to the existence of a written agreement (*acte*).

Although there is neither case law nor official guidelines published by the French tax authorities on this point, transfers of ADSs should remain outside of the scope of the aforementioned 0.1% registration duties.

Wealth Tax

The French wealth tax (*impôt de solidarité sur la fortune*) has been repealed by the finance bill for 2018 (*loi de finances pour 2018*) dated December 30, 2017. It used to apply only to individuals and did not generally apply to securities held by a U.S. Holder who is a resident pursuant to the provisions of the Treaty, provided that such U.S. Holder does not own directly or indirectly more than 25% of the issuer's financial rights.

As from January 1, 2018, it has been replaced by a new real estate wealth tax (*impôt sur la fortune immobilière*) which applies only to individuals owning French real estate assets or rights, directly or indirectly through one or more legal entities and whose net taxable assets amount to at least 1,300,000 euros.

French real estate wealth tax may only apply to a U.S. individual to the extent such individual holds, directly or indirectly, financial rights into a company the assets of which comprise French real estate assets that are not allocated to its operational activity. Such financial rights may be taxable for the fraction of their value representing the French real estate assets that are not allocated to an operational activity. In any case, pursuant to Article 965, 2° of the FTC, shares of an operating company holding French real estate assets in which the relevant individual holds, directly and indirectly, less than 10% of the share capital or voting rights are exempt from real estate wealth tax.

Taxation of Dividends

Dividends paid by a French corporation to non-residents of France are generally subject to French withholding tax at a rate of 30%. Such withholding tax may be reduced to 12.8% for dividends paid to non-resident individuals. Dividends paid by a French corporation in a non-cooperative State or territory, as defined in Article 238-0 A of the FTC, will generally be subject to French withholding tax at a rate of 75%. However, eligible U.S. Holders entitled to Treaty benefits under the "Limitation on Benefits" provision contained in the Treaty who are U.S. residents, as defined pursuant to the provisions of the Treaty, will not be subject to this 12.8%, 30% or 75% withholding tax rate, but may be subject to the withholding tax at a reduced rate (as described below).

Under the Treaty, the rate of French withholding tax on dividends paid to an eligible U.S. Holder who is a U.S. resident as defined pursuant to the provisions of the Treaty and whose ownership of ordinary shares or the ADSs is not effectively connected with a permanent establishment or fixed base that such U.S. Holder has in France, is generally reduced to 15%, or to 5% if such U.S. Holder is a corporation and owns directly or indirectly at least 10% of the share capital of the issuer; such U.S. Holder may claim a refund from the French tax authorities of the amount withheld in excess of the Treaty rates of 15% or 5%, if any.

For U.S. Holders that are not individuals but are U.S. residents, as defined pursuant to the provisions of the Treaty, the requirements for eligibility for Treaty benefits, including the reduced 5% or 15% withholding tax rates contained in the "Limitation on Benefits" provision of the Treaty, are complicated, and certain technical changes were made to these requirements by the protocol of January 13, 2009. U.S. Holders are advised to consult their own tax advisers regarding their eligibility for Treaty benefits in light of their own particular circumstances.

In the event that dividends are paid by Cellectis, dividends paid to an eligible U.S. Holder may immediately be subject to the reduced rates of 5% or 15% provided that such holder establishes before the date of payment that it is a U.S. resident under the Treaty by completing and providing the depositary with a treaty form (Form 5000). Otherwise, dividends paid to a U.S. Holder that is a legal person or another legal entity and has not filed the Form 5000 before the dividend payment date will be subject to French withholding tax at the rate of 30%, or 75% for any U.S. Holder if paid in a non-cooperative State or territory (as defined in Article 238-0 A of the FTC) (unless the Company proves that neither the purpose nor the effect of paying the dividend in that State or territory are that of allowing, with the intent of tax evasion or avoidance, their location in such a State or territory), and then reduced at a later date to 5% or 15%, provided that such holder duly completes and provides the French tax authorities with the treaty forms Form 5000 and Form 5001 before December 31 of the second calendar year following the year during which the dividend is paid.

Certain qualifying pension funds and certain other tax-exempt entities are subject to the same general filing requirements as other U.S. Holders except that they may have to supply additional documentation evidencing their entitlement to these benefits.

Form 5000 and Form 5001, together with appropriate instructions, will be provided by the depositary to all U.S. Holders registered with the depositary. The depositary will arrange for the filing with the French tax authorities of all such forms properly completed and executed by U.S. Holders of ordinary shares or ADSs and returned to the depositary in sufficient time so that they may be filed with the French tax authorities before the distribution in order to obtain immediately a reduced withholding tax rate.

Tax on Sale or Other Disposition

As a matter of principle, under French tax law, a U.S. Holder should not be subject to any French tax on any capital gain from the sale, exchange, repurchase or redemption by us of ordinary shares or ADSs, provided that all of the following apply to such holder:

- it is not a French tax resident for French tax purposes; and,
- it has not held more than 25% of our dividend rights, known as "*droits aux bénéfices sociaux*" at any time during the preceding five years, either directly or indirectly, and, as relates to individuals, alone or with relatives; and,
- it has not transferred ordinary shares or ADSs as part of redemption by Cellectis, in which case the proceeds may under certain circumstances be partially or fully characterized as dividends under French domestic law and, as result, be subject to French dividend withholding tax. As an exception, a U.S Holder, established, domiciled or incorporated in a non-cooperative State or territory as defined in Article 238-0 A of the FTC should be subject to a 75% withholding tax in France on any such capital gain, regardless of the fraction of the dividend rights it holds.

In case an applicable double tax treaty between France and the U.S. Holder country of residence contains more favorable provisions, a U.S. Holder may not be subject to any French income tax or capital gains tax in case of sale or disposal of any ordinary shares or ADSs of Cellectis even if one or more of the above mentioned statements are not applicable.

Particularly, a U.S. Holder who is a U.S. tax resident for purposes of the Treaty and is entitled to Treaty benefit will not be subject to French tax on any such capital gain, unless the ordinary shares or the ADSs form part of the business property of a permanent establishment or fixed base that the U.S. Holder has in France.

U.S. Holders who own ordinary shares or ADSs through U.S. partnerships that are not residents for Treaty purposes are advised to consult their own tax advisors regarding their French tax treatment and their eligibility for Treaty benefits in light of their own particular circumstances.

A U.S. Holder that is not a U.S. resident for Treaty purposes or is not entitled to Treaty benefit (and in both cases is not resident, established or incorporated in a non-cooperative State or territory as defined in Article 238-0 A of the FTC) and has held more than 25% of our dividend rights, known as "*droits aux bénéfices sociaux*" at any time during the preceding five years, either directly or indirectly, and, as relates to individuals, alone or with relatives will be subject to a levy in France at the rate of 31% (anticipated to be progressively decreased to 25% in the coming years), if such U.S. Holder is a legal person, or 12.8%, if such U.S. Holder is an individual.

Special rules apply to U.S. Holders who are residents of more than one country.

F. Dividends and Paying Agents

Not applicable.

G. Statement by Experts

Not applicable.

H. Documents on Display

We are subject to the information reporting requirements of the Exchange Act applicable to foreign private issuers and under those requirements file reports with the SEC. Those reports may be inspected without charge at the locations described below. As a foreign private issuer, we are exempt from the rules under the Exchange Act related to the furnishing and content of proxy statements, and our officers, directors and principal shareholders are exempt from the reporting and short-swing profit recovery provisions contained in Section 16 of the Exchange Act. In addition, we are not required under the Exchange Act to file periodic reports and financial statements with the SEC as frequently or as promptly as United States companies whose securities are

registered under the Exchange Act. Nevertheless, we file with the U.S. Securities and Exchange Commission an Annual Report containing financial statements that have been examined and reported on, with and opinion expressed by an independent registered public accounting firm, and we submit quarterly interim consolidated financial data to the SEC under cover of the SEC's Form 6-K.

We maintain a corporate website at www.cellectis.com. We intend to post our Annual Report on our website promptly following it being filed with the SEC. Information contained on, or that can be accessed through, our website does not constitute a part of this Annual Report. We have included our website address in this Annual Report solely as an inactive textual reference.

You may also review a copy of this Annual Report, including exhibits and any schedule filed herewith, and obtain copies of such materials at prescribed rates, at the Securities and Exchange Commission's Public Reference Room in Room 1580, 100 F Street, NE, Washington, D.C. 20549-0102. You may obtain information on the operation of the Public Reference Room by calling the Securities and Exchange Commission at 1-800-SEC-0330. The Securities and Exchange Commission maintains a website (http://www.sec.gov) that contains reports, proxy and information statements and other information regarding registrants, such as Cellectis, that file electronically with the Securities and Exchange Commission.

With respect to references made in this Annual Report to any contract or other document of Cellectis, such references are not necessarily complete and you should refer to the exhibits attached or incorporated by reference to this Annual Report for copies of the actual contract or document.

I. Subsidiary Information

Not applicable.

ITEM 11. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Foreign Currency Exchange Risk

We derive a significant portion of our revenues, including payments under our collaboration agreement with Pfizer, in U.S. dollars. Since the beginning of fiscal year 2015, we have been significantly expanding our activities in the United States, but there continues to be a currency mismatch in our cash flows since most of our expenses remain denominated primarily in Euros. If the average value of the U.S. Dollar had been 10% higher relative to the euro during 2018, our collaboration revenues would have increased by €0.2 million. Our exposure to currencies other than the U.S. dollar is negligible.

Our financial condition and results of operations are measured and recorded in the relevant local base currency and then translated into Euros for inclusion in our Consolidated Financial Statements. We translate balance sheet amounts at the exchange rates in effect on the date of the balance sheet, while income and cash flow items are translated at the average rate of exchange in effect for the relevant period. Our exposure to currencies other than the U.S. dollar is negligible.

For the year ended December 31, 2018, our revenues denominated in U.S. dollars related to the Allogene collaboration agreement and revenues from our Plants segment. Our cash and cash equivalents and marketable securities denominated in U.S. dollars amounted to $298.1 million as of December 31, 2018. Current financial assets denominated in U.S. dollars amounted to $0.4 million as of December 31, 2018.

The net foreign exchange result for the fiscal year 2018 is a gain of $10.5 million. We cannot rule out the possibility that a significant increase in our business, particularly in the United States, may result in greater exposure to exchange rate risk. We would then consider adopting an appropriate policy for hedging against these risks.

Interest Rate Risk

We seek to engage in prudent management of our cash and cash equivalents, mainly cash on hand and common financial instruments (typically short- and mid-term deposits). Furthermore, the interest rate risk related to cash, cash equivalents and common financial instruments is not significant based on the quality of the financial institutions with which we work.

Inflation Risk

We do not believe that inflation has had a material effect on our business, financial condition or results of operations. If our costs were to become subject to significant inflationary pressures, we may not be able to fully offset such higher costs through price increases. Our inability or failure to do so could harm our business, financial condition and results of operations.

ITEM 12. DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES

A. Debt Securities

Not applicable.

B. Warrants and Rights

Not applicable.

C. Other Securities

Not applicable.

D. American Depositary Shares

Citibank, N.A., as depositary for our ADSs, registers and delivers ADSs. Each ADS represents one ordinary share (or a right to receive one-half of one ordinary share) deposited with Citibank International Limited, located at EGSP 186, 1 North Wall Quay, Dublin 1 Ireland or any successor, as custodian for the depositary. Each ADS will also represent any other securities, cash or other property which may be held by the depositary in respect of the depositary facility. The depositary's corporate trust office at which the ADSs will be administered is located at 388 Greenwich Street, New York, New York 10013.

A deposit agreement among us, the depositary and the ADS holders sets out the ADS holder rights as well as the rights and obligations of the depositary. New York law governs the deposit agreement and the ADSs. A copy of the Agreement is incorporated by reference as an exhibit to this Annual Report.

Fees and Charges

As an ADS holder, you will be required to pay the following fees under the terms of the depositary agreement:

Service	*Fees*
• Issuance of ADSs upon deposit of shares (excluding issuance as a result of distributions of shares)	Up to U.S. 5¢ per ADS issued
• Cancellation of ADSs	Up to U.S. 5¢ per ADS canceled
• Distribution of cash dividends or other cash distributions (i.e., sale of rights and other entitlements)	Up to U.S. 5¢ per ADS held
Service	*Fees*
• Distribution of ADSs pursuant to (1) stock dividends or other free stock distributions, or (2) exercise of rights to purchase additional ADSs	Up to U.S. 5¢ per ADS held
• Distribution of securities other than ADSs or rights to purchase additional ADSs (i.e., spin-off shares)	Up to U.S. 5¢ per ADS held
• ADS Services	Up to U.S. 5¢ per ADS held on the applicable record date(s) established by the depositary

As an ADS holder you will also be responsible to pay certain fees and expenses incurred by the depositary and certain taxes and governmental charges such as:

- taxes (including applicable interest and penalties) and other governmental charges;
- the registration fees as may from time to time be in effect for the registration of ordinary shares on the share register and applicable to transfers of ordinary shares to or from the name of the custodian, the depositary or any nominees upon the making of deposits and withdrawals, respectively;
- certain cable, telex and facsimile transmission and delivery expenses;
- the expenses and charges incurred by the depositary in the conversion of foreign currency;
- the fees and expenses incurred by the depositary in connection with the compliance with exchange control regulations and other regulatory requirements applicable to ordinary shares, ADSs and ADRs; and
- the fees and expenses incurred by the depositary, the custodian, or any nominee in connection with the servicing or delivery of deposited property.

ADS fees and charges payable upon (1) deposit of ordinary shares against issuance of ADSs and (2) surrender of ADSs for cancellation and withdrawal of ordinary shares are charged to the person to whom the ADSs are delivered (in the case of ADS issuances) and to the person who delivers the ADS, for cancellation (in the case of ADS cancellations). In the case of ADSs issued by the depositary into DTC or presented to the depositary via DTC, the ADS issuance and cancellation fees and charges may be deducted from distributions made through DTC, and may be charged to the DTC participant(s) receiving the ADSs or the DTC participant(s) surrendering the ADSs for cancellation, as the case may be, on behalf of the beneficial owner(s) and will be charged by the DTC participant(s) to the account(s) of the applicable beneficial owner(s) in accordance with the procedures and practices of the DTC participant(s) as in effect at the time. ADS fees and charges in respect of distributions and the ADS service fee are charged to the holders as of the applicable ADS record date. In the case of distributions of cash, the amount of the applicable ADS fees and charges is deducted from the funds being distributed. In the case of (1) distributions other than cash and (2) the ADS service fee, holders as of the ADS record date will be invoiced for the amount of the ADS fees and charges and such ADS fees and charges may be deducted from distributions made to holders of ADSs. For ADSs held through DTC, the ADS fees and charges for distributions other than cash and the ADS service fee may be deducted from distributions made through DTC, and may be charged to the DTC participants in accordance with the procedures and practices prescribed by DTC and the DTC participants in turn charge the amount of such ADS fees and charges to the beneficial owners for whom they hold ADSs.

In the event of refusal to pay the depositary fees, the depositary may, under the terms of the deposit agreement, refuse the requested service until payment is received or may set off the amount of the depositary fees from any distribution to be made to the ADS holder. Certain ADS fees and charges (such as the ADS service fee) may become payable shortly after the closing of the ADS offering.

Note that the fees and charges you may be required to pay may vary over time and may be changed by us and by the depositary. You will receive prior notice of such changes. The depositary may reimburse us for certain expenses incurred by us in respect of the ADR program, by making available a portion of the ADS fees charged in respect of the ADR program or otherwise, upon such terms and conditions as we and the depositary agree from time to time.

Depositary Payments for 2018

From time to time, the Depositary may make payments to us to reimburse and/or share revenue from the fees collected from ADS holders, or waive fees and expenses for services provided, generally relating to costs and expenses arising out of establishment and maintenance of the ADS program. In performing its duties under the deposit agreement, the Depositary may use brokers, dealers or other service providers that are affiliates of the Depositary and that may earn or share fees or commissions.

For the year ended December 31, 2018, Citibank, N.A., as Depositary, had made reimbursements to the Company of $151 thousand.

PART II

ITEM 13. DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES.

Not applicable.

ITEM 14. MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITY HOLDERS AND USE OF PROCEEDS.

Initial Public Offering

In March 2015, we sold 5,500,000 ADSs, each representing one ordinary share, nominal value €0.05, in our initial public offering at a price of $41.50 per ADS, for aggregate gross proceeds of approximately $228.3 million. We incurred aggregate underwriting discounts of approximately $16.0 million and expenses of approximately $2.7 million, resulting in net proceeds to us of approximately $209.6 million. No payments were made directly or indirectly to any director, officer, general partner of ours or to their associates, persons owning ten percent or more of any class of our equity securities, or to any of our affiliates. The offering commenced on March 24, 2015 and did not terminate before all of the securities registered in the registration statement were sold. The effective date of the registration statement, File No. 333-202205, for our initial public offering was March 24, 2015. Merrill Lynch, Pierce, Fenner & Smith Incorporated, Jefferies LLC, Piper Jaffray & Co., Oppenheimer & Co. Inc. and Trout Capital LLC acted as underwriters of the initial public offering.

A portion of the net proceeds from our initial public offering was used for general corporate purposes in connection with the development of our current proprietary immuno-oncology product candidates, for further research and development regarding cell attributes and to develop our manufacturing processes and cell engineering technologies, to pursue new human therapeutics outside of oncology and to advance our agricultural biotechnology business. The balance is held in cash and cash equivalents and current financial assets and is intended to also be used for general corporate purposes. None of the net proceeds of our initial public offering were paid directly or indirectly to any director, officer, general partner of ours or to their associates, persons owning ten percent or more of any class of our equity securities, or to any of our affiliates.

Follow-on Offering

On April 10, 2018, Cellectis closed a follow-on offering of 5,646,000 ADS at a public offering price of $31.00 per ADS resulting in gross proceeds of $175 million. On May 11, 2018, in connection with the exercise by the underwriters of the follow-on offering of their option to purchase additional shares, Cellectis closed the sale of an additional 500,000 ADS at the public offering price of $31.00 per ADS resulting in additional gross proceeds of $15.5 million.

ITEM 15. CONTROLS AND PROCEDURES.

(a) Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, after evaluating the effectiveness of our disclosure controls and procedures (as defined in Exchange Act Rule 13a-15(e)) as of the end of the period covered by this Form 20-F, have concluded that our disclosure controls and procedures were effective as of December 31, 2018.

(b) Report of Management on Internal Control Over Financial Reporting

Management of the Company is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). Management, with the participation of the Chief Executive Officer and the Chief Financial Officer, has assessed the effectiveness of internal control over financial reporting as of December 31, 2018. Management's assessment was based on the framework in "Internal Control – Integrated Framework" (2013 framework) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Based on that assessment, management concluded that, as of December 31, 2018, the Company's internal control over financial reporting was effective to provide reasonable assurance regarding the reliability of its financial reporting and the preparation of its financial statements for external purposes, in accordance with generally accepted accounting principles.

Due to its inherent limitations, internal control over financial reporting may not prevent or detect misstatements, and can only provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

The effectiveness of the Company's internal control over financial reporting has been audited by Ernst & Young et Autres, independent registered public accounting firm, as stated in their report on the Company's internal control over financial reporting as of December 31, 2018, which is included herein. See paragraph (c) of the present Item 15, below.

(c) See report of Ernst & Young et Autres, independent registered public accounting firm, included under "Item 18. Financial Statements" on page F-3.

ITEM 15T. CONTROLS AND PROCEDURES.

Not applicable.

ITEM 16. RESERVED

Not applicable.

ITEM 16A. AUDIT COMMITTEE FINANCIAL EXPERT

Our board of directors has determined that Mr. Pierre Bastid, Mr. Laurent Arthaud, and Mr. Hervé Hoppenot are audit and finance committee financial experts as defined by the Securities and Exchange Commission rules and have the requisite financial sophistication under the applicable rules and regulations of the Nasdaq Stock Market. Mr. Pierre Bastid, Mr. Laurent Arthaud, and Mr. Hervé Hoppenot are independent as such term is defined in Rule 10A-3 under the Exchange Act and under the listing standards of the Nasdaq Stock Market.

ITEM 16B. CODE OF ETHICS

We have adopted a Code of Business Conduct and Ethics, or the Code of Conduct that is applicable to all of our employees, executive officers and directors. Following the completion of our initial public offering, the Code of Conduct became available on our website at *www.cellectis.com*. Our board of directors is responsible for overseeing the Code of Conduct and is required to approve any waivers of the Code of Conduct for employees, executive officers and directors. We expect that any amendments to the Code of Conduct, or any waivers of its requirements, will be disclosed on our website.

ITEM 16C. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Ernst & Young et Autres, or Ernst & Young, has served as our independent registered public accounting firm for 2017 and 2018. Our accountants billed the following fees to us for professional services in each of those fiscal years:

	Year Ended December 31,	
	2017	2018
	($, in thousands)	
Audit Fees	1,751*	847**
Audit-Related Fees	—	—
Tax Fees	—	—
Other Fees	—	—
Total	1,751	847

(*) $539 thousand for Cellectis and $1.212 thousand for Calyxt (of which $898 thousand related to the Nasdaq IPO)
(**) $513 thousand for Cellectis and $334 thousand for Calyxt

"Audit Fees" are the aggregate fees billed for the audit of our annual financial statements. This category also includes services that generally the independent accountant provides, such as consents and assistance with and review of documents filed with the SEC.

"Audit-Related Fees" are the aggregate fees billed for assurance and related services that are reasonably related to the performance of the audit and are not reported under Audit Fees.

"Tax Fees" are the aggregate fees billed for professional services rendered by the principal accountant for tax compliance, tax advice and tax planning related services.

"Other Fees" relate to services provided with respect to our registration statement for our initial public offering.

There were no "Audit Related Fees," "Tax Fees" either billed or paid during 2017 or 2018.

Audit and Non-Audit Services Pre-Approval Policy

The audit and finance committee has responsibility for appointing, setting compensation of and overseeing the work of the independent registered public accounting firm. In recognition of this responsibility, the audit and finance committee has adopted a policy governing the pre-approval of all audit and permitted non-audit services performed by our independent registered public accounting firm to ensure that the provision of such services does not impair the independent registered public accounting firm's independence from us and our management. Unless a type of service to be provided by our independent registered public accounting firm has received general pre-approval from the audit and finance committee, it requires specific pre-approval by the audit and finance committee. The payment for any proposed services in excess of pre-approved cost levels requires specific pre-approval by the audit and finance committee. All audit and non-audit services rendered by our independent registered public accounting firm in 2018 were pre-approved by the audit and finance committee.

Pursuant to its pre-approval policy, the audit and finance committee may delegate its authority to pre-approve services to the chairperson of the audit and finance committee. The decisions of the chairperson to grant pre-approvals must be presented to the full audit and finance committee at its next scheduled meeting. The audit and finance committee may not delegate its responsibilities to pre-approve services to the management.

The audit and finance committee has considered the non-audit services provided by Ernst & Young as described above and believes that they are compatible with maintaining Ernst & Young's independence as our independent registered public accounting firm.

ITEM 16D. EXEMPTIONS FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES

Not applicable.

ITEM 16E. PURCHASES OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS

Not applicable.

ITEM 16F. CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT

Not applicable.

ITEM 16G. CORPORATE GOVERNANCE

As a French *société anonyme*, we are subject to various corporate governance requirements under French law. In addition, as a foreign private issuer listed on the Nasdaq Global Market, we will be subject to the Nasdaq corporate governance listing standards. However, the Nasdaq Global Market's listing standards provide that foreign private issuers are permitted to follow home country corporate governance practices in lieu of the Nasdaq rules, with certain exceptions. Certain corporate governance practices in France may differ significantly from corporate governance listing standards. For example, neither the corporate laws of France nor our By-laws require that (i) a majority of our directors be independent, (ii) our compensation committee include only independent directors, or (iii) our independent directors hold regularly scheduled meetings at which only independent directors are present. Other than as set forth below, we currently intend to comply with the corporate governance listing standards of Nasdaq to the extent possible under French law. However, we may choose to change such practices to follow home country practice in the future.

Although we are a foreign private issuer, we are required to comply with Rule 10A-3 of the Exchange Act, relating to audit committee composition and responsibilities. Rule 10A-3 provides that the audit committee must have direct responsibility for the nomination, compensation and choice of our auditors, as well as control over the performance of their duties, management of complaints made, and selection of consultants. Under Rule 10A-3, if the laws of a foreign private issuer's home country require that any such matter be approved by the board of directors or the shareholders of the Company, the audit committee's responsibilities or powers with respect to such matter may instead be advisory. Under French law, the audit committee may only have an advisory role and appointment of our statutory auditors, in particular, must be decided by our shareholders at our annual meeting.

In addition, Nasdaq rules require that a listed company specify that the quorum for any meeting of the holders of share capital be at least 33 1/3% of the outstanding shares of the company's common voting stock. We intend to follow our French home country practice, rather than complying with this Nasdaq rule. Consistent with French Law, our By-laws provide that when first convened, general meetings of shareholders may validly convene only if the shareholders present or represented hold at least (1) 20% of the voting shares in the case of an ordinary general meeting or of an extraordinary general meeting where shareholders are voting on a capital increase by capitalization of reserves, profits or share premium, or (2) 25% of the voting shares in the case of any other extraordinary general meeting. If such quorum required by French law is not met, the meeting is adjourned. There is no quorum requirement under French law when an ordinary general meeting or an extraordinary general meeting where shareholders are voting on a capital increase by capitalization of reserves, profits or share premium is reconvened, but the reconvened meeting may consider only questions that were on the agenda of the adjourned meeting. When any other extraordinary general meeting is reconvened, the required quorum under French law is 20% of the shares entitled to vote. If a quorum is not met at a reconvened meeting requiring a quorum, then the meeting may be adjourned for a maximum of two months. See the section of the prospectus filed with the Commission on March 26, 2015 titled "Description of Share Capital—Key Provisions of Our By-laws and French Law Affecting Our Ordinary Shares."

Further, Nasdaq rules require that listed companies have a nominations committee comprised solely of independent directors. We intend to follow our French home country practice, as described under "—Board Composition," rather than complying with this Nasdaq rule.

Board Committees

The board of directors has established an audit and finance committee and a compensation committee, each of which operates pursuant to a separate charter adopted by our board of directors. The board of directors has also established a scientific committee. The composition and functioning of all of our committees will comply with all applicable requirements of the French Commercial Code, the Exchange Act, the Nasdaq Global Market, and the rules and regulations of the SEC.

In accordance with French law, committees of our board of directors will only have an advisory role and can only make recommendations to our board of directors. As a result, decisions will be made by our board of directors taking into account non-binding recommendations of the relevant board committee.

Audit and Finance Committee. Our audit and finance committee reviews our internal accounting procedures, consults with and reviews the services provided by our independent registered public accountants and assists our board of directors in its oversight of our corporate accounting and financial reporting. Currently, our audit and finance committee is comprised of three members of the board of directors: Messrs. Bastid, Arthaud and Hoppenot.

The duties specifically assigned to the audit and finance committee by our board of directors include, but are not limited to:

- with regard to our financial statements:
  - review on a preliminary basis and express its opinion on the draft annual and quarterly financial statements prior to the board of directors officially receiving the financial statements;
  - examine the critical accounting policies and practices of the Company, including their relevance and consistency used for the preparation of the Company's consolidated financial statements and rectify any failure to comply with these policies and practices;
  - monitor the scope of consolidation and review, where necessary, any explanations in connection thereto;
  - interview, when necessary, the statutory auditors, the chairman of the board of directors, the chief executive officer, the chief financial officer, the employees in charge of our internal controls or any other management personnel; these discussions may take place, where required, without the presence of the chairman of our board of directors and the chief executive officer; and
  - examine—prior to their publication—the draft annual and interim financial statements, the draft annual report and any other draft financial statements (including projected financial statements) prepared for the needs of upcoming material transactions together with the related press releases;
- with regard to internal controls:
  - assess the efficiency and quality of internal control systems and procedures within the consolidated Company;
  - examine, with the persons in charge of the internal audit, and, if necessary, outside of the presence of the chairman of the board of directors and the chief executive officer, the contingency and action plans with respect to internal audit, the findings following the implementation of these actions and the recommendations and follow-up actions in connection therewith; and
  - entrust the internal audit department with any mission which the committee deems necessary;
- with regard to external controls:
  - examine any question relating to the appointment, renewal or dismissal of our statutory auditors and their fees regarding the performance of their control review functions;
  - oversee the rules relating to the use of the statutory auditors for assignments other than the audit of the financial statements and, more generally, ensure that we comply with the principles guaranteeing the statutory auditors' independence;
  - at least annually, review and discuss the information provided by management and the auditors relating to the independence of the audit firm;
  - pre-approve any services entrusted to the statutory auditors which is outside of the scope of the annual audit;
  - review every year with the statutory auditors all fees paid to by the Company and its subsidiaries to any networks to which the auditors belong, their work plan, their findings and recommendations, as well as actions taken by us following such recommendations;
  - review and discuss with the statutory auditors their comments on internal controls over financial reporting and any matters that have come to the attention of the statutory auditors that lead them to believe that modification to our disclosures about changes in internal control over financial reporting is necessary for management's certifications pursuant to Section 302 of the Sarbanes-Oxley Act;
  - discuss if necessary any points of disagreement between the statutory auditors and the officers of the Company that may arise within the scope of these operations; and
  - review and discuss with the statutory auditors the plans for, and the scope of, the annual audit and other examinations; and

- with regard to risks:
    - review on a regular basis the financial situation, the cash position and the material risks and undertakings of the Company and its subsidiaries; and
    - review the risk management policy and the process implemented to evaluate and manage these risks.

Compensation Committee. Our compensation committee assists our board of directors in reviewing the compensation of our executive officers and directors and makes recommendations in respect thereof. Currently, our compensation committee is comprised of two members of the board of directors: Mr. Godard and Dr. Schwebig. The principal duties and responsibilities of our compensation committee include, but are not limited to:

- review the compensation of our employees and managers of the Company and its subsidiaries (fixed and variable compensations, bonus, etc.) and make any recommendation to our board of directors in connection therewith;
- review equity incentive plans (non-employee warrants, stock options, restricted (free) shares, etc.) and make recommendations to our board of directors in connection therewith;
- make recommendations to our board of directors regarding the compensation, pension and insurance plans, benefits in kind and other various pecuniary rights, of officers, as well as the allocation of equity incentive instruments granted to executive officers and directors of the Company;
- evaluate and make recommendations on the compensation policies and programs of executive officers and on the compensation of directors;
- recommend the approval, adoption and amendment of all cash- and equity-based incentive compensation plans in which any of our executive officers or directors participate and all other equity-based plans;
- review any proposed employment agreement with, and any proposed severance or retention plans or agreements applicable to, any of our executive officers;
- review, at least annually, corporate goals and objectives relevant to the compensation of our executive officers; and
- evaluate the performance of the executive officers in light of corporate goals and objectives and recommend compensation levels for these executive officers based on those evaluations and any other factors the compensation committee deems appropriate.

ITEM 16H. MINE SAFETY DISCLOSURE

Not applicable.

PART III

ITEM 17. FINANCIAL STATEMENTS

See pages F-1 through F-58 of this Annual Report.

ITEM 18. FINANCIAL STATEMENTS

Not applicable.

ITEM 19. EXHIBITS

The following exhibits are filed as part of this Annual Report:

Exhibit Number	Description of Exhibit	Schedule/ Form	File Number	Exhibit	File Date
1.1	By-laws (*status*) of the registrant (English translation)				Filed herewith
2.1#	Form of Deposit Agreement	F-1	333-202205	4.1	March 10, 2015
2.2#	Form of American Depositary Receipt (included in Exhibit 2.1)	F-1	333-202205	Included in 4.1	March 10, 2015
4.1#	Patent License Agreement #C-00061901 between L'Institut Pasteur and Cellectis S.A., dated June 19, 2000 (English translation)				Filed herewith
4.1.1	Amendment No. 1 to Patent License Agreement #C-00061901 between L'Institut Pasteur and Cellectis S.A., dated December 20, 2002 (English translation)				Filed herewith
4.1.2	Amendment No. 2 to Patent License Agreement #C-00061901 between L'Institut Pasteur and Cellectis S.A., dated September 8, 2003 (English translation)				Filed herewith
4.1.3#	Amendment No. 3 to Patent License Agreement #C-00061901 between L'Institut Pasteur and Cellectis S.A., dated February 26, 2008	F-1	333-202205	10.1.3	March 12, 2015
4.1.4#	Amendment No. 4 to Patent License Agreement #C-00061901 between L'Institut Pasteur and Cellectis S.A., dated April 11, 2013 (English translation)	F-1	333-202205	10.1.4	March 12, 2015
4.2	Patent License Agreement #C-00061906 between L'Institut Pasteur and Cellectis S.A., dated October 19, 2000 (English translation)				Filed herewith
4.2.1	Amendment No. 1 to Patent License Agreement #C-00061906 between L'Institut Pasteur and Cellectis S.A., dated September 8, 2003 (English translation)				Filed herewith
4.2.2	Amendment No. 2 to Patent License Agreement #C-00061906 between L'Institut Pasteur and Cellectis S.A., dated June 24, 2004 (English translation)				Filed herewith
4.2.3	Amendment No. 3 to Patent License Agreement #C-00061906 between L'Institut Pasteur and Cellectis S.A., dated August 24, 2005 (English translation)				Filed herewith
4.2.4	Amendment No. 4 to Patent License Agreement #C-00061906 between L'Institut Pasteur and Cellectis S.A., dated December 27, 2007 (English translation)				Filed herewith

Exhibit Number	Description of Exhibit	Schedule/ Form	File Number	Exhibit	File Date
4.3	Patent License Agreement #C-00061905 between L'Institut Pasteur and Cellectis S.A., dated June 19, 2000 (English translation)				Filed herewith
4.3.1	Amendment No. 1 to Patent License Agreement #C-00061905 between L'Institut Pasteur and Cellectis S.A., dated September 8, 2003 (English translation)				Filed herewith
4.4	[Reserved]				
4.4.1	[Reserved]				
4.5	[Reserved]				
4.5.1	[Reserved]				
4.6#*	Exclusive Patent License Agreement between Regents of the University of Minnesota and Cellectis S.A., dated January 10, 2011	F-1	333-202205	10.6	March 12, 2015
4.6.1#*	First Amendment to the Exclusive Patent License Agreement between Regents of the University of Minnesota and Cellectis S.A., dated May 24, 2012	F-1	333-202205	10.6.1	March 12, 2015
4.6.2#*	Second Amendment to the Exclusive Patent License Agreement between Regents of the University of Minnesota and Cellectis S.A., dated April 1, 2014	F-1	333-202205	10.6.2	March 12, 2015
4.6.3*	Third Amendment to the Exclusive Patent License Agreement between Regents of the University of Minnesota and Cellectis S.A., dated December 16, 2015	20-F	001-36891	4.6.3	March 13, 2018
4.7	Patent & Technology License Agreement between Ohio State Innovation Foundation and Cellectis S.A., dated October 23, 2014				Filed herewith
4.8#	Warrants Issue Agreement between Cellectis S.A. and Kepler Capital Markets SA, dated December 20, 2012 (English translation)	F-1	333-202205	10.8	March 10, 2015
4.8.1#	First Amendment to Warrants Issue Agreement between Cellectis S.A. and Kepler Capital Markets SA, dated June 6, 2013 (English translation)	F-1	333-202205	10.8.1	March 10, 2015
4.8.2#	Second Amendment to Warrants Issue Agreement between Cellectis S.A. and Kepler Capital Markets SA, dated October 7, 2013 (English translation)	F-1	333-202205	10.8.2	March 10, 2015
4.9#	Warrant Agreement between Cellectis S.A. and Trout Capital LLC, dated March 24, 2014	F-1	333-202205	10.9	March 10, 2015
4.10†#	Change of Control Plan, effective as of September 4, 2014 (English translation)	F-1	333-202205	10.10	March 10, 2015
4.11†#	Summary of BSA Plan	F-1	333-202205	10.11	March 10, 2015
4.12†#	Summary of BSPCE Plan	F-1	333-202205	10.12	March 10, 2015
4.13†#	2012 Free Share Plan	F-1	333-202205	10.13	March 10, 2015
4.14†#	2013 Free Share Plan	F-1	333-202205	10.14	March 10, 2015
4.15†#	2014 Free Share Plan	F-1	333-202205	10.15	March 10, 2015
4.16†#	2015 Free Share Plan	20-F	001-36891	4.16	March 10, 2015

Exhibit Number	Description of Exhibit	Schedule/ Form	File Number	Exhibit	File Date
4.17†#	2015 Stock Option Plan	20-F	001-36891	4.17	March 10, 2015
4.18†#	2016 Stock Option Plan	S-8	333-214884	99.1	December 2, 2016
4.19†#	2017 Stock Option Plan	S-8	333-222482	99.1	January 9, 2018
4.20†#	Summary of BSA Plan	S-8	333-222482	99.2	January 9, 2018
4.21†#	Free Share 2018 Plan	S-8 POS	333-222482	99.3	April 13, 2018
4.22†#	2018 Stock Option Plan	S-8	333-227717	99.1	October 5, 2018
4.23†#	Summary of BSA Plan	S-8	333-227717	99.2	October 5, 2018
4.24†#	Second Free Share 2018 Plan	S-8	333-227717	99.3	October 5, 2018
4.25*	License Agreement between Allogene Therapeutics, Inc. and Cellectis S.A. dated March 7, 2019				Filed herewith
4.26*	License, Development and Commercialization Agreement between Les Laboratoires Servier and Cellectis S.A. dated March 6, 2019				Filed herewith
4.27	Management Services Agreement between Cellectis S.A., Cellectis, Inc. and Calyxt, Inc. dated as of January 1, 2016				Filed herewith
4.28	Management Services Agreement Amendment dated July 25, 2017 between Cellectis S.A. and Calyxt, Inc.				Filed herewith
4.29	Separation Agreement dated July 25, 2017 between Cellectis S.A. and Calyxt, Inc.				Filed herewith
4.30	Stockholders Agreement dated July 25, 2017 between Cellectis S.A. and Calyxt, Inc.				Filed herewith
4.31	License Agreement dated July 25, 2017 between Cellectis S.A. and Calyxt, Inc.				Filed herewith
8.1	List of subsidiaries of the registrant				Filed herewith
12.1	Certificate of Principal Executive Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				Filed herewith
12.2	Certification by the Principal Financial Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				Filed herewith
13.1	Certification by the Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				Filed herewith
13.2	Certification by the Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				Filed herewith
15.1	Consent of Ernst & Young et Autres				Filed herewith

† Indicates a management contract or any compensatory plan, contract or arrangement.
# Indicates a document previously filed with the Commission.
* Portions of this exhibit (indicated by asterisks) have been omitted pursuant to a request for confidential treatment

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Financial Statements for the Years Ended December 31, 2016, 2017 and 2018:

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of Cellectis S.A.,

Opinion on the Consolidated Financial Statements

We have audited the accompanying statements of consolidated financial position of Cellectis S.A. (the Company) as of December 31, 2018 and 2017, and the related statements of consolidated operations, consolidated comprehensive loss, consolidated cash flows and changes in consolidated shareholders' equity for each of the three years in the period ended December 31, 2018, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Company at December 31, 2018 and 2017, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board and in conformity with International Financial Reporting Standards as endorsed by the European Union.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in the Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated March 11, 2019 expressed an unqualified opinion thereon.

Change in Accounting Principle

As discussed in note 2.3 to the consolidated financial statements, the Company changed its revenue recognition method on January 1, 2018, due to the adoption of IFRS 15 "Revenue from Contracts with Customers".

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Ernst & Young et Autres

Ernst & Young et Autres has served as the Company's auditor since 2012.

Paris-La Défense, March 11, 2019

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of Cellectis S.A.

Opinion on Internal Control over Financial Reporting

We have audited Cellectis S.A.'s internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 Framework) (the COSO criteria). In our opinion, Cellectis S.A. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the statements of consolidated financial position of the Company as of December 31, 2018 and 2017, and the related statements of consolidated operations, consolidated comprehensive loss, consolidated cash flows and changes in consolidated shareholders' equity for each of the three years in the period ended December 31, 2018 and the related notes, and our report dated March 11, 2019 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Report of Management on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies and procedures may deteriorate.

Ernst & Young et Autres

Paris-La Défense, March 11, 2019

Cellectis S.A.
STATEMENTS OF CONSOLIDATED FINANCIAL POSITION
$ in thousands

	Notes	As of December 31, 2017 as restated (*)	December 31, 2018
ASSETS			
Non-current assets			
Intangible assets	**5**	1,431	1,268
Property, plant, and equipment	**6**	7,226	10,041
Other non-current financial assets	**7.2**	1,004	1,891
Total non-current assets		**9,661**	**13,199**
Current assets			
Inventories	**8**	250	275
Trade receivables	**9.1**	2,753	2,971
Subsidies receivables	**9.2**	9,524	17,173
Other current assets	**9.3**	13,713	15,333
Current financial assets	**10.1**	40,602	388
Cash and cash equivalents	**10.2**	256,380	451,501
Total current assets		**323,221**	**487,641**
TOTAL ASSETS		**332,882**	**500,840**
LIABILITIES			
Shareholders' equity			
Share capital	**14**	2,367	2,765
Premiums related to the share capital	**14**	614,037	828,525
Treasury share reserve		(297)	—
Currency translation adjustment		1,834	(16,668)
Retained earnings (deficit)		(253,702)	(326,628)
Net income (loss)		(99,368)	(78,693)
Total shareholders' equity - Group Share		**264,872**	**409,301**
Non-controlling interests		19,113	40,970
Total shareholders' equity		**283,985**	**450,272**
Non-current liabilities			
Non-current financial liabilities	**11**	13	1,018
Non-current provisions	**17**	3,430	2,681
Total non-current liabilities		**3,443**	**3,699**
Current liabilities			
Current financial liabilities	**11**	21	333
Trade payables	**11**	9,460	15,883
Deferred revenues and contract liabilities	**13**	27,975	20,754
Current provisions	**17**	1,427	1,530
Other current liabilities	**12**	6,570	8,369
Total current liabilities		**45,453**	**46,869**
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY		**332,882**	**500,840**

The accompanying notes form an integral part of these Consolidated Financial Statements

(*) 2017 consolidated financial statements have been restated for the purpose of IFRS15 application. Reconciliation between the consolidated financial statements presented in previous periods and the 2018 consolidated financial statements is available in Note 2.3.

Cellectis S.A.
STATEMENTS OF CONSOLIDATED OPERATIONS
For the year ended December 31
$ in thousands, except per share amounts

	Notes	For the year ended December 31, 2016	2017	2018
Revenues and other income				
Revenues	**3.1**	44,808	25,188	12,731
Other income	**3.1**	11,637	8,528	8,701
Total revenues and other income		**56,444**	**33,715**	**21,432**
Operating expenses				
Royalty expenses	**3.2**	(1,777)	(2,620)	(2,739)
Research and development expenses	**3.2**	(78,458)	(79,227)	(76,567)
Selling, general and administrative expenses	**3.2**	(43,413)	(44,750)	(47,248)
Other operating income (expenses)		(99)	232	31
Total operating expenses		**(123,746)**	**(126,366)**	**(126,523)**
Operating income (loss)		**(67,302)**	**(92,650)**	**(105,091)**
Financial income	**3.3**	7,147	7,262	20,572
Financial expenses	**3.3**	(7,101)	(18,294)	(3,813)
Financial gain (loss)		**46**	**(11,032)**	**16,758**
Income tax		—	—	—
Net income (loss)		**(67,255)**	**(103,683)**	**(88,333)**
Attributable to shareholders of Cellectis		(67,255)	(99,368)	(78,693)
Attributable to non-controlling interests		—	(4,315)	(9,640)
Basic / Diluted net income (loss) per share attributable to shareholders of Cellectis	**16**			
Basic net income (loss) per share ($ /share)		(1.91)	(2.78)	(1.93)
Diluted net income (loss) per share ($ /share)		(1.91)	(2.78)	(1.93)

The accompanying notes form an integral part of these Consolidated Financial Statements

STATEMENTS OF CONSOLIDATED COMPREHENSIVE INCOME (LOSS)
For the year ended December 31
$ in thousands

	For the year ended December 31,		
	2016	2017	2018
Net income (loss)	**(67,255)**	**(103,683)**	**(88,333)**
Actuarial gains and losses	(30)	(515)	70
Other comprehensive income (loss) that will not be reclassified subsequently to income or loss	(30)	(515)	70
Currency translation adjustment	(4,278)	23,512	(19,192)
Other comprehensive income (loss) that will be reclassified subsequently to income or loss	(4,278)	23,512	(19,192)
Total Comprehensive income (loss)	**(71,563)**	**(80,686)**	**(107,455)**
Attributable to shareholders of Cellectis	(71,551)	(75,963)	(97,125)
Attributable to non-controlling interests	(12)	(4,723)	(10,330)

The accompanying notes form an integral part of these Consolidated Financial Statements

Cellectis S.A.
STATEMENTS OF CONSOLIDATED CASH FLOWS
For the year ended December 31
$ in thousands

	Notes	For the year ended December 31, 2016	2017	2018
Cash flows from operating activities				
Net loss for the period		(67,255)	(103,683)	(88,333)
Reconciliation of net loss and of the cash provided by (used in) operating activities				
Adjustments for				
Amortization and depreciation		2,211	3,371	2,377
Net loss (income) on disposals		65	40	20
Net financial loss (gain)		(46)	11,032	(16,759)
Expenses related to share-based payments		58,622	50,418	37,218
Provisions		(365)	2,908	(468)
Other non cash items		(1,432)	2	—
Interest (paid) / received		1,694	1,371	6,905
Operating cash flows before change in working capital		**(6,507)**	**(34,540)**	**(59,040)**
Decrease (increase) in inventories		50	(109)	(37)
Decrease (increase) in trade receivables and other current assets		(997)	(549)	(3,696)
Decrease (increase) in subsidies receivables		(1,122)	305	(8,257)
(Decrease) increase in trade payables and other current liabilities		(4,384)	(335)	9,374
(Decrease) increase in deferred income and contract liabilities		(19,750)	(17,099)	(6,480)
Change in working capital		**(26,203)**	**(17,787)**	**(9,096)**
Net cash flows provided by (used in) operating activities		**(32,710)**	**(52,327)**	**(68,137)**
Cash flows from investment activities				
Proceeds from disposal of property, plant and equipment		24	7,164	1,262
Acquisition of intangible assets		(337)	(273)	(171)
Acquisition of property, plant and equipment		(13,696)	(2,383)	(4,715)
Net change in non-current financial assets		175	(125)	221
Sale (Acquisition) of current financial assets		(39,302)	(2,598)	39,025
Net cash flows provided by (used in) investing activities		**(53,137)**	**1,784**	**35,623**
Cash flows from financing activities				
Increase in share capital net of transaction costs		713	2,930	186,382
Shares of Calyxt issued to third parties		—	38,257	49,942
Decrease in borrowings		(91)	(41)	(127)
Treasury shares		(137)	120	297
Net cash flows provided by financing activities		**485**	**41,266**	**236,494**
(Decrease) increase in cash		**(85,362)**	**(9,277)**	**203,981**
Cash and cash equivalents at the beginning of the year		**342,111**	**254,568**	**256,380**
Effect of exchange rate changes on cash		(2,181)	11,089	(8,860)
Cash and cash equivalents at the end of the period	**10**	**254,568**	**256,380**	**451,501**

We present our consolidated statements of cash flows using the indirect method.

The accompanying notes form an integral part of these Consolidated Financial Statements

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Cellectis S.A.
STATEMENTS OF CHANGES IN CONSOLIDATED SHAREHOLDERS' EQUITY
For the year ended December 31
$ in thousands, except share data

	Notes	Share Capital Ordinary Shares		Premiums related to share capital	Treasury shares reserve	Currency translation adjustment	Retained earnings (deficit)	Income (Loss)	Equity attributable to shareholders of Cellectis	Non controlling interests	Total Shareholders' Equity
		Number of shares	Amount								
As of January 1, 2016, as restated (*)		**35,178,614**	**2,323**	**509,938**	**(279)**	**(17,819)**	**(185,120)**	**(24,571)**	**284,471**	**789**	**285,260**
Net Loss		—	—	—	—	—	—	(67,255)	(67,255)	—	(67,255)
Other comprehensive income (loss)		—	—	—	—	(4,266)	(30)	—	(4,296)	(12)	**(4,308)**
Total comprehensive income (loss)		**—**	**—**	**—**	**—**	**(4,266)**	**(30)**	**(67,255)**	**(71,551)**	**(12)**	**(71,563)**
Allocation of prior period loss		—	—	—	—	—	(24,571)	24,571	—	—	—
Treasury shares		—	—	—	(137)	—	—	—	(137)	—	(137)
Exercise of share warrants and employee warrants	**14.1**	156,446	9	723	—	—	(6)	—	726	—	726
Share based compensation	**15**	—	—	57,524	—	—	—	—	57,524	1,098	58,622
Other movements		—	—	—	—	—	77	—	77	—	77
As of December 31, 2016, as restated (*)		**35,335,060**	**2,332**	**568,185**	**(416)**	**(22,085)**	**(209,651)**	**(67,255)**	**271,109**	**1,876**	**272,984**
As of January 1, 2017, as restated (*)		**35,335,060**	**2,332**	**568,185**	**(416)**	**(22,085)**	**(209,651)**	**(67,255)**	**271,109**	**1,876**	**272,984**
Net Loss		—	—	—	—	—	—	(99,368)	(99,368)	(4,315)	(103,683)
Other comprehensive income (loss)		—	—	—	—	23,920	(515)	—	23,405	(408)	22,997
Total comprehensive income (loss)		**—**	**—**	**—**	**—**	**23,920**	**(515)**	**(99,368)**	**(75,963)**	**(4,723)**	**(80,686)**
Allocation of prior period loss		—	—	—	—	—	(67,255)	67,255	—	—	—
Capital Increase	**14.1**	466,950	26	—	—	—	(26)	—	—	—	—
Transaction with subsidiaries (1)		—	—	—	—	—	23,747	—	23,747	14,510	38,257
Treasury shares		—	—	—	120	—	—	—	120	—	120
Exercise of share warrants, employee warrants and stock options	**14.1**	158,052	9	2,921	—	—	—	—	2,930	—	2,930
Non-cash stock-based compensation expense	**15**	—	—	42,968	—	—	—	—	42,968	7,450	50,418
Other movements		—	—	(37)	—	—	(1)	—	(38)	—	(38)
As of December 31, 2017, as restated (*)		**35,960,062**	**2,367**	**614,037**	**(297)**	**1,835**	**(253,702)**	**(99,368)**	**264,873**	**19,113**	**283,986**
As of January 1, 2018, as restated (*)		**35,960,062**	**2,367**	**614,037**	**(297)**	**1,835**	**(253,702)**	**(99,368)**	**264,873**	**19,113**	**283,986**
Net Loss		—	—	—	—		—	(78,693)	(78,693)	(9,640)	(88,333)
Other comprehensive income (loss)		—	—	—	—	(18,502)	70	—	(18,432)	(690)	(19,122)
Total comprehensive income (loss)		**—**	**—**	**—**	**—**	**(18,502)**	**70**	**(78,693)**	**(97,125)**	**(10,330)**	**(107,455)**
Allocation of prior period loss		—	—	—	—	—	(99,368)	99,368	—	—	—
Capital Increase	**14.1**	6,146,000	379	178,230	—	—	2	—	178,611	—	178,611
Transaction with subsidiaries (2)		—	—	—	—	—	26,454	—	26,454	23,488	49,942
Treasury shares		—	—	—	297	—	(58)	—	239	—	239
Exercise of share warrants, employee warrants and stock options	**14.1**	324,007	19	7,751	—	—	—	—	7,770	—	7,770
Non-cash stock-based compensation expense	**15**	—	—	28,507	—	—	—	—	28,507	8,711	37,218
Other movements		—	—	—	—	—	(28)	—	(28)	(12)	(40)

As of December 31, 2018	**42,430,069**	**2,765**	**828,525**	**—**	**(16,668)**	**(326,628)**	**(78,693)**	**409,301**	**40,970**	**450,272**

The accompanying notes form an integral part of these Consolidated Financial Statements

(1) Net proceeds to Calyxt from the Calyxt IPO of $58.0 million after deduction of $3.1 million of underwriting discounts and commissions and $3.3 million of other offering expenses. Equity of Calyxt attributable to non-controlling interests of 20.3% was $11.8 million and equity of Calyxt attributable to Cellectis of 79.3% is $26.4 million (after consideration of Cellectis' investment in shares of Calyxt issued as part of the Calyxt IPO for a purchase price of $20 million).

(2) On May 22, 2018, Calyxt Inc completed a follow-on offering of its common stock. Calyxt Inc sold an aggregate of 4,057,500 shares of common stock at a price of $15.00 per share, including 457,500 shares of common stock pursuant to the exercise of the underwriters' option to purchase additional shares. In the aggregate, Calyxt Inc received net proceeds from the follow-on offering and exercise of the overallotment option of approximately $57.0 million, after deducting underwriting discounts and commissions of $3.2 million and offering expenses totaling approximately $0.7 million. As part of the follow-on offering, Cellectis SA purchased 550,000 shares of common stock for a value of $8.3 million. Transaction with subsidiaries also includes the exercise of 592,342 Calyxt stock options during the period for $2.4 million, partially offset by Cellectis' purchase on June 14, 2018 of 63,175 shares of Calyxt common stock from employees and nonemployees of Calyxt and Cellectis at a price of $19.49 per share (the closing price reported on the Nasdaq Global Market on June 14, 2018) for $1.2 million.

(*) 2017 consolidated financial statements have been restated for the purpose of IFRS15 application. Reconciliation between the consolidated financial statements presented in previous periods and the 2018 consolidated financial statements is available in Note 2.3.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 2018

Note 1. The Company

Cellectis S.A. (hereinafter "Cellectis" or "we") is a limited liability company ("société anonyme") registered and domiciled in Paris, France. We are a clinical-stage biotechnological company, employing our core proprietary technologies to develop best-in-class products in the field of immuno-oncology. Our product candidates, based on gene-edited T-cells that express chimeric antigen receptors, or CARs, seek to harness the power of the immune system to target and eradicate cancers. Our gene-editing technologies allow us to create allogeneic CAR T-cells, meaning they are derived from healthy donors rather than the patients themselves. In addition to our focus on immuno-oncology, we are exploring the use of our gene-editing technologies in other therapeutic applications, as well as through our subsidiary, Calyxt, to develop healthier food products for a growing population.

Note 2. Accounting principles

2.1 Basis for preparation

The Consolidated Financial Statements of Cellectis as of and for the year ended December 31, 2018 were approved by our Board of Directors on March 7, 2019.

Our Consolidated Financial Statements are presented in U.S. dollars. See Note 2.2.

The Consolidated Financial Statements have been prepared in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board ("IASB").

The Consolidated Financial Statements have been prepared using the historical cost measurement basis except for certain assets and liabilities that are measured at fair value in accordance with IFRS.

IFRS include International Financial Reporting Standards ("IFRS"), International Accounting Standards ("the IAS"), as well as the interpretations issued by the Standards Interpretation Committee ("the SIC"), and the International Financial Reporting Interpretations Committee ("IFRIC"). The significant accounting methods used to prepare the Consolidated Financial Statements are described below.

Application of new or amended standards or new amendments

The following pronouncements and related amendments have been adopted by us from January 1, 2018 but had no significant impact on the Consolidated Financial Statements (see Note 2.3 for discussion of IFRS 15 adoption):

- IFRS 9 "Financial Instruments" (applicable for periods beginning after January 1, 2018)
- Amendments to IFRS 2 "Classification and Measurement of Share-based Payment Transactions" (applicable for periods beginning after January 1, 2018)
- IFRIC 22 "Foreign Currency Transactions and Advance Consideration" (applicable for periods beginning after January 1, 2018)

Standards, interpretations and amendments issued but not yet effective

The following pronouncements and related amendments are applicable for first quarter accounting periods beginning after January 1, 2019. We do not anticipate that the adoption of these pronouncements and amendments will have a material impact on our results of operations, financial position or cash flows.

- Amendment to IFRS 9 "Financial Instruments – Prepayment Features with Negative Compensation" (applicable for periods beginning after January 1, 2019)
- IFRIC 23 "Uncertainty over Income Tax Treatments" (applicable for periods beginning after January 1, 2019)

IFRS 16 “Leases” is applicable for annual periods beginning on or after January 1, 2019. The application of this standard will lead Cellectis to recognize in the balance sheet most of our lease commitments, without separation between “operating lease” and “finance lease” contracts. The work related to the first application of this standard, as of January 1, 2019, continued during the year. We identified all lease contracts for the Group and we analyzed the contract substance with the criteria of the new standard (identification of a lease contract, assessment of the duration of the contract, evaluation and determination of discount rate, etc.). On the basis of the modified retrospective method, the main expected impact on the consolidated financial statements is an increase of about $35.0 million - $45.0 million in “right-of-use” assets and an increase in lease liabilities under contracts in which the Group is a lessee and currently identified as “operating lease” contracts. These contracts mainly include office buildings, laboratories, production facilities and storage facilities. Commitments related to these contracts are currently presented as off-balance sheet commitments (see Note 18 Commitments) in “facility lease agreements” which are presented without application of a discount rate. In our statements of consolidated operations, the application of this standard will result in a reduction in rental expenses under “operating leases” and an increase in depreciation and financial expenses.

2.2 Change in the presentation currency of the financial statements

The Consolidated Financial Statements are presented in U.S. dollars, which differs from the functional currency of Cellectis S.A., which is the Euro. We decided to change the reporting currency from Euro to U.S. dollars in the third quarter of 2017, using the retrospective method. We believe that this change will enhance comparability with peers, which primarily present their financial statements in U.S. dollars.

The effects of the change in presentation currency on the comparative consolidated financial statements are as follows:

- The various items of assets and liabilities in dollars correspond to the amounts published in euros converted at the European Central Bank’s (“ECB”) daily reference exchange rate for dollar / euro exchanges (as published by Banque de France) at the end of the period. The same methodology is applied for total equity. As a result, the change in the presentation currency of the consolidated financial statements has no effect on the various items of assets and liabilities in dollars, or on total equity. Equity transactions that occurred in 2015 and 2016 are converted at the historical exchange rates instead of the exchange rates at the end of the period. Net loss for 2015 and 2016 is converted at the average exchange rate for the respective period. The offsetting impact of these are included in currency translation adjustment.

- The recalculation of translation adjustments has an effect on the allocation of total equity for the comparative periods presented between currency translation adjustments and other components of shareholders' equity and the amount of other comprehensive income (loss), such as indicated in the following tables:

As of December 31, 2016	Consolidated financial statement as reported (€ in thousand)	Consolidated financial statement as reported converted (a) ($ in thousand)	Adjustments (b)	Consolidated financial statement ($ in thousand)
Total non-current assets	17,963	18,935	—	18,935
Total current assets	296,459	312,497	—	312,497
TOTAL ASSETS	**314,422**	**331,432**	**—**	**331,432**
Shareholders' equity				
Capital	1,767	1,862	470	2,332
Premiums, Retained earnings (deficit) and Net income (loss)	254,834	268,622	24,432	293,054
Treasury share reserve	(307)	(324)	(92)	(416)
Currency translation adjustment	2,501	2,636	(24,810)	(22,174)
Total shareholders' equity - Group Share	**258,795**	**272,795**	**—**	**272,795**
Non-controlling interests	1,779	1,875	—	1,875
Total shareholders' equity	260,574	274,671	—	274,671
Total non-current liabilities	560	590	—	590
Total current liabilities	53,288	56,171	—	56,171
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	**314,422**	**331,432**	**—**	**331,432**

(a) Converted at the ECB's closing daily reference exchange rate for dollar / euro exchanges (as published by Banque de France) at the end of the period, i.e., 0.94867 euro for 1 dollar.

(b) Difference between the historical exchange rates and the ECB's closing daily reference exchange rate for dollar / euro exchanges (as published by Banque de France) at the end of the period, i.e. 0.94867 euro for 1 dollar.

For the full year ended December 31, 2015	Consolidated financial statement as reported (€ in thousand)	Consolidated financial statement as reported converted (a) ($ in thousand)	Adjustments	Consolidated financial statement ($ in thousand)
Total revenues and other income	56,385	62,565	—	62,565
Total operating expenses	(84,309)	(93,549)	—	(93,549)
Operating income (loss)	(27,924)	(30,984)	—	(30,984)
Financial gain (loss)	7,550	8,378	—	8,378
Income tax	—	—	—	—
Income (loss) from continuing operations	(20,373)	(22,606)	—	(22,606)
Loss from discontinued operations	—	—	—	—
Net income (loss)	**(20,373)**	**(22,606)**	**—**	**(22,606)**

(a) Converted at the average for the applicable annual period of the ECB's daily reference exchange rate for dollar / euro exchanges (as published by Banque de France), i.e 0.90121 euro for 1 dollar in 2015.

For the full year ended December 31, 2016	Consolidated financial statement as reported (€ in thousand)	Consolidated financial statement as reported converted (a) ($ in thousand)	Adjustments	Consolidated financial statement ($ in thousand)
Total revenues and other income	51,007	56,444	—	56,444
Total operating expenses	(111,824)	(123,746)	—	(123,746)
Operating income (loss)	(60,818)	(67,302)	—	(67,302)
Financial gain (loss)	42	46	—	46
Income tax	—	—	—	—
Income (loss) from continuing operations	(60,776)	(67,255)	—	(67,255)
Loss from discontinued operations	—	—	—	—
Net income (loss)	**(60,776)**	**(67,255)**	**—**	**(67,255)**

(a) Converted at the average for the applicable annual period of the ECB's daily reference exchange rate for dollar / euro exchanges (as published by Banque de France), i.e. 0.90366 euro for 1 dollar in 2016.

By convention and for practicability purpose, the differences have been recalculated on a cumulative basis from January 1, 2014 instead of the date of adoption of IFRS.

The amounts shown in the income statements and in the cash flow statements in dollars correspond to the amounts reported in euros converted at the average for the applicable annual period of the ECB's daily reference exchange rate for dollar / euro exchanges (as published by Banque de France).

All financial information (unless indicated otherwise) is presented in thousands of U.S. dollars.

The statements of financial position of consolidated entities having a functional currency different from the U.S. dollar are translated into U.S. dollars at the closing exchange rate (spot exchange rate at the statement of

financial position date) and the statements of operations, statements of comprehensive income (loss) and statements of cash flows of such consolidated entities are translated at the average period to date exchange rate. The resulting translation adjustments are included in equity under the caption "Accumulated other comprehensive income (loss)" in the Consolidated Statements of Changes in Shareholders' Equity.

2.3 IFRS15 application

IFRS 15 "Revenue from Contracts with Customers" establishes a comprehensive framework for determining whether, how much and when revenue is recognized. It replaces existing revenue recognition guidance, including IAS 18 "Revenue". IFRS 15 is effective for annual reporting periods beginning on or after January 1, 2018.

The different categories of contracts with customers of Cellectis, which have been reviewed are:

- Collaboration agreements and;
- Licensing agreements.

Cellectis applies IFRS 15 with effect from January 1, 2018 using the full retrospective method. The application of IFRS 15 led to a deferral of collaboration revenue (specifically milestone payments) from fiscal year 2015 with a negative opening equity adjustment of $1.7 million as of January 1, 2016. Except for this opening equity impact presented below, IFRS 15 has no impact in the financial statements for fiscal years 2016 and 2017.

	January 1st, 2016 as presented	IFRS 15 restatement	January 1st, 2016 as restated
		$ in thousands	
Total non-current assets	**7,451**	**—**	**7,451**
Total current assets	**363,863**	**—**	**363,863**
TOTAL ASSETS	**371,314**	**—**	**371,314**
Shareholders' equity			—
Share capital	2,323	—	2,323
Premiums related to the share capital	509,938	—	509,938
Treasury share reserve	(279)	—	(279)
Currency translation adjustment	(17,853)	34	(17,819)
Retained earnings (deficit)	(185,120)	—	(185,120)
Net income (loss)	(22,796)	(1,775)	(24,571)
Total shareholders' equity - Group Share	**286,212**	**(1,742)**	**284,471**
Non-controlling interests	789	—	789
Total shareholders' equity	**287,002**	**(1,742)**	**285,260**
Total non-current liabilities	**548**	**—**	**548**
Current liabilities			—
Current financial liabilities	2,091	—	2,091
Trade payables	7,197	—	7,197
Deferred revenues and contract liabilities	59,615	1,742	61,357
Current provisions	1,038	—	1,038
Other current liabilities	13,823	—	13,823
Total current liabilities	**83,765**	**1,742**	**85,506**
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	**371,314**	**—**	**371,314**

	December 31, 2016 as presented	IFRS 15 restatement	December 31, 2016 as restated
		$ in thousands	
Total non-current assets	**18,935**	**—**	**18,935**
Total current assets	**312,498**	**—**	**312,498**
TOTAL ASSETS	**331,432**	**—**	**331,432**
Shareholders' equity			—
Share capital	2,332	—	2,332
Premiums related to the share capital	568,185	—	568,185
Treasury share reserve	(416)	—	(416)
Currency translation adjustment	(22,174)	89	(22,085)
Retained earnings (deficit)	(207,875)	(1,775)	(209,650)
Net income (loss)	(67,255)	—	(67,255)
Total shareholders' equity - Group Share	**272,795**	**(1,686)**	**271,109**
Non-controlling interests	1,876	—	1,876
Total shareholders' equity	**274,671**	**(1,686)**	**272,985**
Total non-current liabilities	**590**	**—**	**590**
Current liabilities			—
Current financial liabilities	1,730	—	1,730
Trade payables	9,722	—	9,722
Deferred revenues and contract liabilities	38,929	1,686	40,615
Current provisions	594	—	594
Other current liabilities	5,196	—	5,196
Total current liabilities	**56,171**	**1,686**	**57,857**
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	**331,432**	**—**	**331,432**

	December 31, 2017 as presented	IFRS 15 restatement	December 31, 2017 as restated
		$ in thousands	
Total non-current assets	**9,661**	**—**	**9,661**
Total current assets	**323,221**	**—**	**323,221**
TOTAL ASSETS	**332,882**	**—**	**332,882**
Shareholders' equity			—
Share capital	2,367	—	2,367
Premiums related to the share capital	614,037	—	614,037
Treasury share reserve	(297)	—	(297)
Currency translation adjustment	1,978	(144)	1,834
Retained earnings (deficit)	(251,927)	(1,775)	(253,702)
Net income (loss)	(99,368)	—	(99,368)
Total shareholders' equity - Group Share	**266,791**	**(1,919)**	**264,873**
Non-controlling interests	19,113	—	19,113
Total shareholders' equity	**285,904**	**(1,919)**	**283,985**
Total non-current liabilities	**3,443**	**—**	**3,443**
Current liabilities			—
Current financial liabilities	21	—	21
Trade payables	9,460	—	9,460
Deferred revenues and contract liabilities	26,056	1,919	27,975
Current provisions	1,427	—	1,427
Other current liabilities	6,570	—	6,570
Total current liabilities	**43,534**	**1,919**	**45,453**
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	**332,882**	**—**	**332,882**

$ in thousands	Share Capital Ordinary Shares Number of shares	Amount	Premiums related to share capital	Treasury shares reserve	Currency translation adjustment	Retained earnings (deficit)	Income (Loss)	Equity attributable to shareholders of Cellectis	Non controlling interests	Total Shareholders' Equity
As of January 1, 2016, as presented	**35,178,614**	**2,323**	**509,938**	**(279)**	**(17,853)**	**(185,120)**	**(22,796)**	**286,212**	**789**	**287,002**
IFRS 15 restatement	—	—	—	—	34	—	(1,775)	(1,742)	—	(1,742)
As of January 1, 2016, as restated	**35,178,614**	**2,323**	**509,938**	**(279)**	**(17,819)**	**(185,120)**	**(24,571)**	**284,471**	**789**	**285,260**

$ in thousands	Share Capital Ordinary Shares Number of shares	Amount	Premiums related to share capital	Treasury shares reserve	Currency translation adjustment	Retained earnings (deficit)	Income (Loss)	Equity attributable to shareholders of Cellectis	Non controlling interests	Total Shareholders' Equity
As of January 1, 2017, as presented	**35,335,060**	**2,332**	**568,185**	**(416)**	**(22,174)**	**(207,875)**	**(67,255)**	**272,795**	**1,876**	**274,671**
IFRS 15 restatement	—	—	—	—	89	(1,775)	—	(1,686)	—	(1,686)
As of January 1, 2017, as restated	**35,335,060**	**2,332**	**568,185**	**(416)**	**(22,085)**	**(209,651)**	**(67,255)**	**271,109**	**1,876**	**272,984**

$ in thousands	Share Capital Ordinary Shares: Number of shares	Share Capital Ordinary Shares: Amount	Premiums related to share capital	Treasury shares reserve	Currency translation adjustment	Retained earnings (deficit)	Income (Loss)	Equity attributable to shareholders of Cellectis	Non controlling interests	Total Shareholders' Equity
As of January 1, 2018, as presented	**35,960,062**	**2,367**	**614,037**	**(297)**	**1,978**	**(251,927)**	**(99,368)**	**266,791**	**19,113**	**285,904**
IFRS 15 restatement	—	—	—	—	(143)	(1,775)	—	(1,919)	—	(1,919)
As of January 1, 2018, as restated	**35,960,062**	**2,367**	**614,037**	**(297)**	**1,835**	**(253,702)**	**(99,368)**	**264,873**	**19,113**	**283,986**

	As of December 31, 2016, as presented	IFRS 15 restatement	As of December 31, 2016, as restated
		$ in thousands	
Deferred revenues and contract liabilities	38,929	1,686	40,615
Total Deferred revenue and contract liabilities	**38,929**	**1,686**	**40,615**

	As of December 31, 2017, as presented	IFRS 15 restatement	As of December 31, 2017, as restated
		$ in thousands	
Deferred revenues and contract liabilities	26,056	1,919	27,975
Total Deferred revenue and contract liabilities	**26,056**	**1,919**	**27,975**

2.4 Basis of consolidation

Accounting policy

We control all the legal entities included in the consolidation. An investor controls an investee when the investor is exposed to variable returns from its involvement with the investee, and has the ability to affect those returns through its power over the investee. Control requires power, exposure to variability of returns and a linkage between the two.

To have power, the investor needs to have existing rights that give it the current ability to direct the relevant activities that significantly affect the investee's returns.

In order to ascertain control, potential voting rights which are substantial are taken into consideration.

Consolidation of a subsidiary begins when the Group obtains control over the subsidiary and ceases when the Group loses control of the subsidiary.

All intra-group assets and liabilities, equity, income, expenses and cash flows relating to transactions between members of the Group are eliminated in full consolidation.

Consolidated entities

For the year ended December 31, 2018, the consolidated group of companies (sometimes referred to as the "Group") includes Cellectis S.A., Cellectis, Inc. and Calyxt, Inc.

As of December 31, 2018, Cellectis S.A. owns 100% of Cellectis, Inc. and approximately 69.5% of Calyxt's outstanding shares of common stock. As of December 31, 2017, Cellectis S.A. owned 100% of Cellectis, Inc. and approximately 79.7% of Calyxt's outstanding shares of common stock.

Until July 25, 2017, Cellectis S.A. fully owned Calyxt, Inc. On July 25, 2017, Calyxt closed its IPO with $64.4 million in gross proceeds to Calyxt from the sale of 8,050,000 shares at $8 per share, including the full exercise of the underwriter's over-allotment option and Cellectis' purchase of $20.0 million of shares in the IPO. On May 22, 2018, Calyxt, Inc. completed a follow-on offering of its common stock. Calyxt, Inc. sold an aggregate of 4,057,500 shares of common stock at a price of $15.00 per share, including 457,500 shares of common stock pursuant to the exercise of the underwriters' option to purchase additional shares. In the aggregate, Calyxt, Inc. received net proceeds from the follow-on offering and exercise of the overallotment option of approximately $57.0 million, after deducting underwriting discounts and commissions of $3.2 million and offering expenses totaling approximately $0.7 million. As part of the follow-on offering, Cellectis SA purchased 550,000 shares of common stock for a value of $8.3 million, the proceeds of which are included in the net proceeds of approximately $57.0 million.

Our 2016 Consolidated Financial Statements include the operations of Cellectis S.A., Cellectis, Inc. and Calyxt, Inc. The two subsidiaries were fully owned by Cellectis S.A. during the year ended December 31, 2016.

Non-controlling interests

Non-controlling shareholders hold a 30.5% interest in Calyxt, Inc. as of December 31, 2018 and a 20.3% interest in Calyxt, Inc. as of December 31, 2017. These non-controlling interests were generated during the initial public offering of Calyxt, Inc. and a follow-on offering as described above.

2.5 Foreign currency

Foreign currency transactions and balances

Significant transactions in foreign currencies are translated into the respective functional currencies at the exchange rates effective at the transaction dates, otherwise the average rate of the previous month is used for non-significant transactions. Monetary assets and liabilities denominated in foreign currencies are translated into the functional currency using the exchange rate effective at the period end date.

The resulting exchange gains or losses are recorded in the consolidated statements of operations in financial gain (loss).

Foreign currency translation

The assets and liabilities of foreign operations having a functional currency different from the euro are translated into euros at the period end exchange rate. The income and expenses of foreign operations are translated into euros using the average exchange rate for the reporting period.

Gains and losses arising from currency translation are recognized in other comprehensive loss.

Consolidated financial statements are then converted into dollars using the method described in Note 2.2.

The difference in effect of exchange rate changes on cash and cash equivalents between the statements of consolidated operations and consolidated cash flows is mainly explained by the following elements:

- the differential between the average exchange rate and the period end rates applied to the cash flows of the period;
- the differential between the opening exchange rates and the period end exchanges rate applied on our opening cash and cash equivalents balance denominated in dollars; and
- the foreign exchange rate impact of the conversion of the financial statements of our US subsidiaries.

2.6 Use of judgment, estimates and assumptions

The preparation of these consolidated financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the accompanying disclosures, including the disclosure of contingent liabilities. Actual amounts may differ from those estimates.

The Group’s exposure to risks and uncertainties is disclosed in Note 7.3: Financial instruments risk management and policies.

Estimates and assumptions

The key assumptions concerning the future and other key sources of estimation uncertainty at the period end date, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year, are described below. The Group based its assumptions and estimates on parameters available when the consolidated financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising that are beyond the control of the Group. Such changes are reflected in the assumptions when they occur.

- Revenue recognition – Note 3.1
- Share-based payments – Note 15
- Provisions for risks and charges – Note 17

Note 3. Information concerning the Group's Consolidated Operations

3.1 Revenues and other income

Accounting policies

Collaboration agreements and licenses

The new standard IFRS 15 "Revenue from contracts with customers" is of mandatory application since January 1, 2018. Such standard was applied by Cellectis using the full retrospective method. Therefore, we restated 2016 opening balance sheet i.e. January 1, 2016. Please see note 2.3 for more details.

Under IFRS 15, revenue is recognized at an amount that reflects the consideration to which Cellectis expects to be entitled in exchange for transferring goods and services to customers (and it will collect consideration to which it will be entitled). That is, revenue is recognized when Cellectis satisfies a performance obligation by transferring a distinct good or service (or a distinct bundle of goods and or/ services) to a customer, i.e. when the customer obtains control of these goods or services. Since January 1st, 2016, the application of this standard impacted primarily the milestones recognition from our collaboration contracts.

We enter into research and development collaboration agreements that may consist of non-refundable upfront payments, payments for the sale of rights to technology, milestone payments, royalties and research and development cost reimbursements. In addition, we license our technology to third parties, which may be part of the research and development collaboration agreements.

Non-refundable upfront payments are deferred and recognized as revenue over the period of the collaboration agreement. Sales of technology pursuant to non-cancelable, non-refundable fixed-fee arrangements are recognized when such technology is delivered to the co-contracting party and our exclusive rights to access the technology have stopped.

Milestone payments represent amounts received from our collaborators, the receipt of which is dependent upon the achievement of certain scientific, regulatory, or commercial milestones. Such payments are considered variable consideration. We recognize milestone payments when it is highly probable that any revenue recognized will not be subsequently reversed. This includes consideration of whether the performance obligation is achieved and may be when the triggering event has occurred, depending on the nature of the triggering event, there are no further contingencies or services to be provided with respect to that event, and the co-contracting party has no right to require refund of payment. The triggering event may be scientific results achieved by us or another party to the arrangement, regulatory approvals, or the marketing of products developed under the arrangement. As a consequence, milestones payments are recognized as a contract liability in our statement of financial position.

Royalty revenues arise from our contractual entitlement to receive a percentage of product sales achieved by co-contracting parties under our license arrangements. As we have no products approved for sale, we have not received any royalty revenue to date. Royalty revenues, if earned, will be recognized at the later of when (1) the subsequent sale or usage occurs; and (2) the performance obligation to which the sales-based or usage-based royalties relates has been satisfied.

Research and development costs reimbursements are recognized with respect to the policy described in section "Sales of products and services" below.

Revenues from technology licenses are recognized ratably over the period of the license agreements.

Sales of products and services

Revenues on sales of products are recognized once the control over the delivered products is transferred to the customer. We also offer research services, which revenue is recognized over time, as the customer receives the benefits of the services.

Research Tax Credit

The main Research Tax Credit from which we benefit is the *Crédit d'Impôt Recherche,* or "CIR", which is granted to entities by the French tax authorities in order to encourage them to conduct technical and scientific research. Entities that demonstrate that their research expenditures meet the required CIR criteria receive a tax credit that may

be used for the payment of their income tax due for the fiscal year in which the expenditures were incurred, as well as in the next three years. If taxes due are not sufficient to cover the full amount of tax credit at the end of the three-year period, the difference is repaid in cash to the entity by the authorities. If a company meets certain criteria in terms of sales, headcount or assets to be considered a small/middle size company, immediate payment of the Research Tax Credit can be requested. Cellectis S.A., meets such criteria.

We apply for CIR for research expenditures incurred in each fiscal year and recognize the amount claimed in the line item “Other income” in the same fiscal year. Research tax credit is subject to audit of tax authorities. When tax authorities’ payment related to CIR is late, default interests are applied and are recognized in “other income”.

Details of revenues and other income

Revenues by country of origin and other income

	For the year ended December 31,		
	2016	2017	2018
	$ in thousands		
From France	44,409	24,680	12,495
From USA	399	508	236
Revenues	**44,808**	**25,188**	**12,731**
Research tax credit	10,038	8,327	8,561
Subsidies and other	1,599	201	140
Other income	**11,637**	**8,528**	**8,701**
Total revenues and other income	**56,444**	**33,715**	**21,432**

For the years ended December 31, 2018, 2017 and 2016, the revenue from France was generated by Cellectis S.A.

For the years ended December 31, 2018, 2017 and 2016, the revenue from USA was generated by Calyxt, Inc.

Revenues by nature

	For the year ended December 31,		
	2016	2017	2018
	$ in thousands		
Recognition of previously deferred upfront payments	20,856	14,875	7,114
Other revenues	21,035	7,945	3,383
Collaboration agreements	**41,891**	**22,821**	**10,497**
Licenses	2,771	2,270	2,142
Products & services	145	97	92
Total revenues	**44,808**	**25,188**	**12,731**

Revenues are primarily generated by therapeutics activities, which are mainly attributable to our entering into two major collaboration agreements signed with Pfizer Inc. and Les Laboratoires Servier during 2014. Effective as of April 2018, Pfizer sold certain assets to which the Research Collaboration and License Agreement relates to Allogene Therapeutics, Inc. (“Allogene”) (the “Asset Contribution Agreement”). As part of this Asset Contribution Agreement, Pfizer assigned the Research Collaboration and License Agreement to Allogene. The revenues of plants activities are generated by technology licenses and amounted to $0.6 million, $0.5 million and $0.3 million for years ended December 31, 2016, 2017 and 2018, respectively.

Entity-wide disclosures:

In 2018, two clients represent more than 10% of the total revenue: Client A with 55% and Client B with 21%.
In 2017, two clients represent more than 10% of the total revenue: Client A with 11% and Client B with 69%.
In 2016, two clients represent more than 10% of the total revenue: Client A with 37% and Client B with 57%.

3.2 Operating expenses

Accounting policies

Royalty expenses correspond to costs from license agreements that we entered into to obtain access to technology that we use in our product development efforts. Depending on the contractual provisions, expenses are based either on a percentage of revenue generated by using the patents or on fixed annual royalties.

Research and development expenses include employee-related costs, laboratory consumables, materials supplies and facility costs, as well as fees paid to non-employees and entities to conduct research and development activities on our behalf. They also include expenses associated with obtaining patents. The costs associated with manufacturing of product candidates are recorded depending on the use of the material. If products are not intended to be used in clinical studies, we recognize the expense when the product is delivered. If they are intended to be used for clinical studies, the expense is recognized when the certificate of compliance is obtained.

Selling, general and administrative expenses consist primarily of employee-related expenses for executive, business development, intellectual property, finance, legal and human resource functions. Administrative expenses also include facility-related costs and service fees, other professional services, recruiting fees and expenses associated with maintaining patents.

We classify a portion of personnel and other costs related to information technology, human resources, business development, legal, intellectual property and general management in research and development expenses based on the time that each employee or person spent contributing to research and development activities versus sales, general and administrative activities.

Details of operating expenses by nature

	For the year ended December 31,		
	2016	2017	2018
	$ in thousands		
Royalty expenses	(1,777)	(2,620)	(2,739)

	For the year ended December 31,		
	2016	2017	2018
	$ in thousands		
Research and development expenses			
Wages and salaries	(11,924)	(12,986)	(16,452)
Social charges on free shares and stock option grants	(3,851)	(1,088)	(99)
Non-cash stock based compensation expense	(33,207)	(23,832)	(18,057)
Personnel expenses	**(48,982)**	**(37,906)**	**(34,608)**
Purchases and external expenses	(27,720)	(38,458)	(40,458)
Other	(1,756)	(2,863)	(1,501)
Total research and development expenses	**(78,458)**	**(79,227)**	**(76,567)**

	For the year ended December 31,		
	2016	2017	2018
	$ in thousands		
Selling, general and administrative expenses			
Wages and salaries	(4,978)	(7,019)	(11,373)
Social charges on free shares and stock option grants	(3,130)	(881)	(29)
Non-cash stock based compensation expense	(25,415)	(26,586)	(19,161)
Personnel expenses	**(33,523)**	**(34,486)**	**(30,563)**
Purchases and external expenses	(8,854)	(9,138)	(14,251)
Other	(1,035)	(1,126)	(2,433)
Total selling, general and administrative expenses	**(43,413)**	**(44,750)**	**(47,248)**

	For the year ended December 31,		
	2016	2017	2018
	$ in thousands		
Personnel expenses			
Wages and salaries	(16,902)	(20,005)	(27,825)
Social charges on free shares and stock option grants	(6,981)	(1,969)	(128)
Non-cash stock based compensation expense	(58,622)	(50,418)	(37,218)
Total personnel expenses	**(82,505)**	**(72,392)**	**(65,171)**

3.3 Financial income and expenses

Accounting policies

Financial income and financial expense include, in particular, the following:

- Interest income from savings accounts and fixed term bank deposits;
- Interest expense from financial leases;
- Foreign exchange gain (loss) from transactions in foreign currencies; and
- Other financial income and expenses, mainly derived from fair value adjustments related to our financial assets and derivative instruments.

Details of financial income and expenses

	For the year ended December 31,		
	2016	2017	2018
	$ in thousands		
Interest income	1,630	1,974	6,787
Foreign exchange gain	4,832	1,185	13,597
Other financial revenues	689	4,102	188
Total financial revenues	**7,147**	**7,262**	**20,572**
Interest expenses	—	—	(39)
Interest expenses for finance lease	(7)	(4)	(7)
Foreign exchange loss	(4,201)	(17,734)	(3,090)
Other financial expenses	(2,895)	(556)	(677)
Total financial expenses	**(7,101)**	**(18,294)**	**(3,813)**
Total	**46**	**(11,032)**	**16,758**

The increase in financial income and expenses between 2017 and 2018 of $27.8 million was mainly attributable to the increase in net foreign exchange gain ($27.0 million), the increase in interest income ($4.8 million) partly offset by the decrease of foreign exchange derivatives fair value adjustment ($4.0 million), included in other financial revenues and expenses.

The decrease in financial income and expenses between 2016 and 2017 of $11.1 million was mainly attributable to the increase in net foreign exchange loss ($17.2 million), partly offset by the increase of foreign exchange derivatives fair value adjustment ($5.8 million), the increase in interest income ($0.3 million) and other immaterial variances.

3.4 Income tax

Accounting policies

Income tax (expense or income) comprises current tax expense (income) and deferred tax expense (income).

Deferred taxes are recognized for all the temporary differences arising from the difference between the tax basis and the accounting basis of assets and liabilities. Tax losses that can be carried forward or backward may also be recognized as deferred tax assets. Tax rates that have been enacted as of the closing date are utilized to determine deferred tax. Deferred tax assets are recognized only to the extent that it is likely that future profits will be sufficient to recover them. We have not recorded deferred tax assets or liabilities in the statements of financial position.

Tax proof

	For the year ended December 31,		
	2016	2017	2018
	$ in thousands		
Income (loss) before taxes from continuing operations	(67,255)	(103,683)	(88,333)
Theoretical group tax rate	34.43%	34.43%	23.66%
Theoretical tax benefit (expense)	23,156	35,698	20,901
Increase/decrease in tax benefit arising from:			
Permanent differences	124	293	832
Research tax credit	3,082	2,926	2,079
Share-based compensation & other IFRS adjustments	(20,184)	(8,297)	(8,065)
Non recognition of deferred tax assets related to tax losses and temporary differences	(6,158)	(30,713)	(15,652)
Other differences	(20)	92	(95)
Effective tax expense	—	—	—
Effective tax rate	0.00%	0.00%	0.00%

On December 22, 2017 the President of the United States signed The Tax Cuts and Jobs Act ("the Act") into law. We considered the impact the tax reform has on our US subsidiaries' tax obligations and its deferred tax assets and liabilities. Since its inception, our US subsidiaries have had losses and it expects to continue to have losses in the future. As a result, our US subsidiaries have not had taxable income. The deferred income tax assets and liabilities are recognized for the differences between the financial statement and income tax reporting basis of assets and liabilities based on currently enacted rates and laws. Historically, our US subsidiaries used the Federal statutory rate of 34% to estimate the benefit of the deferred tax asset and going forward they expect to use a lower rate of 21% passed in the Act.

In France, the income tax rate we anticipate to use our tax loss carryforwards is 25% based on the 2018 French Finance Act.

We provide for a valuation allowance when it is more likely than not that we will not realize a portion of the deferred tax assets. Historically we have established a full valuation allowance for deferred tax assets due to the uncertainty that enough taxable income will be generated in the taxing jurisdiction to utilize the assets. Therefore, we have not reflected any benefit of such deferred tax assets in the accompanying financial statements. Going forward, with the lower tax rate enacted in the Act, the ability to utilize the deferred tax asset becomes even less probable. We do not expect the passing of the Act to have material impact on our financial statements, as all net deferred tax assets are fully reserved.

Deferred tax assets and liabilities

	As of December 31,		
	2016	2017	2018
	$ in thousands		
Credits and net operating loss carryforwards	41,985	51,640	65,555
Pension commitments	193	548	569
Leases	(54)	(12)	(4)
Impairment of assets	14	10	10
Revenue recognition	—	—	200
Other	894	604	491
Valuation allowance on deferred tax assets	(43,032)	(52,790)	(66,823)
Total	—	—	—

We have cumulative tax loss carryforwards for the French entity of the Group totaling $186 million as of December 31, 2018, $144 million as of December 31, 2017 and $87 million as of December 31, 2016. Such carryforwards can be offset against future taxable profit within a limit of $1.0 million per year, plus 50% of the profit exceeding this limit. Remaining unused losses will continue to be carried forward indefinitely.

The cumulative tax loss carryforwards for the U.S. entities of the Group totaled $86 million as of December 31, 2018, $62 million as of December 31, 2017 and $42 million as of December 31, 2016. The carryforward periods are as follows: $32.0 million do not expire; while other expire in 2032 or after.

3.5 Reportable segments

Accounting policies

Reportable segments are identified as components of the Group that have discrete financial information available for evaluation by the Chief Operating Decision Maker ("CODM"), for purposes of performance assessment and resource allocation.

Cellectis' CODM is composed of:

- The Chairman and Chief Executive Officer;
- The Chief Operating Officer;
- The Executive Vice President Technical Operations;
- The Chief Scientific Officer;
- The Chief Financial Officer;

- The General Counsel;
- The Senior Vice President Research and Development (until February 7, 2019);
- The Chief Medical Officer (until February 28, 2019);
- The Chief Regulatory & Compliance Officer.

We view our operations and manage our business in two operating and reportable segments that are engaged in the following activities:

- *Therapeutics:* This segment is focused on the development (i) of products in the field of immuno-oncology and (ii) of novel therapies outside immuno-oncology to treat other human diseases. This approach is based on our gene editing and Chimeric Antigen Receptors ("CARs") technologies. All these activities are supported by Cellectis S.A. and Cellectis, Inc. The operations of Cellectis S.A., the parent company, are presented entirely in the Therapeutics segment which also comprises research and development, management and support functions.
- *Plants:* This segment is focused on creating healthier specialty food ingredients and agriculturally advantageous food crops through the use of gene editing technology for plants. It corresponds to the activity of our U.S.-based majority-owned subsidiary, Calyxt, Inc., which is currently based in Roseville, Minnesota.

There are inter-segment transactions between the two reportable segments, including allocation of corporate general and administrative expenses by Cellectis S.A. and allocation of research and development expenses to the reportable segments.

With respect to corporate general and administrative expenses, Cellectis S.A. provides Calyxt, Inc. with general sales and administrative functions, accounting and finance functions, investor relations, intellectual property, legal advice, human resources, communication and information technology pursuant to a management agreement. Under the management agreement, Cellectis S.A. charges Calyxt, Inc. in euros at cost plus a mark-up ranging between zero to 10%, depending on the nature of the service. Amounts due to Cellectis S.A. pursuant to inter-segment transactions bear interest at a rate of the 12-month Euribor plus 5% per annum.

The intersegment revenues represent the transactions between segments. Intra-segment transactions are eliminated within a segment's results and intersegment transactions are eliminated in consolidation as well as in key performance indicators by reportable segment.

Information related to each reportable segment is set out below. Segment revenues and other income, Research and development expenses, Selling, general and administrative expenses, and Royalties and other operating income and expenses, and Adjusted net income (loss) attributable to shareholders of Cellectis (which does not include non-cash stock-based compensation expense) are used by the CODM for purposes of making decisions about allocating resources to the segments and assessing their performance. The CODM does not review any asset or liability information by segment or by region.

Adjusted Net Income (Loss) attributable to shareholders of Cellectis S.A. is not a measure calculated in accordance with IFRS. Because Adjusted Net Income (Loss) attributable to shareholders of Cellectis excludes Non-cash stock based compensation expense—a non-cash expense, our management believes that this financial measure, when considered together with our IFRS financial statements, can enhance an overall understanding of Cellectis' financial performance. Moreover, our management views the Company's operations, and manages its business, based, in part, on this financial measure.

The net income (loss) includes the impact of the operations between segments while the intra-segment operations are eliminated.

Details of key performance indicators by reportable segment

$ in thousands	For the year ended December 31, 2016			For the year ended December 31, 2017			For the year ended December 31, 2018		
	Plants	Therapeutics	Total reportable segments	Plants	Therapeutics	Total reportable segments	Plants	Therapeutics	Total reportable segments
External revenues	399	44,409	44,808	508	24,680	25,188	236	12,495	12,731
External other income	186	11,450	11,637	239	8,290	8,528	178	8,523	8,701
External revenues and other income	**585**	**55,859**	**56,444**	**747**	**32,969**	**33,715**	**414**	**21,018**	**21,432**
Royalty expenses	(468)	(1,309)	(1,777)	(390)	(2,230)	(2,620)	(595)	(2,144)	(2,739)
Research and development expenses	(4,112)	(74,345)	(78,458)	(6,057)	(73,170)	(79,227)	(8,638)	(67,929)	(76,567)
Selling, general and administrative expenses	(4,809)	(38,603)	(43,413)	(13,143)	(31,607)	(44,750)	(21,067)	(26,180)	(47,248)
Other operating income and expenses	(6)	(93)	(99)	6	225	232	(50)	81	31
Total operating expenses	**(9,395)**	**(114,351)**	**(123,746)**	**(19,584)**	**(106,782)**	**(126,366)**	**(30,351)**	**(96,172)**	**(126,523)**
Operating income (loss) before tax	**(8,810)**	**(58,492)**	**(67,302)**	**(18,837)**	**(73,813)**	**(92,650)**	**(29,937)**	**(75,154)**	**(105,091)**
Financial gain (loss)	87	(41)	46	—	(11,032)	(11,032)	1,420	15,339	16,758
Net income (loss)	**(8,722)**	**(58,533)**	**(67,255)**	**(18,837)**	**(84,846)**	**(103,683)**	**(28,517)**	**(59,816)**	**(88,333)**
Net income (loss) from discontinued operations	—	—	—	—	—	—	—	—	—
Non controlling interests	—	—	—	4,315	—	4,315	9,640	—	9,640
Net income (loss) attributable to shareholders of Cellectis	**(8,722)**	**(58,533)**	**(67,255)**	**(14,522)**	**(84,846)**	**(99,368)**	**(18,877)**	**(59,816)**	**(78,693)**
R&D non-cash stock-based expense attributable to shareholder of Cellectis	477	32,731	33,208	967	22,623	23,590	838	16,852	17,689
SG&A non-cash stock-based expense attributable to shareholder of Cellectis	621	24,793	25,414	4,990	20,345	25,335	5,218	11,655	16,873
Adjustment of share-based compensation attributable to shareholders of Cellectis	**1,098**	**57,524**	**58,622**	**5,957**	**42,967**	**48,924**	**6,056**	**28,507**	**34,563**
Adjusted net income (loss) attributable to shareholders of Cellectis	**(7,625)**	**(1,009)**	**(8,633)**	**(8,565)**	**(41,877)**	**(50,443)**	**(12,821)**	**(31,309)**	**(44,130)**
Depreciation and amortization	(345)	(1,866)	(2,211)	(551)	(2,820)	(3,371)	(637)	(1,740)	(2,377)
Additions to tangible and intangible assets	10,410	4,164	14,573	792	1,849	2,642	1,871	3,040	4,911
Impairment of tangible assets	—	—	—	—	(798)	(798)	—	—	—

Reconciliation of Plant result of operations

The tables below present a reconciliation between the Plant segment figures that are prepared in accordance with IFRS for the Group with Calyxt, Inc. stand alone financial statements which are prepared in accordance with US GAAP for the domestic registration.

Reconciliation of Plant Segment result of operations for the year ended December 31, 2018

	For the full year ended December 31, 2018						
$ in thousands	Cellectis Consolidated financial statements Reportable segments note (IFRS)	Non-cash stock-based compensation booked in IFRS (1)	Non-cash stock-based compensation in US GAAP (1)	Intersegment transactions (2)	Reclassifications (3)	Other (4)	Calyxt Stand alone financial statements (US GAAP)
External revenues and other income	**414**	**—**	**—**	**—**	**(177)**	**—**	**236**
Research and development expenses	(8,638)	1,205	(630)	—	(1,783)	—	(9,846)
Selling, general and administrative expenses	(21,067)	7,506	(3,756)	(3,090)	1,245	657	(18,505)
Royalties and other operating income and expenses	(645)	—	—	(71)	716	—	—
Total operating expenses	**(30,350)**	**8,711**	**(4,386)**	**(3,161)**	**177**	**657**	**(28,351)**
Operating income (loss) before tax	**(29,937)**	**8,711**	**(4,386)**	**(3,161)**	**—**	**657**	**(28,115)**
Financial gain (loss)	1,420	—	—	51	—	(1,244)	218
Net income (loss)	**(28,517)**	**8,711**	**(4,386)**	**(3,110)**	**—**	**(587)**	**(27,897)**

Reconciliation of Plant Segment result of operations for the year ended December 31, 2017

	For the full year ended December 31, 2017						
$ in thousands	Cellectis Consolidated financial statements Reportable segments note (IFRS)	Calyxt equity award plan IFRS/US GAAP difference : Non cash stock-based compensation (1)	Cellectis and Calyxt equity award IFRS/US GAAP difference : Non cash stock-based compensation (1)	Intersegment transactions (2)	Reclassifications (3)	Other (4)	Calyxt Stand alone financial statements (US GAAP)
External revenues and other income	**747**	**—**	**—**	**167**	**(405)**	**(1)**	**508**
Research and development expenses	(6,057)	1,134	(6,086)	—	(563)	16	(11,556)
Selling, general and administrative expenses	(13,143)	6,316	(6,006)	(2,501)	436	157	(14,741)
Royalties and other operating income and expenses	(384)	—	—	(114)	504	(7)	—
Total operating expenses	**(19,584)**	**7,450**	**(12,092)**	**(2,615)**	**378**	**166**	**(26,297)**
Operating income (loss) before tax	**(18,837)**	**7,450**	**(12,092)**	**(2,448)**	**(27)**	**165**	**(25,789)**
Financial gain (loss)	—	—	—	(1)	27	(218)	(191)
Net income (loss)	**(18,837)**	**7,450**	**(12,092)**	**(2,449)**	**—**	**(53)**	**(25,980)**

Reconciliation of Plant Segment result of operations for the year ended December 31, 2016

	For the year ended December 31, 2016						
$ in thousands	**Cellectis Consolidated financial statements Reportable segments note (IFRS)**	**Calyxt equity award plan IFRS/US GAAP difference : Non cash stock-based compensation (1)**	**Cellectis equity award IFRS/US GAAP difference : Non cash stock-based compensation (1)**	**Intersegment transactions (2)**	**Reclassifications (3)**	**Other (4)**	**Calyxt Stand alone financial statements (US GAAP)**
External revenues and other income	**585**	**—**	**—**	**131**	**(317)**	**—**	**399**
Research and development expenses	(4,112)	477	(928)	—	(1,058)	(17)	(5,638)
Selling, general and administrative expenses	(4,809)	621	(20)	(3,443)	945	37	(6,670)
Royalties and other operating income and expenses	(474)	—	—	(155)	430	(1)	(200)
Total operating expenses	**(9,395)**	**1,098**	**(948)**	**(3,598)**	**317**	**19**	**(12,508)**
Operating income (loss) before tax	**(8,810)**	**1,098**	**(948)**	**(3,468)**	**—**	**19**	**(12,109)**
Financial gain (loss)	87	—	—	(64)	—	(1)	23
Net income (loss)	**(8,722)**	**1,098**	**(948)**	**(3,532)**	**—**	**18**	**(12,086)**

(1) In IFRS, non-cash stock-based compensation is recorded for stock options and other equity compensation plan awards issued by all entities of the consolidated group. The grant-date fair value of share warrants, employee warrants, stock options and free shares granted to employees is recognized as a payroll expense over the vesting period. In U.S. GAAP, the expenses related to the stock options granted in 2014, 2015 and 2016 under the Calyxt, Inc. Equity Incentive Existing Plan and in 2017 and 2018 under the Omnibus Plan are only incurred upon a triggering event or Initial Public Offering of Calyxt, Inc., as defined by the plan. Accordingly, Plant segment compensation expense was not recognized for Calyxt stock options and other Calyxt equity compensation plan awards in periods prior to the completion of Calyxt's IPO on July 25, 2017.

Since 2016, Cellectis allocates share-based compensation to the share-related entity (rather than the entity related to the employee that benefited from such compensation), considering that the share-based compensation is an expense linked to such entity's performance. Consequently, in the segment disclosure, all share-based compensation based on Cellectis shares have been charged in the Therapeutics segment, even if some Calyxt employees are included in a Cellectis stock-option plan. However, the Cellectis equity award plan non-cash stock-based compensation expenses related to Cellectis stock-option plans have been recorded in the Calyxt stand-alone financial statements prepared under U.S. GAAP.

(2) Intersegment transactions primarily relate to management fees invoiced by Cellectis to Calyxt. Intersegment transactions are eliminated in the consolidated financial statements as well as in Cellectis' presentation of key performance indicators by reportable segment. However, intersegment transactions are included in Calyxt's stand-alone financial statements.

(3) Reclassifications relate to expenses, which are classified differently under IFRS for Cellectis' consolidated financials and U.S. GAAP for Calyxt's stand-alone financial statements.
(4) Other principally includes the restatement of Calyxt's sale and lease-back transaction with respect to its Roseville, Minnesota property, which is recorded as a finance lease in U.S. GAAP and as an operating lease under IFRS.

Note 4. Impairment tests

Accounting policy

Amortizable intangible assets and depreciable tangible assets are tested for impairment when there is an indicator of impairment. Goodwill is tested for impairment at least once a year. Impairment tests involve comparing the carrying amount of cash-generating units with their recoverable amount. The recoverable amount of an asset is the higher of (i) its fair value less costs to sell and (ii) its value in use. If the recoverable amount of any asset is below its carrying amount, an impairment loss is recognized to reduce the carrying amount to the recoverable amount.

Our cash-generating units ("CGUs") correspond to the operating/reportable segments: Therapeutics and Plants.

Results of impairment test

No indicator of impairment has been identified for any intangible or tangible assets in either of the CGUs for the years ended December 31, 2016 or 2018. In 2017, as we had the willingness to discontinue the lease of the facility in Montvale, New Jersey (USA), we recorded a $0.8 million tangible assets impairment.

Note 5. Intangible assets

Accounting policy

Capitalization of development expenses

In accordance with IAS 38 *Intangible Assets*, development expenses are recorded as intangible assets only if all the following criteria are met:

- technical feasibility necessary for the completion of the development project;
- intention on our part to complete the project and to utilize it;
- capacity to utilize the intangible asset;
- proof of the probability of future economic benefits associated with the asset;
- availability of the technical, financial, and other resources for completing the project; and
- reliable evaluation of the development expenses.

Other intangible assets

The other intangible assets we acquired with definite useful lives are recognized at cost less accumulated amortization and impairment. Amortization expense is recorded on a straight-line basis over the estimated useful lives of the intangible assets, in the line Research and Development expenses or Selling, general and administrative expenses of the Statement of Consolidated Operations, depending on the use of the related asset.

The estimated useful lives are as follows:

- Software: from 1 year to 3 years;
- Patents: amortized from acquisition until legal protection expires, maximum of 20 years.

Details of intangible assets

$ in thousands	Software and Patents	Assets under construction	Total
Net book value as of January 1, 2016	**1,041**	**—**	**1,041**
Change in scope	—	—	—
Additions to intangible assets	212	439	652
Disposal of intangible assets	(74)	—	(74)
Depreciation expense	(226)	—	(226)
Translation adjustments	(28)	(21)	(49)
Net book value as of December 31, 2016	**924**	**419**	**1,343**
Gross value at end of period	2,256	419	2,675
Accumulated depreciation and impairment at end of period	(1,332)	—	(1,332)
Net book value as of January 1, 2017	**924**	**419**	**1,343**
Additions to intangible assets	6	135	141
Depreciation expense	(231)	—	(231)
Translation adjustments	112	66	178
Net book value as of December 31, 2017	**811**	**619**	**1,431**
Gross value at end of period	2,571	517	3,190
Accumulated depreciation and impairment at end of period	(1,759)	—	(1,759)
Net book value as of January 1, 2018	**811**	**619**	**1,431**
Additions to intangible assets	14	103	117
Disposal of intangible assets	(7)	—	(7)
Reclassification	6	—	6
Depreciation expense	(217)	—	(217)
Translation adjustments	(30)	(31)	(61)
Net book value as of December 31, 2018	**577**	**691**	**1,268**
Gross value at end of period	2,454	691	3,146
Accumulated depreciation and impairment at end of period	(1,878)	—	(1,878)

Intangible assets mainly consist of electroporation technology patents acquired in 2011. The 2016, 2017 and 2018 additions in intangible assets under construction corresponds to the internal development of existing technology.

Note 6. Property, plant and equipment

Accounting policy

Property, plant and equipment are recognized at acquisition cost less accumulated depreciation and any impairment losses. Acquisition costs include expenditures that are directly attributable to the acquisition of the asset and costs to ready it for use.

Depreciation is expensed on a straight-line basis over the estimated useful lives of the assets. If components of property, plant and equipment have different useful lives, they are accounted for separately.

The estimated useful lives are as follows:

- Buildings and other outside improvements 10-20 years
- Leasehold improvements 5-10 years
- Office furniture 10 years
- Laboratory equipment 3-10 years
- Office equipment 5 years
- IT equipment 3 years

Depreciation methods, useful lives and residual values are reviewed at each reporting date and adjusted, if appropriate.

Any gain or loss on disposal of an item of property, plants and equipment is determined by comparing the proceeds from disposal with the carrying amount of the item. The net amount is recognized in the statement of consolidated operations under the line item “Other operating income and expenses.”

Payments made under operating leases are expensed on a straight-line basis over the term of the lease. Lease incentives received are recognized as an integral part of the total lease expense, over the term of the lease.

If, according to the terms of a lease, it appears that substantially all the risks and rewards incidental to ownership are transferred from the lessor to the lessee, the associated leased assets are initially recognized as an asset at the lower of their fair value and the present value of the minimum lease payments and subsequently depreciated or impaired, as necessary. The associated financial obligations are reported in the line item “non-current financial debt” and “current financial debt.”

Details of property, plant and equipment

	Lands and Buildings	Technical equipment	Fixtures, fittings and other equipment	Assets under construction	Total
			$ in thousands		
Net book value as of January 1, 2016	**2,072**	**2,897**	**340**	**182**	**5,490**
Additions to tangible assets	11,164	1,076	562	902	13,704
Disposal of tangible assets	—	(3)	(1)	(183)	(186)
Depreciation expense	(741)	(1,077)	(167)	—	(1,986)
Reclassification	—	3	(3)	—	—
Translation adjustments	(59)	(38)	(23)	(4)	(122)
Net book value as of December 31, 2016	**12,436**	**2,858**	**707**	**898**	**16,900**
Gross value at end of period	15,085	10,634	1,104	898	27,721
Accumulated depreciation and impairment at end of period	(2,649)	(7,775)	(397)	—	(10,821)
Net book value as of January 1, 2017	**12,436**	**2,858**	**707**	**898**	**16,900**
Additions to tangible assets	718	701	203	878	2,501
Disposal of tangible assets	(9,243)	(103)	2	(109)	(9,453)
Reclassification	14	47	18	(79)	—
Depreciation expense	(972)	(1,126)	(245)	(798)	(3,140)
Translation adjustments	206	127	68	18	418
Net book value as of December 31, 2017	**3,159**	**2,505**	**753**	**809**	**7,226**
Gross value at end of period	6,936	12,114	1,447	1,606	22,103
Accumulated depreciation and impairment at end of period	(3,777)	(9,609)	(693)	(798)	(14,877)
Net book value as of January 1, 2018	**3,159**	**2,505**	**753**	**809**	**7,226**
Additions to tangible assets	879	1,622	1,820	1,942	6,263
Disposal of tangible assets	—	(49)	(690)	(426)	(1,164)
Reclassification	39	216	793	(1,053)	(6)
Depreciation expense	(758)	(854)	(478)	—	(2,091)
Translation adjustments	(90)	(46)	(27)	(25)	(188)
Net book value as of December 31, 2018	**3,229**	**3,393**	**2,172**	**1,247**	**10,041**
Gross value at end of period	7,604	13,297	3,215	2,045	26,160
Accumulated depreciation and impairment at end of period	(4,375)	(9,903)	(1,043)	(798)	(16,119)

No assets have been pledged as security for financial liabilities. There is no restriction on title of property, plant and equipment, except for assets recognized under finance lease agreements.

In 2017, Calyxt entered into a transaction whereby it sold a certain land and building (with a total net book value of $9.2 million), which was considered a sale under applicable accounting guidance and then entered into an operating lease for this property.

Assets under construction as of December 31, 2018 primarily relates to Cellectis' new raw material manufacturing facility in Paris ($0.3 million) and new commercial manufacturing facility in the United States ($0.3 million) and the rest relates to the Plants activity.

For the year ended December 31, 2018, we continued our investments in research and development equipment in both the United States of America and France. The addition in tangible assets reflects improvements of Calyxt and Cellectis sites for $2.5 million and other equipment for $1.8 million.

Details of finance lease

	As of December 31,	
	2017	2018
	$ in thousands	
Gross value	4,448	5,689
Accumulated depreciation	(4,366)	(4,329)
Net	**82**	**1,360**

The finance leases relate mainly to laboratory equipment and IT equipment.

Note 7. Financial assets and liabilities

7.1 Accounting principles

The new standard IFRS 9 "Financial instruments" is of mandatory application since January 1, 2018. Cellectis elected not to restate the 2016 and 2017 comparative periods, as authorized by the standard. Such adoption did not lead to any adjustment recorded in the Group opening equity at January 1, 2018.

IFRS 9 comprises three phases: classification and measurement of financial assets and liabilities, impairment of financial assets and hedge accounting. Cellectis was not affected by the new classification required by the standard to determine the way financial assets are recognized and measured.

Financial assets

Under IFRS 9, Cellectis holds either:

- financial assets measured at amortized cost or;
- financial assets measured at fair value through profit or loss.

Non-current financial assets are recorded at the amortized cost and correspond to security deposits mainly relating to our facilities rents.

Current financial assets correspond to investments and are recorded at fair value through profit and loss, which is the nominal value of the investment adjusted with the daily mark-to-market value.

Trade and other receivables are recorded at fair value, which is the nominal value of invoices unless payment terms require a material adjustment for the time value discounting effect at market interest rates. Trade receivables are subsequently measured at amortized cost. A provision for expected credit losses for trade and other receivables is recognized if their recoverable amount is less than their carrying amount. The introduction of a new expected loss model for impairment of financial assets under IFRS 9 had no significant impact on the initial recognition of Cellectis trade and other receivables.

Receivables are classified as current assets, except for those with a maturity exceeding 12 months after the reporting date.

Government grants to Cellectis related to research and development expenses for research programs are recognized as subsidies receivables in the period in which the expenses subject to the subsidy have been incurred, provided there is a reasonable assurance that we will comply with conditions attached to the subsidy and that the subsidy will be received.

Financial liabilities

The application of IFRS 9 has no impact on the Cellectis' accounting policy regarding financial liabilities.

Financial liabilities include trade and other payables, finance leases and conditional advances.

We initially recognize financial liabilities on the transaction date, which is the date that we become a party to the contractual provisions of the instrument.

We derecognize financial liabilities when our contractual obligations are discharged, canceled or expire.

Financial liabilities are valued at amortized cost. The amount of interest recognized in financial expenses is calculated by applying the financial liability's effective interest rate to its carrying amount. Any difference between the expense calculated using the effective interest rate and the actual interest payment impacts the value at which the financial liability is recognized.

Liabilities for short term employee benefits are included in financial liabilities. They are recognized for the amount expected to be paid under short-term cash bonus or profit-sharing plans if we have a present legal or constructive obligation to pay the amount as a result of past service provided by the employee, and the obligation can be estimated reliably.

7.2 Detail of financial assets and liabilities

The following table shows the carrying amounts and fair values of financial assets and financial liabilities.

2017	Accounting category: Fair value through profit and loss	Accounting category: Amortized cost	Book value on the statement of financial position	Fair Value
		$ in thousands		
Financial assets				
Non-current financial assets	—	1,004	1,004	1,004
Trade receivables	—	2,753	2,753	2,753
Subsidies receivables	—	9,524	9,524	9,524
Current financial assets	40,602	—	40,602	40,602
Cash and cash equivalents	256,380	—	256,380	256,380
Total financial assets	**296,982**	**13,281**	**310,263**	**310,263**
Financial liabilities				
Non-current financial liabilities	—	13	13	13
Current financial liabilities	—	21	21	21
Trade payables	—	9,460	9,460	9,460
Other current liabilities	—	6,570	6,570	6,570
Total financial liabilities	**—**	**16,064**	**16,064**	**16,064**

2018	Accounting category: Fair value through profit and loss	Accounting category: Amortized cost	Book value on the statement of financial position	Fair Value
		$ in thousands		
Financial assets				
Non-current financial assets	—	1,891	1,891	1,891
Trade receivables	—	2,971	2,971	2,971
Subsidies receivables	—	17,173	17,173	17,173
Current financial assets	7	381	388	388
Cash and cash equivalents	451,501	—	451,501	451,501
Total financial assets	**451,508**	**22,416**	**473,924**	**473,924**
Financial liabilities				
Non-current financial liabilities	—	1,018	1,018	1,018
Current financial liabilities	—	333	333	333
Trade payables	—	15,883	15,883	15,883
Other current liabilities	—	8,369	8,369	8,369
Total financial liabilities	**—**	**25,603**	**25,603**	**25,603**

7.3. Financial risks management

We have exposure to the following risks arising from financial instruments:

Foreign exchange risk

A portion of our revenue is generated in currencies other than euro. Although our strategy is to favor the euro as our transaction currency when signing contracts, some agreements have been signed in US dollars (primarily our agreement with Pfizer/Allogene Therapeutics, Inc.).

As of December 31, 2017, 75% of our cash and cash equivalents were denominated in US dollars and 79% of our current financial assets and cash and cash equivalents were denominated in US dollars. As of December 31, 2018, 66% of our cash and cash equivalents were denominated in US dollars.

As of December 31, 2017, we held the following derivative financial instruments, denominated in US dollars:

2017	Notional	Fair Value	Maturity
		$ in thousands	
USD forward sale contracts	18,775	558	2018
USD forward purchase contracts	—	—	—
Total derivative financial instruments		**558**	
of which :			
Derivative financial assets		558	
Derivative financial liabilities		—	

Cellectis hedging policy is not affected by the application of IFRS 9.

As of December 31, 2018, we did not hold derivative financial instruments.

We do not apply hedge accounting to these instruments.

Liquidity risk

Our financial debt consists of finance lease liabilities $1.4 million as of December 31, 2018).

We have incurred losses and cumulative negative cash flows from operations since our inception in 2000, and we anticipate that we will continue to incur losses for at least the next several years. As of December 31, 2018, we held $451.5 million in cash and cash equivalents.

Interest rate risk

We seek to engage in prudent management of our cash and cash equivalents, mainly cash on hand and common financial instruments (typically short- and mid-term deposits). Furthermore, the interest rate risk related to cash, cash equivalents and common financial instruments is not significant based on the quality of the financial institutions with which we work.

Credit risk

Credit risk is the risk of our financial loss if a customer or counterparty to a financial instrument defaults on its contract commitments. We are exposed to credit risk due to our trade receivables, subsidies receivables and cash equivalents.

Our policy is to manage our risk by dealing with third parties with good credit standards.

Note 8. Inventories

Accounting policy

Inventories are measured at the lower of cost and net realizable value. Cost is determined using the first in first out cost method.

Description of inventories

As of December 31, 2018 and 2017, they consist of $275 thousand and $250 thousand, respectively, in raw materials and laboratory consumables (representing pharmaceutical and chemical products). No provision for impairment has been recorded as of December 31, 2017 and 2018.

Note 9. Trade receivables and other current assets

Accounting policies for trade receivables and other current assets are described in Note 7.1.

9.1 Trade receivables

	As of December 31, 2017	As of December 31, 2018
	$ in thousands	
Trade receivables	3,079	3,353
Provision for expected credit losses	(326)	(382)
Total net value of trade receivables	**2,753**	**2,971**

All trade receivables have payment terms of less than one year. The trade receivables are mainly due to collaboration contracts.

9.2 Subsidies receivables

	As of December 31, 2017	As of December 31, 2018
	$ in thousands	
Research tax credit	9,039	16,842
Other subsidies	1,812	1,598
Valuation allowance for other subsidies	(1,326)	(1,266)
Total subsidies receivables	**9,524**	**17,173**

Research tax credit receivables as of December 31, 2017 include the accrual for a French research tax credit related to 2017 for $8.2 million and the remaining amount mainly relates to refundable tax credits in the United States.

Research tax credit receivables as of December 31, 2018 include the accrual for a French research tax credit related to 2017 for $8.0 million and to 2018 for $7.8 million and the remaining amount mainly relates to refundable tax credits in the United States. During December 2018, the French Tax Authority has initiated an audit related to the 2014, 2015, 2016 and 2017 French research tax credits. We do not believe that a provision should be recorded at this stage of this audit. As a result of such audit, the reimbursement of the French research tax credit related to 2017 is currently pending.

The valuation allowance for other subsidies corresponds to a grant, which was fully reserved in 2014.

9.3 Other current assets

	As of December 31, 2017	As of December 31, 2018
	$ in thousands	
VAT receivables	1,543	1,679
Prepaid expenses and other prepayments	8,304	10,985
Tax and social receivables	873	244
Deferred expenses and other current assets	2,993	2,425
Total other current assets	**13,713**	**15,333**

Prepaid expenses and other prepayments primarily include advances to our sub-contractors on research and development activities. They mainly relate to advance payments to suppliers of biological raw materials and to third parties participating in product manufacturing.

During 2018, we prepaid certain manufacturing costs related to our product candidates UCART123, UCARTCS1 and UCART22 of which the delivery of products or services is expected in the coming months.

As of December 31, 2018, deferred expenses and other current assets include (i) a deferred expense of $2.1 million related to the sale and lease-back transaction entered into by Calyxt and (ii) other current assets for $0.3 million.

Tax and social receivables as of December 31, 2018 include $0.2 million of social charges on personnel expenses.

During 2017, we prepaid certain manufacturing costs related to our product candidates UCART123, UCARTCS1 and UCART22 of which the delivery of products or services is expected in the coming months.

As of December 31, 2017, deferred expenses and other current assets include (i) a deferred expense of $2.1 million related to the sale and lease-back transaction entered into by Calyxt, (ii) other deferred expenses for $0.6 million, (iii) other current assets for $0.3 million.

Tax and social receivables as of December 31, 2017 include $0.6 million of tax receivables and $0.3 million of social charges on personnel expenses.

Note 10. Current financial assets and Cash and cash equivalents

As of December 31, 2017	Carrying amount	Unrealized Gains/(Losses)	Estimated fair value
		$ in thousands	
Current financial assets	40,602	—	40,602
Cash and cash equivalents	256,380	—	256,380
Current financial assets and cash and cash equivalents	**296,982**	**—**	**296,982**

As of December 31, 2018	Carrying amount	Unrealized Gains/(Losses)	Estimated fair value
		$ in thousands	
Current financial assets	388	—	388
Cash and cash equivalents	451,501	—	451,501
Current financial assets and cash and cash equivalents	**451,889**	**—**	**451,889**

10.1 Current financial assets

Accounting policies

Current financial assets include current restricted cash and other current financial assets.

Restricted cash consists of deposits to secure a one-year grain broker license for $50 thousand entered into in July 2018 and also for the furniture and equipment sales lease back for $1,444 thousand. Of $1,444 thousand, we classify $331 thousand as short term restricted cash at December 31, 2018.

Financial assets are measured at fair value through profit or loss in accordance with IAS 39 include the following:

- Financial assets including embedded derivatives for which Cellectis elected to designate at fair value through profit or loss;
- Financial assets managed on a fair value basis; and
- Derivative instruments that are not documented in hedging relationships.

IFRS 13 (Fair Value Measurement) requires counterparty and own credit risk to be taken into account when measuring the fair value of financial instruments. This risk is estimated on the basis of observable, publicly-available statistical data.

Details of current financial assets

Current financial assets are measured at fair value through profit or loss and are classified as follows within the fair value hierarchy:

- Instruments classified under level 1 are measured with reference to quoted prices in active markets; they consist of notes indexed to equity index. Their nominal value amount to $40.3 million and their fair value amount to $39.7 million as of December 31, 2017.
- Instruments classified under level 2 are measured with reference to observable valuation inputs; they consist in zero-premium accumulator. Their nominal value amount to $0.6 million and their fair value amount to $0.6 million as of December 31, 2017.

There were no other current financial assets as of December 31, 2018.

10.2 Cash and cash equivalents

Accounting policy

Cash and cash equivalents are held for the purpose of meeting short-term cash commitments rather than for the purpose of investment or for other purposes. They are readily convertible into a known amount of cash and are subject to an insignificant risk of changes in value. Cash and cash equivalents include cash, bank accounts, money market funds and fixed bank deposits that meet the definition of a cash equivalent. Cash equivalents are fair valued at the end of each reporting period.

Details of cash and cash equivalents

	As of December 31, 2017	As of December 31, 2018
	$ in thousands	
Cash and bank accounts	219,368	398,178
Money market funds	13,026	13,248
Fixed bank deposits	23,986	40,075
Total cash and cash equivalents	**256,380**	**451,501**

Money market funds earn interest and are refundable overnight. Fixed bank deposits have fixed terms that are less than three months or are readily convertible to a known amount of cash.

Note 11. Financial liabilities

11.1 Detail of financial liabilities

	As of December 31, 2017	As of December 31, 2018
	$ in thousands	
Finance leases	13	1,018
Total non-current financial liabilities	**13**	**1,018**
Finance leases	21	333
Total current financial liabilities	**21**	**333**
Trade payables	9,460	15,883
Other current liabilities	6,570	8,369
Total Financial liabilities	**16,064**	**25,603**

The change in trade payables is mainly due to higher external expenses linked with UCART 123, UCART22, UCARTCS1 and other product candidates' manufacturing costs.

11.2 Due dates of the financial liabilities

Balance as of December 31, 2018	Gross Amount	Less than One Year	One to Five Years	More than Five Years
		$ in thousands		
Finance leases	1,350	333	1,018	—
Derivative instruments	—	—	—	—
Financial liabilities	**1,350**	**333**	**1,018**	**—**
Trade payables	15,883	15,883	—	—
Other current liabilities	8,369	8,369	—	
Total financial liabilities	**25,603**	**24,585**	**1,018**	**—**

Note 12. Other current liabilities

	As of December 31, 2017	As of December 31, 2018
	$ in thousands	
VAT Payables	9	291
Accruals for personnel related expenses	5,982	7,041
Other	579	1,037
Total	**6,570**	**8,369**

Accruals for personnel are related to annual bonuses, vacations accruals and social expenses on stock options. The increase in accruals for personnel related expenses between December 31, 2017 and December 31, 2018, is mainly driven by higher accrual for annual bonuses due to the increase of headcount recruited both in the United States and in France.

As of December 31, 2018 "Other" mainly include Board of Directors attendance fees for $0.3 million liabilities and subsidies liabilities for $0.3 million.

As of December 31, 2017 "Other" mainly include subsidies liabilities for $0.3 million and other immaterial variances.

Note 13. Deferred revenues and contract liabilities

Accounting policies

As disclosed in Note 3, non-refundable upfront payments are deferred and recognized as revenue over the period of the collaboration agreement.

Details of deferred revenues and contract liabilities

	As of December 31, 2017 as restated (*)	As of December 31, 2018
	$ in thousands	
Deferred revenues and contract liabilities	27,975	20,454
Other	—	299
Total Deferred revenue and contract liabilities	**27,975**	**20,754**

Deferred revenues

The deferred revenues and contract liabilities correspond to upfront payments for the collaboration agreements with Les Laboratoires Servier and Pfizer Inc. The research period under the initial Pfizer/Allogene agreement stopped in June 2018.

Other

As of December 31, 2018, other deferred income corresponds to Tax increment financing related to Calyxt sale and leaseback transaction and recognized over the term of the lease.

Note 14. Capital

14.1 Share capital issued

Accounting policy

Share capital comprises ordinary shares and shares with double voting rights classified in equity. Costs directly attributable to the issue of ordinary shares or share options are recognized as a reduction in equity. Repurchased own shares are classified as treasury shares and deducted from equity.

Nature of the Transactions	Share Capital	Share premium	Number of shares	Nominal value
		$ in thousands		in $
Balance as of January 1, 2016	**2,323**	**509,938**	**35,178,614**	**0.05**
Capital increase by issuance of ordinary shares (BSA, BSPCE and free shares)	9	723	156,446	—
Non-cash stock based compensation expense	—	57,524	—	—
Balance as of December 31, 2016	**2,332**	**568,185**	**35,335,060**	**0.05**
Capital Increase	26		466,950	
Exercise of share warrants, employee warrants and stock options	9	2,921	158,052	
Non-cash stock based compensation expense		42,968		
Other movements		(37)		
Balance as of December 31, 2017	**2,367**	**614,037**	**35,960,062**	**0.05**
Capital Increase	379	178,230	6,146,000	
Exercise of share warrants, employee warrants and stock options	19	7,751	324,007	
Non-cash stock based compensation expense		28,507		
Balance as of December 31, 2018	**2,765**	**828,525**	**42,430,069**	**0.05**

Capital evolution in 2018

- During the full year ended December 31, 2018, 6,146,000 ordinary shares were issued upon the closing of a follow-on offering for net proceeds, after deducting underwriting discounts and commissions and offering expenses, of $178,611,687 ; 1,939 ordinary shares were issued upon the exercise of 1,867 employee warrants (“bons de souscription de parts de créateurs”) for total proceeds of $14,112; 322,068 ordinary shares were issued upon the exercise of 322,068 stock options for total proceeds of $7,525,542 and 160,000 non-employees warrants (“bons de souscription d’actions”) were subscribed for total proceeds of $230,629.

Capital evolution in 2017

- During the full year ended December 31, 2017, 126,179 ordinary shares were issued upon the exercise of 121,492 employee warrants (“bons de souscription de parts de créateurs”) for a total amount of $2,173,058; 466,950 free shares were converted to 466,950 ordinary shares; 31,873 ordinary shares were issued upon the exercise of 31,873 stock options for a total amount of $734,234 and 228,000 non-employees warrants (“bons de souscription d’actions”) were subscribed for a total amount of $252,171.

Capital evolution in 2016

- During the year ended December 31, 2016, we issued 156,446 ordinary shares resulting from exercise of 50,000 BSA and 6,700 BSPCE and acquisition of 99,488 free shares.

BSA 2011:

On October 28, 2011, using the delegation of authority granted by the General Assembly held the same day, we issued 12,195,113 warrants (Bon de Souscription d'Actions or "BSA") to the existing shareholders with a ratio of one BSA for one share. October 28, 2014 was the closing date for the exercise of the "BSA 2011." Pursuant to the terms of the plan, we issued 1,470,836 ordinary shares for gross proceeds of $16.4 million.

Voting rights:

After a shareholder continuously holds ordinary shares for two years, each ordinary share held by such shareholder is entitled to two votes.

- At December 31, 2018, we had 42,430,069 ordinary shares outstanding of which 5,016,911 had a double voting right.
- At December 31, 2017, we had 35,960,062 ordinary shares outstanding of which 5,155,335 had a double voting right
- At December 31, 2016, we had 35,335,060 ordinary shares outstanding of which 4,531,047 had a double voting right.

Otherwise, our ordinary shares are not entitled to any preferential voting right or restriction.

14.2 Share warrants and non-employee warrants

Share warrants and non-employee warrants consist of Bon de Souscription d'Action ("BSAs") which are granted to our board members and consultants.

Date	Type	Number of options/warrants/ shares oustanding as of 01/01/2018	Number of options/warrants/ shares granted	Number of options/warrants/ shares vested/exercised	Number of options/warrants/ shares voided	Number of options/warrants/ shares oustanding as of 12/31/2018	Maximum of shares to be issued	Number of options/warrants/ shares exercisable as of 12/31/2018
02/28/2008	BSPCE D	**1,867**	—	1,867	—	**—**	—	—
07/27/2010	BSPCE E	**19,702**	—	—	—	**19,702**	20,464	19,702
05/18/2015	Free shares	**15,600**	—	—	—	**15,600**	15,600	—
03/24/2015	Stock Options	**1,749,055**	—	—	18,409	**1,730,646**	1,730,646	1,622,458
03/27/2015	BSA	**180,000**	—	—	50,000	**130,000**	130,000	130,000
05/18/2015	BSA	**50,000**	—	—	—	**50,000**	50,000	50,000
09/08/2015	BSA	**274,200**	—	—	50,000	**224,200**	224,200	224,200
09/08/2015	Stock Options	**1,802,000**	—	—	32,000	**1,770,000**	1,770,000	1,438,098
03/14/2016	BSA	**187,200**	—	—	40,175	**147,025**	147,025	98,017
03/14/2016	Stock Options	**1,945,948**	—	127,828	32,849	**1,785,271**	1,785,271	1,192,064
10/28/2016	BSA	**148,000**	—	—	—	**148,000**	148,000	98,667
10/28/2016	Stock Options	**2,615,601**	—	191,740	54,172	**2,369,689**	2,369,689	1,093,924
10/11/2017	BSA	**240,000**	—	—	40,000	**200,000**	200,000	66,667
10/11/2017	Stock Options	**1,220,000**	—	—	37,500	**1,182,500**	1,182,500	297,500
10/08/2018	Free shares	**—**	43,000	—	—	**43,000**	43,000	—
10/08/2018	Stock Options	**—**	100,000	—	—	**100,000**	100,000	—
	Total	**10,449,173**	**143,000**	**321,435**	**355,105**	**9,915,633**	**9,916,395**	**6,331,296**

Holders of vested stock options and warrants are entitled to subscribe to a capital increase of Cellectis at predetermined exercise price.

- In 2018, our subsidiary Calyxt Inc. granted stock options and restricted stock unit in Calyxt Inc. representing as of December 31, 2018 a 3.1% interest of that subsidiary if fully exercised to a group of its employees, directors, executive officers and consultants. The compensation expense for 2018 amounted to $3.3 million (see Note 15).
- In June 2017, our subsidiary Calyxt Inc. granted stock options and restricted stock unit in Calyxt Inc. representing as of December 31, 2017 a 9.8% interest of that subsidiary if fully exercised to a group of its employees, directors and executive officers. The compensation expense for 2017 amounted to $5.2 million (see Note 15);
- In April 2016, our subsidiary Calyxt Inc. granted options in Calyxt Inc. representing as of December 31, 2017 a 4.9% interest of that subsidiary if fully exercised to a small group of its employees, directors and executive officers. The compensation expense for 2017 amounted to $0.2 million (see Note 15).

14.3 Non-controlling interests

On July 25, 2017, Calyxt closed its IPO with $64.4 million in gross proceeds to Calyxt from the sale of 8,050,000 shares at $8 per share, including the full exercise of the underwriter's over-allotment option and Cellectis' purchase of $20.0 million of shares in the IPO. On May 22, 2018, Calyxt Inc completed a follow-on offering of its common stock. Calyxt Inc sold an aggregate of 4,057,500 shares of common stock at a price of $15.00 per share. In the aggregate, Calyxt Inc received net proceeds of approximately $57.0 million, after deducting underwriting discounts and commissions of $3.2 million and offering expenses totaling approximately $0.7 million. As part of the follow-on offering, Cellectis SA purchased 550,000 shares of common stock for a value of $8.3 million, the proceeds of which are included in the net proceeds of approximately $57.0 million. As of December 31, 2018, non-controlling interests represent 30.5% of Calyxt shares.

The following table summarizes the information relating to each of our subsidiaries that reported non-controlling interest ("NCI"):

	CALYXT	
	2017	2018
	$ in thousands	
Revenue	747	236
Net Profit (Loss)	(18,837)	(28,517)
Net Profit (Loss) attributable to NCI	**(4,315)**	**(9,640)**
Other comprehensive income	(5,856)	(5,373)
Total comprehensive income	(24,693)	(33,891)
Total comprehensive income attributable to NCI	**(4,723)**	**(10,330)**
Current assets	59,753	97,735
Non-current assets	2,072	4,539
Current liabilities	3,027	5,460
Non-current liabilities	—	826
Net assets	64,852	95,987
Net assets attributable to NCI	**13,145**	**29,257**

14.4 Treasury shares

In 2008, Cellectis executed a liquidity contract with Natixis Securities ("Natixis"). This contract entitles Natixis to transact on Euronext, on our behalf, in order to enhance the liquidity of transactions and regularity of quotation of our ordinary shares, in an independent way, without hindering the functioning of the market or misleading investors.

The initial advance payment made to Natixis Securities for the purpose of making transactions under this contract was $0.4 million. As of December 31, 2017, $0.3 million are classified in treasury shares and the balance is presented in the line item "Other non-current financial assets" in the statements of consolidated financial position.

In 2018, we terminated our liquidity contract.

Note 15. Share-based payments

15.1 Detail of Cellectis equity awards

Holders of vested Cellectis stock options and warrants are entitled to exercise such options and warrants to purchase Cellectis Ordinary shares at a fixed exercise price established at the time of such options and warrants are granted during their useful life.

For stock options and warrants, we estimate the fair value of each option on the grant date or other measurement date if applicable using a Black-Scholes option-pricing model, which requires us to make predictive assumptions regarding future stock price volatility, employee exercise behavior, dividend yield, and the forfeiture rate. We estimate our future stock price volatility based on Cellectis historical closing share prices over the expected term period. Our expected term represents the period of time that options granted are expected to be outstanding determined using the simplified method. The risk-free interest rate for periods during the expected term of the options is based on the French government securities with maturities similar to the expected term of the options in effect at the time of grant. We have never declared or paid any cash dividends and do not presently plan to pay cash dividends in the foreseeable future. Consequently, we used an expected dividend yield of zero. Options may be priced at 100 percent or more of the fair market value on the date of grant, and generally vest over four years after the date of grant. Options generally expire within ten years after the date of grant.

Stock Options

The weighted-average fair values of stock options granted and the assumptions used for the Black-Scholes option pricing model were as follows:

	2016	2017	2018
Weighted-Average fair values of stock options granted	10.53€	14.30€	8.89€
Assumptions:			
Risk-free interest rate	0.00% - 0.03%	0.03%	0.13%
Share entitlement per options	1	1	1
Exercise price	17.90€ - 22.44€	22.57€	24.80€
Grant date share fair value	16.42€ - 22.48€	24.01€	17.78€
Expected volatility	62.8% - 63.2%	65.6%	63.3%
Expected term (in years)	6.11 - 6.12	6.12	6.25
Vesting conditions	Service	Service	Service
Vesting period	Graded	Graded	Graded

Information on stock option activity follows:

	Options Exercisable	Weighted-Average Exercise Price Per Share	Options Outstanding	Weighted-Average Exercise Price Per Share	Remaining Average Useful Life
Balance as of December 31, 2016	**1,355,680**	**33.75 €**	**8,436,255**	**25.43 €**	9.09y
Granted	—	—	1,220,000	22.57 €	
Exercised	—	—	(31,873)	20.40 €	
Forfeited or Expired	—	—	(291,778)	22.19 €	
Balance as of December 31, 2017	**3,822,772**	**28.02 €**	**9,332,604**	**25.17 €**	8.31y
Granted	—	—	100,000	24.80 €	
Exercised	—	—	(319,568)	19.72 €	
Forfeited or Expired	—	—	(174,930)	23.68 €	
Balance as of December 31, 2018	**5,644,044**	**27.47 €**	**8,938,106**	**25.39 €**	7.32y

Share-based compensation expense related to stock option awards was $26.0 million in 2018, $36.8 million in 2017, and $45.6 million in 2016.

Warrants

The weighted-average fair values of warrants granted and the assumptions used for the Black-Scholes option pricing model were as follows:

	2016	2017
Weighted-Average fair values of warrants granted	9.33€	13.20€
Assumptions:		
Risk-free interest rate	0.00% - 0.04%	0.12%
Share entitlement per options	1	1
Exercise price	18.68€ - 27.37€	24.34€
Grant date share fair value	16.42€ - 22.48€	24.95€
Expected volatility	62.8% - 63.1%	64.7%
Expected term (in years)	6.00	6.00
Vesting conditions	Service	Service
Vesting period	Graded	Graded

Information on warrants activity follows:

	Warrants Exercisable	Weighted-Average Exercise Price Per Share	Warrants Outstanding	Weighted-Average Exercise Price Per Share	Remaining Average Useful Life
Balance as of December 31, 2016	**315,928**	**23.00 €**	**1,027,261**	**25.91 €**	7.78y
Granted	—	—	240,000	24.34 €	
Exercised	—	—	(126,179)	13.75 €	
Forfeited or Expired	—	—	(40,113)	18.67 €	
Balance as of December 31, 2017	**469,436**	**28.80 €**	**1,100,969**	**27.23 €**	8.20y
Granted	—	—	0	0.00 €	
Exercised	—	—	(1,867)	6.16 €	
Forfeited or Expired	—	—	(180,175)	29.95 €	
Balance as of December 31, 2018	**687,252**	**27.74 €**	**918,927**	**26.74 €**	7.22y

Share-based compensation expense related to warrants awards was $2.3 million in 2018, $3.5 million in 2017, and $4.7 million in 2016.

Free shares

The free shares granted prior to 2018 are subject to a two-year vesting period for French employees and four years for foreign citizens. The free shares granted in 2018 are subject to a one-year vesting period for French employees and two-years for foreign citizens.

Information on free shares activity follows:

	Number of Free shares Outstanding	Weighted-Average Grant Date Fair Value
Unvested balance at December 31, 2016	**492,550**	**27.16 €**
Granted	0	0.00 €
Vested	(466,950)	27.11 €
Cancelled	(10,000)	28.17 €
Unvested balance at December 31, 2017	**15,600**	**28.17 €**
Granted	43,000	17.78 €
Vested	0	0.00 €
Cancelled	0	0.00 €
Unvested balance at December 31, 2018	**58,600**	**20.55 €**

The fair value of free shares corresponds to the grant date share fair value.

We have never declared or paid any cash dividends and do not presently plan to pay cash dividends in the foreseeable future. Consequently, we used an expected dividend yield of zero.

Share-based compensation expense related to free shares awards was $0.2 million in 2018, $2.6 million in 2017, and $7.3 million in 2016.

15.2 Detail of Calyxt equity awards

Stock Options

The estimated fair values of stock options granted and the assumptions used for the Black-Scholes option pricing model were as follows:

	2016	2017	2018
Weighted-Average fair values of stock options granted	$1.11	$4.00	$9.09
Assumptions:			
Risk-free interest rate	1.41%	1.96%	2.45% - 2.89%
Share entitlement per options	1	1	1
Exercise price	$3.59	$13.29	$14.24 - $23.39
Grant date share fair value	$3.59	$13.29	$14.24 - $23.39
Expected volatility	30%	25%	40.86% - 57.22%
Expected term (in years)	5.74	6.57	5.57 - 10.01
Vesting conditions	Service	Service	Service
Vesting period	Graded	Graded	Graded

We estimate the fair value of each option on the grant date or other measurement date if applicable using a Black-Scholes option-pricing model, which requires us to make predictive assumptions regarding future stock price volatility, employee exercise behavior, dividend yield, and the forfeiture rate. We estimate our future stock price volatility using the historical volatility of comparable public companies over the expected term of the option.

Our expected term represents the period of time that options granted are expected to be outstanding determined using the simplified method.

The risk-free interest rate for periods during the expected term of the options is based on the U.S. Treasury zero-coupon yield curve in effect at the time of grant.

We have not nor do we expect to pay dividends for the foreseeable future.

Options may be priced at 100 percent or more of the fair market value on the date of grant, and generally vest over six years after the date of grant. Options generally expire within ten years after the date of grant. Certain awards granted before Calyxt's IPO contained accelerated vesting provisions if certain events occurred as defined in the option agreement.

Information on stock option activity follows:

	Options Exercisable	Weighted-Average Exercise Price Per Share	Options Outstanding	Weighted-Average Exercise Price Per Share	Remaining Average Useful Life
Balance as of December 31, 2016	**0**	**$ 0.00**	**1,931,248**	**$ 4.45**	9.10y
Granted	—	—	2,104,999	$ 13.29	
Exercised	—	—	(68,780)	$ 4.03	
Forfeited or Expired	—	—	(84,035)	$ 8.48	
Balance as of December 31, 2017	**1,244,968**	**$ 5.20**	**3,883,432**	**$ 9.16**	8.84y
Granted	—	—	554,243	$ 16.69	
Exercised	—	—	(592,342)	$ 4.43	
Forfeited or Expired	—	—	(643,446)	$ 12.52	
Balance as of December 31, 2018	**1,278,038**	**$ 7.45**	**3,201,887**	**$ 10.67**	8.17y

Stock-based compensation expense related to stock option awards was $3.2 million in 2018, $2.8 million in 2017, and $1.1 million in 2016. The options granted under the plans were originally only exercisable upon a triggering event or initial public offering as defined by the plans.

Restricted Stock Units

Units settled in stock subject to a restricted period may be granted to key employees under the 2017 Omnibus Plan. Restricted stock units generally vest and become unrestricted over five years after the date of grant.

Information on restricted stock unit activity follows:

	Number of Restricted Stock Units Outstanding	Weighted-Average Grant Date Fair Value
Unvested balance at December 31, 2016	**0**	**$ 0.00**
Granted	1,442,533	$ 13.29
Vested	(39,200)	$ 13.29
Cancelled	(29,400)	$ 13.29
Unvested balance at December 31, 2017	**1,373,933**	**$ 13.29**
Granted	315,825	$ 16.68
Vested	(261,507)	$ 14.07
Cancelled	(376,837)	$ 13.30
Unvested balance at December 31, 2018	**1,051,414**	**$ 14.11**

The fair value of restricted stock units corresponds to the grant date share fair value.

We have not nor do we expect to pay dividends for the foreseeable future.

Share-based compensation expense related to restricted stock units awards was $5.5 million in 2018, $4.7 million in 2017, and 0 in 2016.

Note 16. Earnings per share

Accounting policy

Basic earnings per share are calculated by dividing profit attributable to our ordinary shareholders by the weighted average number of ordinary shares outstanding during the period, adjusted to take into account the impact of treasury shares.

Diluted earnings per share is calculated by adjusting profit attributable to ordinary shareholders and the weighted average number of ordinary shares outstanding, for the effects of all potentially dilutive ordinary shares (stock-options, free shares, share warrants, employee warrants).

Detail of earnings per share

	For the year ended December 31,		
	2016	2017	2018
Net income (loss) attributable to shareholders of Cellectis ($ in thousands)	(67,255)	(99,368)	(78,693)
Adjusted weighted average number of outstanding shares, used to calculate both basic and diluted net result per share	35,274,890	35,690,636	40,774,197
Basic / Diluted net income (loss) per share ($ / share)			
Basic net income (loss) per share ($ /share)	(1.91)	(2.78)	(1.93)
Diluted net income (loss) per share ($ /share)	(1.91)	(2.78)	(1.93)

Note 17. Provisions

Accounting policy

A provision is recognized if, as a result of a past event, we have a present legal or constructive obligation that can be estimated reliably, and it is probable that an outflow of economic benefits will be required to settle the obligation.

The amount recognized as a provision is the best estimate of the expenditure required to settle the present obligation at the reporting date.

Provisions for retirement and other benefits

Our defined benefit obligations, and their cost, are determined using the projected unit credit method.

The method consists in measuring the obligation based on a projected end-of-career salary and vested rights at the measurement date, according to the provisions of the collective bargaining agreement, corporate agreements and applicable law.

Actuarial assumptions used to determine the benefit obligations are specific to each country and each benefit plan. The discount rate used is the yield at the reporting date on AA credit-rated bonds with maturity dates that approximate the expected payments for our obligations.

Actuarial gains or losses are recognized in the statement of comprehensive loss for the year in which they occur.

Other long-term employee benefits

Our net obligation for long-term employee benefits other than retirement plans is equal to the value of employees' future benefits vested in exchange for services rendered in the current and prior periods. The benefits are discounted and the fair value of any plan assets is deducted.

The obligation is measured using the projected unit credit method. The discount rate is the same as the one used for the provisions for retirement and other benefits. Actuarial gains or losses are recognized in profit or loss for the year in which they occur.

Termination benefits

Termination benefits are recognized as a liability and expense at the earlier of the following dates:

- When the entity can no longer withdraw the offer of those benefits; and
- When the entity recognizes costs for a restructuring that is within the scope of IAS 37 Provisions and involves the payment of termination benefits.

Details of provisions

	01/01/2017	Additions	Amounts used during the period	Reversals	OCI	12/31/2017
			$ in thousands			
Pension	560	949	—	—	683	2,193
Loss on contract	—	1,876	—	—	—	1,876
Employee litigation and severance	121	29	(50)	(108)	9	1
Commercial litigation	468	552	(102)	(215)	79	782
Redundancy plan	6	—	—	—	1	7
Total	**1,154**	**3,406**	**(152)**	**(323)**	**773**	**4,858**
Non-current provisions	560	2,186	—	—	683	3,430
Current provisions	594	1,220	(152)	(323)	89	1,427

	01/01/2018	Additions	Amounts used during the period	Reversals	OCI	12/31/2018
			$ in thousands			
Pension	2,193	314	(54)	—	(175)	2,278
Loss on contract	1,876	—	(834)	—	1	1,043
Employee litigation and severance	1	43	—	(1)	(2)	41
Commercial litigation	782	646	—	(570)	(8)	850
Redundancy plan	7	—	—	(6)	(1)	—
Total	**4,858**	**1,003**	**(888)**	**(577)**	**(186)**	**4,211**
Non-current provisions	3,430	314	(888)	—	(175)	2,681
Current provisions	1,427	688	—	(577)	(11)	1,528

During the year ended December 31, 2018, additions mainly relates to (i) operating charges linked with discussions with suppliers for $0.6 million and (ii) pension service cost of the period for $0.3 million (see detail above). Amounts used during the year ended December 31, 2018 mainly consists of (i) the rents payments of the facility lease in Montvale, New Jersey (USA) for $0.8 million and (ii) settlement of commercial litigations with suppliers for $0.6 million.

During the year ended December 31, 2017, additions in (i) commercial litigations mainly relates to one supplier and in (ii) loss on contract is mainly attributable to our willingness to discontinue the facility lease in Montvale, New Jersey (USA). Amounts used during the year ended December 31, 2017 mainly consist of the payments to a former supplier and in settlement of employee litigations.

Commitments for compensation payable to employees upon their retirement

France

In France, pension funds are generally financed by employer and employee contributions and are accounted for as defined contribution plans, with the employer contributions recognized as expense as incurred. There are no actuarial liabilities in connection with these plans. Expenses recorded in the years ended December 31, 2016, 2017 and 2018 amounted to $0.8 million, $0.8 million and $1.5 million, respectively.

French law also requires payment of a lump sum retirement indemnity to employees based on years of service and annual compensation at retirement. Benefits do not vest prior to retirement. We are paying this defined benefit plan. It is calculated as the present value of estimated future benefits to be paid, applying the projected unit credit method whereby each period of service is seen as giving rise to an additional unit of benefit entitlement, each unit being measured separately to build up the final.

The calculation of legal compensation for termination has changed in 2017 following the publication of a new French law.

The two important changes are:

- Seniority conditions: the employee must justify to be entitled to an indemnity of 8 working months against one year before.
- Calculation of the allowance: 1/4 of a month of salary per year of seniority up to 10 years, against 1/5 before, and no change beyond the 11th year.

As part of the estimation of the retirement indemnity to employee, the following assumptions were used for all categories of employees:

	2016	2017	2018
% social security contributions	45.00%	45.00%	45.00%
Salary increases	2.00%	3.50%	3.50%
Discount rate	1.75%	1.75%	1.75%
Terms of retirement		voluntary retirement	
Retirement age	65 years old	65 years old	65 years old

The discount rates are based on the market yield at the end of the reporting period on high quality corporate bonds.

The following table shows reconciliation from the opening balances to the closing balances for net defined benefit liability and its components.

	$ in thousands
As of January 1, 2016	**(477)**
Current service cost	(65)
Interest cost	(9)
Actuarial gains and losses	(31)
Reclassification/CTA	20
As of December 31, 2016	**(562)**
Current service cost	(925)
Interest cost	(24)
Actuarial gains and losses	(515)
Reclassification/CTA	(168)
As of December 31, 2017	**(2,194)**
Current service cost	(276)
Interest cost	(38)
Benefit paid	54
Actuarial gains and losses	70
Reclassification/CTA	105
As of December 31, 2018	**(2,279)**

United States of America

There is no defined benefit plan for Cellectis S.A.'s subsidiaries located in the United States.

Note 18. Commitments

Accounting policy

The commitment amounts are associated with contracts that are enforceable and legally binding and that specify all significant terms, including fixed or minimum services to be used, fixed, minimum or variable price provisions, and the approximate timing of the actions under the contracts. They do not include obligations under agreements that we can cancel without a significant penalty.

Details of commitments

As of December 31, 2018	Total	Less than 1 year	1 - 3 years	3 - 5 years	More than 5 years
			$ in thousands		
Sale and lease-back agreement	30,047	1,423	2,864	2,852	22,908
Facility lease agreements	27,188	1,651	7,411	8,193	9,933
License agreements	18,093	1,237	2,474	2,474	11,907
Manufacturing agreements	10,293	10,293	—	—	—
Other agreements	12,356	7,754	4,602	—	—
Total contractual obligations	**97,977**	**22,359**	**17,350**	**13,519**	**44,749**

Obligations under the terms of the sale and lease-back agreement

The sale and lease-back agreement entered into by Calyxt in the third quarter of 2017 has a defined lease term and is classified as an operating lease agreement under IFRS. It results in off-balance sheet commitments.

Obligations under the terms of the facility lease agreements

Facility lease agreements in Paris, France, and in New York City, New York; Montvale, New Jersey and Roseville, Minnesota (all in the USA) have been subscribed for a defined term. Future payments of these leases as disclosed in the table above, along with the letters of credit provided to the landlords of the Company's facilities in New York and in Roseville, are off balance sheets commitments.

Obligations under the terms of license agreements

We have entered into various license agreements with third parties that subject us to certain fixed license fees, as well as fees based on future events, such as research and sales milestones.

We also have collaboration agreements whereby we are obligated to pay royalties and milestones based on future events that are uncertain and therefore they are not included in the table above.

Obligations under the terms of manufacturing agreements

We have manufacturing agreements whereby we are obligated to pay for services rendered in the next year regarding our products UCART123, UCARTCS1 and UCART22.

Obligations under the terms of other agreements

Calyxt has forward purchase commitments with growers to purchase seed and grain at future dates that are estimated based on anticipated yield and expected price. This amount is not recorded in the financial statements because the company has not taken delivery of the seed and grain.

Note 19. Related parties

Key management personnel remuneration

Key management personnel include members of the Board of Directors and the CODM as of December 31, 2018, as described in Note 3.5.

Short-term employee benefits paid to key management personnel totaled to $2.4 million in the fiscal year 2016, $3.6 million in the fiscal year 2017 and to $5.7 million in the fiscal year 2018.

On September 4, 2014, the Board of Directors adopted a change of control plan which applies to the members of the CODM. This plan defines the conditions under which a severance package will be paid after a change of control of our company. Key management personnel employment agreements include a termination indemnity or additional post-employment compensation.

Key management personnel received an aggregate of 90.000 securities in share-based remuneration (free shares and stock options) over the year ended December 31, 2018. The associated non-cash stock-based compensation expense of $0.1 million recognized for 2018.

Other transactions with related parties

Mr. Godard, a member of the Board of Directors, entered into two service agreements with us and provided consultancy services in the area of (i) global development strategy and (ii) specific development of agricultural biotechnology activities. Compensation paid for those services in the years ended December 31, 2016, 2017 and 2018 amounted to $37 thousand, $38 thousand and $70 thousand respectively. No balances were outstanding at the end of each fiscal year. As of December 31, 2018, Mr. Godard held 220,175 non-employee warrants that could be exercised to obtain 50,000 shares at a strike price of €38.45, 50,000 shares at a strike price of €28.01 for 50,000 warrants, 40,175 shares at a strike price of €27.37 for 40,175 warrants, 40,000 shares at a strike price of €18.68 for 40,000 warrants and 40,000 shares at a strike price of €24.34 for 40,000 warrants.

In connection with the vesting on June 14, 2018 of Restricted Stock Units (RSU) granted to certain employees and non-employees of Calyxt Inc. and Cellectis SA, Cellectis SA purchased 2,352 common shares of Calyxt and 1,470 Calyxt shares at a price of $19.49 per share (the closing price reported on the Nasdaq Global Market on June 14, 2018) directly from Mr. André Choulika and Mr. Jean Marie Messier respectively in connection with share purchase transactions dated June 13 2018.

Note 20. Subsequent events

In March 2019, we entered into a lease agreement for a 82,000 square foot commercial-scale manufacturing facility, called the IMPACT site, which stands for “Innovative Manufacturing Plant for Allogeneic Cellular Therapies”. The IMPACT facility is located in Raleigh, North Carolina. The new manufacturing facility is being designed to provide GMP manufacturing for clinical supply and commercial product upon potential regulatory approval. The facility is planned to be operational by 2021.

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Exhibit Index

Exhibit Number	Description of Exhibit	Schedule/ Form	File Number	Exhibit	File Date
1.1	By-laws (*status*) of the registrant (English translation)				Filed herewith
2.1#	Form of Deposit Agreement	F-1	333-202205	4.1	March 10, 2015
2.2#	Form of American Depositary Receipt (included in Exhibit 2.1)	F-1	333-202205	Included in 4.1	March 10, 2015
4.1	Patent License Agreement #C-00061901 between L'Institut Pasteur and Cellectis S.A., dated June 19, 2000 (English translation)				Filed herewith
4.1.1	Amendment No. 1 to Patent License Agreement #C-00061901 between L'Institut Pasteur and Cellectis S.A., dated December 20, 2002 (English translation)				Filed herewith
4.1.2	Amendment No. 2 to Patent License Agreement #C-00061901 between L'Institut Pasteur and Cellectis S.A., dated September 8, 2003 (English translation)				Filed herewith
4.1.3#	Amendment No. 3 to Patent License Agreement #C-00061901 between L'Institut Pasteur and Cellectis S.A., dated February 26, 2008	F-1	333-202205	10.1.3	March 12, 2015
4.1.4#	Amendment No. 4 to Patent License Agreement #C-00061901 between L'Institut Pasteur and Cellectis S.A., dated April 11, 2013 (English translation)	F-1	333-202205	10.1.4	March 12, 2015
4.2	Patent License Agreement #C-00061906 between L'Institut Pasteur and Cellectis S.A., dated October 19, 2000 (English translation)				Filed herewith
4.2.1	Amendment No. 1 to Patent License Agreement #C-00061906 between L'Institut Pasteur and Cellectis S.A., dated September 8, 2003 (English translation)				Filed herewith
4.2.2	Amendment No. 2 to Patent License Agreement #C-00061906 between L'Institut Pasteur and Cellectis S.A., dated June 24, 2004 (English translation)				Filed herewith
4.2.3	Amendment No. 3 to Patent License Agreement #C-00061906 between L'Institut Pasteur and Cellectis S.A., dated August 24, 2005 (English translation)				Filed herewith
4.2.4	Amendment No. 4 to Patent License Agreement #C-00061906 between L'Institut Pasteur and Cellectis S.A., dated December 27, 2007 (English translation)				Filed herewith

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Exhibit Number	Description of Exhibit	Schedule/ Form	File Number	Exhibit	File Date
4.3	Patent License Agreement #C-00061905 between L'Institut Pasteur and Cellectis S.A., dated June 19, 2000 (English translation)				Filed herewith
4.3.1	Amendment No. 1 to Patent License Agreement #C-00061905 between L'Institut Pasteur and Cellectis S.A., dated September 8, 2003 (English translation)				Filed herewith
4.4	[Reserved]				
4.5	[Reserved]				
4.5.1	[Reserved]				
4.6#*	Exclusive Patent License Agreement between Regents of the University of Minnesota and Cellectis S.A., dated January 10, 2011	F-1	333-202205	10.6	March 12, 2015
4.6.1#*	First Amendment to the Exclusive Patent License Agreement between Regents of the University of Minnesota and Cellectis S.A., dated May 24, 2012	F-1	333-202205	10.6.1	March 12, 2015
4.6.2#*	Second Amendment to the Exclusive Patent License Agreement between Regents of the University of Minnesota and Cellectis S.A., dated April 1, 2014	F-1	333-202205	10.6.2	March 12, 2015
4.6.3*	Third Amendment to the Exclusive Patent License Agreement between Regents of the University of Minnesota and Cellectis S.A., dated December 16, 2015	20-F	001-36891	4.6.3	March 13, 2018
4.7	Patent & Technology License Agreement between Ohio State Innovation Foundation and Cellectis S.A., dated October 23, 2014				Filed herewith
4.8#	Warrants Issue Agreement between Cellectis S.A. and Kepler Capital Markets SA, dated December 20, 2012 (English translation)	F-1	333-202205	10.8	March 10, 2015
4.8.1#	First Amendment to Warrants Issue Agreement between Cellectis S.A. and Kepler Capital Markets SA, dated June 6, 2013 (English translation)	F-1	333-202205	10.8.1	March 10, 2015
4.8.2#	Second Amendment to Warrants Issue Agreement between Cellectis S.A. and Kepler Capital Markets SA, dated October 7, 2013 (English translation)	F-1	333-202205	10.8.2	March 10, 2015
4.9#	Warrant Agreement between Cellectis S.A. and Trout Capital LLC, dated March 24, 2014	F-1	333-202205	10.9	March 10, 2015
4.10†#	Change of Control Plan, effective as of September 4, 2014 (English translation)	F-1	333-202205	10.10	March 10, 2015
4.11†#	Summary of BSA Plan	F-1	333-202205	10.11	March 10, 2015
4.12†#	Summary of BSPCE Plan	F-1	333-202205	10.12	March 10, 2015
4.13†#	2012 Free Share Plan	F-1	333-202205	10.13	March 10, 2015
4.14†#	2013 Free Share Plan	F-1	333-202205	10.14	March 10, 2015
4.15†#	2014 Free Share Plan	F-1	333-202205	10.15	March 10, 2015
4.16†#	2015 Free Share Plan	20-F	001-36891	4.16	March 10, 2015
4.17†#	2015 Stock Option Plan	20-F	001-36891	4.17	March 10, 2015
4.18†#	2016 Stock Option Plan	S-8	333-214884	99.1	December 2, 2016

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Exhibit Number	Description of Exhibit	Schedule/ Form	File Number	Exhibit	File Date
4.19†#	2017 Stock Option Plan	S-8	333-222482	99.1	January 9, 2018
4.20†#	Summary of BSA Plan	S-8	333-222482	99.2	January 9, 2018
4.21†#	Free Share 2018 Plan	S-8 POS	333-222482	99.3	April 13, 2018
4.22†#	2018 Stock Option Plan	S-8	333-227717	99.1	October 5, 2018
4.23†#	Summary of BSA Plan	S-8	333-227717	99.2	October 5, 2018
4.24†#	Second Free Share 2018 Plan	S-8	333-227717	99.3	October 5, 2018
4.25*	License Agreement between Allogene Therapeutics, Inc. and Cellectis S.A. dated March 7, 2019				Filed herewith
4.26*	License, Development and Commercialization Agreement between Les Laboratoires Servier and Cellectis S.A. dated March 6, 2019				Filed herewith
4.27	Management Services Agreement between Cellectis S.A., Cellectis, Inc. and Calyxt, Inc. dated as of January 1, 2016				Filed herewith
4.28	Management Services Agreement Amendment dated July 25, 2017 between Cellectis S.A. and Calyxt, Inc.				Filed herewith
4.29	Separation Agreement dated July 25, 2017 between Cellectis S.A. and Calyxt, Inc.				Filed herewith
4.30	Stockholders Agreement dated July 25, 2017 between Cellectis S.A. and Calyxt, Inc.				Filed herewith
4.31	License Agreement dated July 25, 2017 between Cellectis S.A. and Calyxt, Inc.				Filed herewith
8.1	List of subsidiaries of the registrant				Filed herewith
12.1	Certificate of Principal Executive Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				Filed herewith
12.2	Certification by the Principal Financial Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				Filed herewith
13.1	Certification by the Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				Filed herewith
13.2	Certification by the Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				Filed herewith
15.1	Consent of Ernst & Young et Autres				Filed herewith

† Indicates a management contract or any compensatory plan, contract or arrangement.
# Indicates a document previously filed with the Commission.
* Portions of this exhibit (indicated by asterisks) have been omitted pursuant to a request for confidential treatment

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SIGNATURES

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

CELLECTIS S.A.

/s/ André Choulika
By: André Choulika
Title: Chairman and Chief Executive Officer

Date: March 11, 2019

Exhibit 1.1

Translation for information purposes only

CELLECTIS
A French *société anonyme* (corporation) with share capital of € 2,121,501.30
Registered office : 8 rue de la Croix Jarry, 75013 Paris
Paris Trade and Companies Registry no. 428 859 052

BYLAWS

Updated as of November 13, 2018

Copy certified as true to the original by
the Chairman and Chief Executive Officer

André Choulika

ARTICLE 1 - FORM

The Company is a corporation (*société anonyme)*, governed by Book II of the French commercial code (*code de commerce*) and by the present bylaws.

ARTICLE 2 - NAME

The name of the Company is:

CELLECTIS

In all deeds and documents emanating from the Company and addressed to third parties, this name must always be immediately preceded or followed by the words "*société anonyme"* or the initials "S.A." and by the mention of the amount of the share capital.

ARTICLE 3 - PURPOSES

The Company's purposes, both in France and abroad, are all activities relating to genetics and more particularly to genome engineering and, notably, research, development and invention, filing and use of patents and trademarks, valorization, sale and marketing, advice and assistance in any field, and more particularly in the fields of agrifood, pharmaceuticals, textile and environment; and generally, all industrial, commercial, financial, civil, and personal or real property operations that may be directly or indirectly related to the purposes above or any similar or connected purposes.

ARTICLE 4 - REGISTERED OFFICE

The registered office of the Company is located at 8 rue de la Croix Jarry, 75013 Paris.

It may be transferred anywhere else in French territory by a decision of the Board of Directors, subject to the ratification of such decision by the next ordinary general meeting, and elsewhere by virtue of a resolution of the extraordinary general meeting.

If a transfer is decided by the Board of Directors, the Board is authorized to amend the bylaws and perform the publication and filing formalities required as a result, provided it is stated that the transfer is subject to the aforementioned ratification.

ARTICLE 5 - DURATION

The term of the Company shall be ninety-nine (99) years starting from the date of its registration with the Trade and Companies Registry, except in the event it is dissolved before the expiration of its term or if said term is extended by an extraordinary general shareholders' meeting.

ARTICLE 6 - SHARE CAPITAL

The Company has a share capital of € 2,121,501.30 It is divided into 42,430,026 shares with a par value of € 0.05 each, all fully paid-up.

It may be increased or reduced as provided by the French commercial code (*code de commerce*).

On October 28, 2011, the shareholders' general meeting approved the contribution to the Company of 11,111,089 shares of Cellartis, a Swedish Company with a share capital of SEK 2,222,217.80, which registered office is located at Arvid Wallgrens Backe 20, SE-41346 Göteborg (Sweden). This contribution, valued at €17,399,997, resulted in a share capital increase of a nominal amount of € 96,666.65 and the issuance of 1,933,333 shares at a price of € 9 each (share premium included), with a par value of €0.05 each, allocated to Cellartis shareholders in exchange for their respective contributions.

ARTICLE 7 - LEGAL FORM

Fully paid-up shares are either held in registered or bearer form at the option of each shareholder, subject to the applicable legal provisions regarding the form of shares held by certain natural or legal persons. Non fully paid-up shares must be held in registered form.

Shares are registered in an account under the conditions and in the manner prescribed by applicable laws and regulations.

Ownership of the shares delivered in registered form results from their registration in a registered account.

ARTICLE 8 - SHARE TRANSFERS - IDENTIFYING THE SHAREHOLDERS

8.1 Shares registered in accounts are freely transferable from one account to another through a wire, in accordance with applicable laws and regulations.

8.2 The Company may also, subject to applicable laws and regulations, at its own expense, request from an authorized agency at any time, the name, or, in the case of a legal entity, the corporate name, nationality, and address of holders of securities granting an immediate or future right to vote at its shareholders' meetings, and the number of securities held by each of them and, if applicable, any restrictions to which these securities may be subject.

ARTICLE 9 - RIGHTS AND OBLIGATIONS PERTAINING TO SHARES

The rights and obligations attached to a share follow the share to any transferee to whom it may be transferred and the transfer includes all unpaid dividends due and dividends to be paid, as well as, as the case may be, the pro-rata portion of the reserve funds and provisions.

The ownership of a share implies *ipso facto* the owner's approval of the present bylaws and the decisions adopted by general shareholders' meetings.

As well as the voting right attached to shares in accordance with applicable law, each share gives right to a pro-rata portion of corporate assets, profits, and of liquidation surplus, proportional to the portion of the share capital it represents.

Whenever it is necessary to hold several shares to exercise any right, shareholders or securities' holders shall take it upon themselves to pool the number of shares or securities required.

In accordance with the provisions of the French commercial code (*code de commerce*), all fully paid-up shares which have been held in registered form for at least two years by the same shareholder will be granted double voting rights in comparison to the voting right attached to other shares which shall be equal to amount of share capital it represents.

ARTICLE 10 - PAYING UP OF THE SHARES

Amounts to be paid as payment for shares subscribed pursuant to a share capital increase shall represent not less than one-fourth of their par value and the entire amount of the premium (as the case may be).

The Board of Directors shall make calls for payment of the balance, in one or more installments, within a period of five years from the date the capital increase is completed.

Each shareholder shall be notified of the amounts called and the date on which the corresponding sums are to be paid at least fifteen days before the due date.

Shareholders who do not pay amounts owed on the shares they hold by the due date shall automatically and without the need for a formal demand for payment owe the Company late payment interest calculated on a daily basis, on the basis of a 360 day year, starting as of the due date at the legal rate in commercial matters, plus three points, without prejudice to the Company's personal action against such defaulting shareholder and the enforcement measures authorized by law.

ARTICLE 11 - BOARD OF DIRECTORS

11.1. Composition

The Company is managed by a Board of Directors composed of individuals or legal entities, the number of which is determined by the ordinary general shareholders' meeting within the limits of law.

At the time they are appointed, legal entities shall designate an individual as their permanent representative to the Board of Directors. The term of office of the permanent representative shall be the same as the term of office of the legal entity it represents. If a legal entity removes its permanent representative from office, it shall immediately appoint a replacement. The same provision shall also apply in the event of the death or resignation of the permanent representative.

The term of directors' office shall be three years (3), with a year being defined as the period between two consecutive ordinary general shareholders' meetings. Directors' term of office shall occur at the end of the ordinary general shareholders' meeting which voted on the financial statements for the past fiscal year and held in the year during which said directors' term of office occurs.

Directors are always eligible for reappointment. They may be removed from office at any time by a decision of a general shareholders' meeting.

In the event of one or more vacancies on the Board of Directors due to death or resignation, the Board may make temporary appointments between two general shareholders' meetings.

Appointments made by the Board pursuant to the preceding paragraph shall be submitted for ratification by the next ordinary general shareholders' meeting.

If such appointments are not ratified, decisions adopted and acts performed by the Board shall nevertheless remain valid.

If the number of directors falls below the statutory minimum, the remaining directors shall immediately convene an ordinary general shareholders' meeting in order to supplement the Board.

A director appointed to replace another director if the term of the latter's office has not yet expired shall serve only for the remaining portion of his predecessor's term of office.

Company's employees may be appointed as directors. However, their employment contracts must correspond to actual employment. In such case, employees do not lose the benefit of their employment contracts.

The number of directors who have employment contracts with the Company shall not exceed one-third of the directors in office.

The number of directors over the age of 70 shall not exceed one-third of the directors in office. If this limit is exceeded during the directors' terms of office, the oldest director shall automatically be deemed to have resigned at the end of the next ordinary general shareholders' meeting.

11.2 Chairman

The Board of Directors shall elect a Chairman from among its members, who shall be an individual. The Board shall determine its term of office, which shall not exceed its term of office as director, and may remove him from office at any time. The Board shall set his compensation.

The Chairman shall organize and manage the work of the Board and report it to the general shareholders' meetings. The Chairman is responsible for the good functioning of the Company's corporate bodies and, notably, sees that the directors are able to carry out their functions.

The Chairman of the Board cannot be more than 70 years old. If the Chairman reaches this age limit during his term of office as Chairman, he shall automatically be deemed to have resigned at the end of the current office. Subject to this provision, the Chairman of the Board is always eligible for reappointment.

11.3 Observers

The ordinary shareholders' meeting may, upon suggestion from the Board of Directors, appoint one or several observers. The Board of Directors may also directly appoint the members, subject to ratification by the following general meeting.

The number of observers may not exceed five. They are freely chosen in light of their abilities.

They are appointed for a term of three (3) years.

The observers review questions that the Board of Directors or its Chairman submit for their opinion. The observers attend the Board of Directors meetings and participate in the discussions only with a consultative voice. Their absence shall have no effect on the validity of the vote.

They are convened to Board meetings under the same conditions as the Board members.

The Board of Directors may compensate the observers and take such compensation from the amount of attendance fees (*jetons de présence*) if any, authorized by the general shareholders' meeting for the purposes of compensating directors.

ARTICLE 12 MEETING OF THE BOARD

12.1. The Board of Directors shall meet as often as required for the interest of the Company.

12.2. Directors are convened to the Board meetings by the Chairman of the Board. The Chairman convenes meetings of the Board of Directors by any means, in oral or written form.

The Chief Executive Officer may also ask the Chairman to convene the Board on a specific agenda.

When a works council *(comité d'entreprise*) has been formed, the representatives of such committee, appointed in accordance with the provisions of the French labor code *(code du travail*), shall be convened to all the Board meetings.

The Board meetings are held either at the registered office or at any other place, in France or abroad as indicated at the time of the convening.

12.3. The Board can only validly take decisions if half of its members are present.

The Board's decisions are taken at the majority of votes of its members present or represented by proxy; in the case of deadlock; the Chairman shall have the casting vote.

12.4. Internal regulations may be adopted by the Board of Directors providing, among others, that for the calculation of the quorum and of the majority, the directors participating in the meeting of the board by means of visioconference consistent with applicable regulations, shall be considered as having attended the meeting in person. This provision is not applicable for the adoption of a resolution relating to L. 232-1 and L. 232-16 of French commercial code (*code de commerce*).

12.5. Each director receives the information necessary to perform its duties and office and may ask to be provided with any other documents it deems necessary.

12.6. Any director may give to another director, by letter, cable, email or telex, a proxy to be represented at a meeting of the board. However, each director can only represent one director during each meeting.

12.7. The copies or abstracts of the minutes are certified by the Chairman of the Board of Directors, the Chief Executive Officer and the director temporarily delegated in the duties of Chairman or by a representative duly authorized for that purpose.

ARTICLE 13 - POWERS OF THE BOARD OF DIRECTORS

The Board of Directors shall establish the Company's business policies and ensure that they are carried out. Subject to the powers expressly granted to shareholders' meetings, and within the limits of the corporate purpose, the Board of Directors may consider any issue relating to the proper operation of the Company and shall resolve on matters that relate to the Company.

With regards to third parties, the Company shall be bound by the acts of the Board of Directors that exceed the scope of the corporate purpose, unless the Company proves that the third party was aware, or that in light of the circumstances could not have been unaware, that the act was not within the corporate purpose; however, the mere publication of the bylaws is not sufficient to constitute such proof.

The Board of Directors can carry out all controls and verifications it deems necessary.

Furthermore, the Board of Directors shall exercise the special powers conferred by law.

ARTICLE 14 - GENERAL MANAGEMENT

14.1.1. The Company's executive management functions shall be performed, under its responsibility, by the Chairman of the Board of Directors or another individual appointed by the Board of Directors, who shall hold the title of Chief Executive Officer.

The Chief Executive Officer is vested with the most extensive powers to act under all circumstances on behalf of the Company. The Chief Executive Officer performs his powers within the limits of the purpose of the Company, except for those powers expressly granted by law to the meetings of shareholders and to the Board of Directors.

The Chief Executive Officer shall represent the Company in its relations with third parties. The Company shall be bound by acts of the Chief Executive Officer that exceed the scope of the corporate purpose, unless the Company is able to prove that the third party was aware, or that in light of the circumstances could not have been unaware, that the act was not within the corporate purpose; however, the mere publication of the bylaws is not sufficient to constitute such proof.

14.1.2. The Chief Executive Officer cannot be more than 70 years old. If the Chief Executive Officer reaches this age limit, he shall automatically be deemed to have resigned. However, the Chief Executive Officer's term of office shall be prolonged until the next Board of Directors meeting, at which a new Chief Executive Officer shall be appointed.

14.1.3. If the Chief Executive Officer is a director, the term of his office shall not exceed his term of office as director.

The Board of Directors may remove the Chief Executive Officer from office at any time. If the removal from office is decided without fair cause, the Chief Executive Officer removed from office may claim damages unless the Chief Executive Officer is also Chairman of the Board of Directors.

14.1.4. By a decision adopted by a majority vote of the directors present or represented by proxy, the Board of Directors shall choose between the two options of exercise of the general management described in Article 14.1.1, paragraph 1. The shareholders and third parties shall be informed of such choice in the manner prescribed by applicable laws and regulations.

The choice made by the Board of Directors shall remain in effect until a contrary decision of the Board or, at the Board's discretion, for the duration of the Chief Executive Officer's term of office.

If the Company's executive management functions are carried out by the Chairman of the Board of Directors, the provisions concerning the Chief Executive Officer shall apply to him.

In accordance with the provisions of Article L. 706-43 of the French code of criminal procedure (*code de procédure pénale)*, the Chief Executive Officer may validly delegate to any individual of his choice the power to represent the Company in connection with criminal proceedings that may be filed against the Company.

14.2.1. Upon proposal of the Chief Executive Officer, the Board of Directors may authorize one or more individuals to assist the Chief Executive Officer in the capacity of Deputy General Managers.

In accordance with the Chief Executive Officer, the Board of Directors shall determine the scope and duration of the powers granted to the Deputy General Managers. The Board of Directors shall set their compensation. If a Deputy General Manager is also a director, the term of his office shall not exceed his term of office as director.

No more than five Deputy General Managers shall be appointed.

Pursuant to a proposal of the Chief Executive Officer, the Deputy General Manager(s) may be removed from office by the Board of Directors at any time. If the removal from office is decided without fair cause, a Deputy General Manager removed from office may claim damages.

Deputy General Managers cannot be more than 70 years old. If a Deputy General Manager in office reaches this age limit, he shall automatically be deemed to have resigned. The Deputy General Manager's term of office shall be prolonged until the next Board of Directors' meeting, at which a new Deputy General Manager may be appointed.

If the Chief Executive Officer ceases its office or is unable to perform its duties, unless otherwise decided by the Board of Directors, the Deputy General Manager(s) shall remain in office and retain their powers until the appointment of a new Chief Executive Officer.

Vis-à-vis third parties, the Deputy General Managers shall have the same powers as the Chief Executive Officer.

ARTICLE 15 - AGREEMENTS SUBJECT TO AUTHORIZATION

15.1. Any sureties, endorsements and guarantees granted by the Company shall be authorized by the Board of Directors in accordance with the requirements prescribed by law.

15.2. Any agreement to be entered into, whether directly or indirectly or through an intermediary, between the Company and its Chief Executive Officer, one of its Deputy General Manager(s), one of its directors, one of its shareholders holding more that 10 % of the voting rights or, in the case of a Company being a shareholder, the Company controlling it within the meaning of article L 233-3 of the commercial code, must be submitted for the prior authorization of the Board of Directors.

The same applies for agreements in which one of the persons referred to in the above paragraph is indirectly interested.

Such prior authorization is also required for agreements between the Company and another Company, should the general manager, one of the deputy general manager or one of the directors of the Company be owner, partner with unlimited liability, manager, director, member of the supervisory board or, in general, manager of said Company.

The prior authorization of the Board of Directors shall be delivered in accordance with the requirements prescribed by law.

The above provisions do not apply to agreements relating to current transactions entered into under ordinary conditions or to agreements entered into between two companies, one of which holds, directly or indirectly, all of the capital of the other, minus, if applicable, the minimum number of shares required to satisfy the requirements of article 1832 of the French civil code or articles L. 225-1 and L. 226-1 of the French commercial code.

ARTICLE 16 - PROHIBITED AGREEMENTS

Directors, other than legal entities, are forbidden to contract loans from the Company in any form whatsoever, to secure an overdraft from it, as a current account or otherwise, and to have the Company guarantee or secure their commitments toward third parties.

The same prohibition applies to the Chief Executive Officer, the Deputy General Managers and to the permanent representatives of directors that are legal entities. The foregoing provision also applies to the spouses, ascendants and descendants of the persons referred to in this article, as well as to all intermediaries.

ARTICLE 17 - STATUTORY AUDITORS

Audits of the Company shall be carried out, as provided by law, by one or more statutory auditors legally entitled to be elected as such. When the conditions provided by law are met, the Company must appoint at least two supervisory auditors.

The statutory auditor(s) shall be appointed by the ordinary general meeting.

The ordinary general meeting shall appoint, in the cases provided for by law, one or more alternate statutory auditors, which shall be called upon to replace the primary statutory auditors in the event of refusal, impediment, resignation or death.

Should the general ordinary meeting of the shareholders fail to elect a statutory auditor, any shareholder can claim in court that one be appointed, provided that the President of the Board of Directors be duly informed. The term of office of the statutory auditor appointed in court will end upon the appointment of the statutory auditor(s) by the general ordinary meeting of the shareholders.

ARTICLE 18 - GENERAL SHAREHOLDERS' MEETING QUORUM – VOTE – NUMBER OF VOTES

General shareholders' meetings shall be convened and held as provided by law.

If the Company wishes to convene the meeting by electronic means in lieu and place of the postal mail, it has to obtain the prior approval of the interested shareholders which will indicate their electronic address.

Meetings shall be held at the registered office or at any other location specified in the convening notice.

The right to participate in general shareholders' meetings is determined by the applicable laws and regulations and is conditioned upon the registration of shares under the shareholder's name or under an intermediary's name acting on its behalf, on the second business day prior to the general shareholders' meeting at midnight (Paris time), either in the registered shares accounts held by the Company or in the bearer shares accounts held by the authorized intermediary.

If a shareholder does not attend the meeting in person, it can grant a proxy to another shareholder, to its spouse or partner of French *pacte civil de solidarité* (PACS) or any other individual or legal entity. It can also send vote by correspondence or send a proxy to the Company without indicating the beneficiary, in accordance with applicable laws.

In accordance with the requirements prescribed by the laws and regulations in force, the Board of Directors may arrange for shareholders to participate and vote by videoconference or means of telecommunication that allow them to be identified. If the Board of Directors decides to exercise this right for a particular shareholders' meeting, such decision shall be mentioned in the meeting notice (*avis de réunion*) and/or convening notice (*avis de convocation*) of the meeting. Shareholders who participate in shareholders' meetings be videoconference or any of the other means of telecommunication referred to above, as selected by the Board of Directors, shall be deemed present for the purposes of calculating the quorum and majority.

Shareholders' meetings shall be chaired by the Chairman of the Board of Directors or, in its absence, by the Chief Executive Officer or by a Deputy General Manager if he is a director, or by a director specifically appointed for such purposes by the Board. If no president has been appointed, the shareholders' meeting shall elect its own chairman.

The duties of scrutineers shall be performed by the two members of the shareholders' meeting who are present and hold the greatest number of votes, and who agree to perform such duties. The officers shall appoint a secretary, who may but need not be a shareholder.

An attendance sheet is drawn up, in accordance with the requirements prescribed by law.

Upon first notice, an ordinary general shareholders' meeting may validly deliberate only if the shareholders present or represented by proxy own at least one-fifth of the shares entitled to vote. Upon second notice, no quorum is required.

Decisions at ordinary general shareholders' meeting are made by a majority of the votes held by the shareholders present or represented by proxy.

Upon first notice, an extraordinary general shareholders' meeting may validly deliberate only if the shareholders present or represented by proxy own at least one-fourth of the shares entitled to vote. Upon second notice, an extraordinary general shareholders' meeting may validly deliberate only if the shareholders present or represented by proxy own at least one-fifth of the shares entitled to vote.

Decisions at extraordinary general shareholders' meeting are made by a two-thirds majority of the votes held by the shareholders present or represented by proxy.

Copies or extracts of shareholder meeting minutes may be validly certified by the Chairman of the Board of Directors, a director who holds the position of Chief Executive Officer or Deputy General Manager or by the secretary of the meeting.

Ordinary and extraordinary general shareholders' meetings shall exercise their respective powers in accordance with the requirements prescribed by law.

ARTICLE - 19 – FISCAL YEAR

Each fiscal year shall last one year, starting on January 1 and ending on December 31.

ARTICLE 20 - PROFITS – STATUTORY RESERVE FUND

Out of the profit of a fiscal year, reduced by prior losses if any, an amount equal to at least 5 % thereof is first deducted in order to form the legal reserve fund provided by law. This deduction is no longer required when the legal reserve fund amounts to one tenth of the capital of the Company.

Distributable profit is the profit of a fiscal year, reduced by prior losses and by the deduction provided for in the preceding paragraph and increased by the profits carried forward.

ARTICLE 21 - DIVIDENDS

If there results a distributable profit from the accounts of the fiscal year, as approved by the general meeting, the general meeting may decide to allocate it to one or several reserve funds, the appropriation or use of which it shall determine, or to carry it forward or to distribute it as dividends.

Furthermore, after having established the existence of reserves which it may dispose of, the general meeting may decide the distribution of amounts paid out of such reserves. In such case, the payments shall be made. However, the dividends shall be set off by priority on the distributable profit of the fiscal year.

The general meeting shall determine the terms of payment of dividends ; failing such determination, these terms shall be determined by the Board of Directors.

However, the dividends must be declared payable no more than nine months following the close of the fiscal year.

The general meeting deciding upon the accounts of a fiscal year will be entitled to grant to each shareholder, for all or part of the distributed dividends, an option between payment in cash or in shares.

Similarly, should the ordinary general meeting resolve the distribution of interim dividends pursuant to article L. 232-12 of the French commercial code (*code de commerce*) , it will be entitled to grant to each shareholder an interim dividend and, for whole or part of the said interim dividend, an option between payment in cash or in shares.

The offer of payment in shares, the price and the conditions as to the issuing of such shares, together with the request for payment in shares and the conditions of the completion of the capital increase will be governed by the law and regulations.

When a balance sheet, drawn up during, or at the end of the fiscal year, and certified by the statutory auditor, shows that the Company, since the close of the preceding fiscal year, after having made the necessary depreciations and provisions and after deduction of the prior losses, if any, as well as of the amounts which are to be allocated to the reserve fund provided by law or by the by-laws and taking into account the profits carrying forward, has made profits, the Board of Directors may resolve the distribution of interim dividends prior to the approval of the accounts of the fiscal year, and may determine the amount thereof and the date of such distribution. The amount of such interim dividends cannot exceed the amount of the profits as defined in this paragraph. In this case, the option described in the preceding paragraph shall not be available.

ARTICLE 22 - EARLY DISSOLUTION

An extraordinary general shareholders' meeting may, at any time, decide to dissolve the Company before the expiration of its term.

ARTICLE 23 - LOSS OF ONE HALF OF SHARE CAPITAL

If, as a consequence of losses showed by the Company's accounts, the net assets (*capitaux propres*) of the Company are reduced below one half of the capital of the Company, the Board of Directors must, within four months from the approval of the accounts showing this loss, convene an extraordinary general meeting of shareholders in order to decide whether the Company ought to be dissolved before its statutory term.

If the dissolution is not declared, the capital must, at the latest at the end of the second fiscal year following the fiscal year during which the losses were established and subject to the legal provisions concerning the minimum capital of *sociétés anonymes*, be reduced by an amount at least equal to the losses which could not be charged on reserves, if during that period the net assets have not been restored up to an amount at least equal to one half of the capital.

In the absence of a meeting of shareholders, or in the case where the Company has not been able to validly act, any interested party may institute legal proceedings to dissolve the Company.

ARTICLE 24 - EFFECT OF THE DISSOLUTION

The Company is in liquidation as soon as it is dissolved for any reason whatsoever. It continues to exist as a legal entity for the needs of this liquidation until the liquidation is completed.

During the period of the liquidation, the general meeting shall retain the same powers it exercised during the life of the Company.

The shares shall remain transferable until the completion of the liquidation proceedings.

The dissolution of the Company is only valid vis-à-vis third parties as from the date at which it is published at the Trade and Companies Registry.

ARTICLE 25 - APPOINTMENT OF LIQUIDATORS - POWERS

When the Company's term expires or if the Company is dissolved before the expiration of its term, a general shareholders' meeting shall decide the method of liquidation, appoint one or more liquidators and determine their powers. The liquidators will exercise their duties in accordance with the law. The appointment of liquidators shall cause the duties of the directors, Chairman, Chief Executive Officer and Deputy General Managers to end.

ARTICLE 26 - LIQUIDATION - CLOSING

After payment of the liabilities, the remaining assets shall be used first for the payment to the shareholders of the amount paid for their shares and not amortized.

The balance, if any, shall be divided among all the shareholders.

The shareholders shall be convened at the end of the liquidation in order to decide on the final accounts, to discharge the liquidator from liability for his acts of management and the performance of his office, and to take notice of the closing of the liquidation.

The closing of the liquidation is published as provided by law.

ARTICLE 27 - NOTIFICATIONS

All notifications provided for in the present bylaws shall be made either by registered mail with acknowledgment of receipt or by process server. Simultaneously a copy of the notification shall be sent to the recipient by ordinary mail.

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PATENT LICENSE AGREEMENT n° C-00061901

BETWEEN:

L'Institut Pasteur,
Foundation recognized as having public utility,
25-28, rue du Docteur Roux,
75724 Paris cedex 15,
represented by Mr. Christian POLICARD,
Director of Development and Industrial Partnerships.

Hereafter referred to as the IP or the "LICENSOR", acting both on its own behalf and on behalf of:

- **Université Pierre et Marie Curie,**
  4, place de Jussieu,
  75252 Paris cedex 05,
  Hereafter referred to as "UPMC",
- **Institut Curie,**
  26, rue d'Ulm,
  75248 Paris cedex 05,
  Hereafter referred to as "IC",
- **Le Centre National de la Recherche Scientifique,**
  3, rue Michel-Ange,
  75794 Paris cedex 16
  Hereafter referred to as "CNRS".

Jointly also referred to as the "LICENSOR",

Party of the first part

AND:

CELLECTIS

Public limited company with capital of 250,000 Francs
with its registered office at 3, rue François Mouthon, Paris 75015
represented by Mr. André Choulika, acting in the capacity of Chairman and Managing Director

Hereafter referred to as the "LICENSEE",

Party of the second part.

The LICENSOR and the LICENSEE are hereafter referred to as the "Parties".

RECITALS:

IP is the owner with both UPMC and the Institut Curie and CNRS of patents and patent applications relating to the gene of enzyme *I-SceI*, the expression of the enzyme *I-SceI* and its use. The LICENSOR has already granted exploitation rights for these patents and patent application to Third Parties for specific applications and now wishes to hare this technology with a new industrial partner.

The UPMC, IC and the CNRS have given a mandate to the IP, which accepts it, to represent them and negotiate in their name any license agreement with the company CELLECTIS.

CELLECTIS is a recently-created company, which has as its activity the domain of genome and anti-viral therapy, the production of genomically-modified organisms, with respect to offering services to third parties, the sale of molecular biology products and reagents, the development of new therapeutic strategies, alone or in cooperation with pharmaceutical laboratories.

CELLECTIS wishes to be able to develop, within the context of its technological platform, the LICENSOR's patents and patent applications above whilst respecting the rights already granted to third parties.

It has therefore been agreed as follows between the Parties:

ARTICLE 1: DEFINITIONS

The following definitions apply for the purposes of the present AGREEMENT, it being understood that one the one had, the singular is understood, when the context so permits, as the plural, and inversely, and on the other hand, masculine is understood as feminine in the same conditions.

1.1 AFFILIATE

"Affiliate" is understood as any company, firm, group of persons or other entity, which de *jure* ou *de facto,* directly or indirectly, controls another entity or is controlled by it, or is under common control with it, control being understood as holding over fifty percent (50%) of the voting shares of a company (or any other percentage that a foreign company is authorised to hold in a third party national company with respect to the legislation of the latter's country) or as having decision-making power, in the case of a company without legal status.

1.2 AGREEMENT PATENTS

"AGREEMENT PATENTS" are understood as:

• The U.S. patent application Serial no. 07/879,689 filed on May 5, 1992, in the names of IP and the UPMC, and titled "Nucleotide sequence encoding the enzyme *I-SceI* and the uses thereof", the French patent no. 9509587 used on October 10, 1997, the U.S. patent no. 5830729 issued on November 3, 1998, any division application, continuation applications, any reissue application, made on the basis of the patents and patent applications cited above, including the PCT extension of the application, published under the no. WO 96 14 408, and the patent applications and patents which will results, the list of which is shown in APPENDIX A to the present AGREEMENT, and the corresponding patents issued which shall be automatically included in APPENDIX A to the present AGREEMENT.

• The U.S. patent application Serial no. 634,192 filed on April 18, 1996 in the names of HP, HC and the CNRS, which was not extended abroad, and having led to the U.S. patent no. 5 830 729 issued on November 3, 1998, any division application, continuation application, any reissue application, made on the basis of the patent application cited above.

1.3 FIELD

"FIELD" of the AGREEMENT is understood as any application of the LICENSED PRODUCTS and LICENSED PROCESS, in particular with to homologous recombination, excluding the applications for which rights have already been granted mentioned in Article 2.1.

1.4 LICENSE

"LICENSE" is understood as the grant by the LICENSOR to the LICENSEE of exploitation rights for the AGREEMENT PATENTS in accordance with the provisions of the present document (the "AGREEMENT") in particular as covered in Article 2.

1.5 IMPROVEMENT

"IMPROVEMENT" is understood as any improvements or innovations, whether patentable or not, made to the LICENSED PRODUCTS and/or LICENSED PROCESS by the LICENSOR, and depending on the AGREEMENT PATENTS. The IMPROVEMENTS constitute, with the AGREEMENT PATENTS, the licensed technology. The patents filed to protect IMPROVEMENTS shall be included as they are filed in the AGREEMENT PATENTS.

1.6 LICENSEE

The "LICENSEE" is understood as the LICENSEE as defined above and all its AFFILIATES taken collectively; the LICENSEE is authorized to extend the benefits of the rights conferred upon it by the present AGREEMENT to its AFFILIATES, as long as it itself continues to assume liability for respect of the obligations conferred upon its by the present AGREEMENT, both for itself and its AFFILIATES.

1.7 PROVISION OF SERVICES

"PROVISION OF SERVICES" is understood as the performance by the LICENSEE in favour of a THIRD PARTY of provision of services, implementing any LICENSED PRODUCT or LICENSED PROCESS.

1.8 LICENSED PRODUCT

"LICENSED PRODUCT" is understood as any composition or any product, the exploitation of which would constitute, without a license, an infringement of the AGREEMENT PATENTS.

1.9 LICENSED PROCESS

"LICENSED PROCESS" is understood as any process, the implementation of which would constitute, without a license, an infringement of the AGREEMENT PATENTS.

1.10 NET INCOME

''NET INCOME" is understood as the gross income, royalties (or market value corresponding to any form of non-monetary remuneration) which the LICENSEE accepts to receive in compensation for PROVISIONS OF SERVICES or LICENSED PRODUCTS which the LICENSEE receives from SALES or PROVISION OF SERVICES relating to the LICENSED PRODUCTS or LICENSED PROCESSES, or even in compensation for R&D SOLD, with deductions for the elements below insofar as the corresponding sums are paid or allocated and form part of the price invoiced:

i) discounts or reductions for quantity actually granted and deducted in proportionate shares in accordance with the normal practices of the profession;

ii) credits granted for the LICENSED PRODUCTS returned or refused within the appropriate periods by clients;

iii) taxes really paid by the LICENSEE relating to the sale or delivery of the LICENSED PRODUCTS;

iv) subsidy or payment by a THIRD PARTY of the costs relating to personnel, supplies and travel incurred for the completion of the research program.

The definition above may not be interpreted in such a manner to include sums collected by the LICENSEE by virtue of research collaborations agreements with THIRD PARTIES on R&D SOLD if these agreements do not involved the implementation of the AGREEMENT PATENTS, in which case, the sums collected shall be included in the NET INCOME.

1.11 R&D SOLD

"R&D SOLD" is understood as a research AGREEMENT with transfer to a THIRD PARTY of the exploitation rights for the LICENSED PRODUCTS or LICENSED PROCESS. The following in particular are excluded from R&D SOLD:

- research agreement without transfer of the exploitation rights for LICENSED PRODUCT or LICENSED PROCESS.
- research agreement subsidized by a national state or international organization, or charitable foundation.

1.12 KNOW-HOW

"KNOW-HOW'' is understood as all knowledge and data, including technical, strategic and commercial information, methods, supplies and products including the organisms and micro-organisms belonging to the LICENSOR, patented or not patented, and which it holds before signature of the AGREEMENT or which it develops or acquires after signature of the present AGREEMENT. The list of KNOW HOW is in APPENDIX B to the present AGREEMENT.

1.13 TERRITORY

"TERRITORY" is understood as the whole world.

1.14 THIRD PARTIES

"THIRD PARTIES" are understood as any entity other than the parties to the present AGREEMENT and their AFFILIATES.

1.15 SALE

"SALE" is understood as the transfer by the LICENSEE to a THIRD PARTY of any property or disposal right for the LICENSED PRODUCTS. A SALE becomes effective from when it is invoiced by the LICENSEE.

1.16 INDUSTRIAL GROUP

"INDUSTRIAL GROUP" is understood as any company or group of companies exercising an economic activity which products material assets by the transformation and implementation of raw materials into a finished or semi-finished product.

ARTICLE 2: LICENSE GRANT

2.1 The LICENSOR grants, subject to the reservations and conditions stipulated in the present document, to the LICENSEE, which accepts, an exclusive license subject to Article 2.1(i) below, for the AGREEMENT PATENTS to make, have made, use and sell the LICENSED PRODUCTS and/or implement or have implemented the LICENSED PROCESS in the TERRITORY in the FIELD during the term of the present AGREEMENT.

The LICENSOR has already granted exploitation rights under the AGREEMENT PATENTS to THIRD PARTIES for (i) the production of the enzyme *I-SceI*, (ii) the use of the plasmid pSCM525, (iii) internal research.

Consequently, the term exclusive is understood for the purposes of the present AGREEMENT as the LICENSOR being prohibited from exploiting or having exploited or granting a license or exploitation rights under the AGREEMENT PATENTS to a THIRD PARTY in the FIELD, other than those already granted.

2.2 The LICENSOR grants to the LICENSEE an immediate, complete and free access to the KNOW-HOW.

2.3 The LICENSEE shall be diligent and do its utmost to design, develop and obtain the administrative authorizations necessary to sell the LICENSED PRODUCTS and LICENSED PROCESS. It is expressly agreed that maintaining the exclusive nature of the LICENSE as defined above in paragraph 2.1 has as a sine qua non condition, the respect for the aforementioned obligation.

The LICENSEE must ensure the LICENSOR receives, within a period of three months from the date of signature of the present AGREEMENT, a plan giving figures, details and a timeline for the development and commercial perspectives for the AGREEMENT PATENTS, for the first twelve months from the date of signature of the present AGREEMENT. The LICENSEE shall spontaneously inform the LICENSOR of any event occurring or which it anticipates which shall be of such a nature as to compromise or substantially delay these perspectives; it shall provide detailed explanations on the measures it intends to take to restore the initial perspectives. After the first twelve months the LICENSEE, upon LICENCOR's request, must ensure the LICENSOR receives an update of the aforementioned document.

2.4 The LICENSEE may only grant sub-licenses for the rights it receives by virtue of the present AGREEMENT to any THIRD PARTY with the prior approval of the LICENSOR. If the LICENSOR does not indicate its disagreement within a period of one month from the date of notification of a planned sub-license, it shall be deemed to have given its approval.

2.5 The LICENSEE in the AGREEMENT undertakes, for a period of five years after signature of the AGREEMENT, to grant at least three sub-licenses for the AGREEMENT PATENTS. If not, the AGREEMENT shall lose its exclusive nature.

2.6 The IMPROVEMENTS made by the LICENSOR are granted with an exclusive license to the LICENSEE according to the terms and restrictions of the present AGREEMENT and at no additional price. The LICENSOR shall have no obligation with respect to the LICENSEE concerning the IMPROVEMENTS made by the LICENSOR after the LICENSE has been converted to a non-exclusive LICENSE in the case of Article 2.5.

The LICENSOR shall inform the LICENSEE of any patent it files in the FIELD after the present AGREEMENT takes effect, no later than one month after such a filing.

Consequently, the term exclusive is understood for the purposes of the present AGREEMENT as the LICENSOR being prohibited from exploiting or having exploited or granting a license or exploitation rights under the IMPROVEMENTS to a THIRD PARTY.

ARTICLE 3: CONSIDERATION

3.1 Under this AGREEMENT the LICENSEE will pay to the LICENSOR on the date of the third anniversary of the coming into force of this AGREEMENT a lump sum, non-reimbursable and non-deductible from future license fees, of 100,000 FRANCS ex tax.

3.2 Under this AGREEMENT the LICENSEE will pay to the LICENSOR license fees equal to 3% of the NET INCOME generated in the TERRITORY.

3.3 In reimbursement of the license fees already paid, the LICENSEE will pay to the LICENSOR:

- The sum of 200,000 FRANCS ex tax, on the date of the second anniversary of the coming into force of this AGREEMENT,
- The sum of 300,000 FRANCS ex tax, on the date of the third anniversary of the coming into force of this AGREEMENT.

3.4 Under the sub-licenses granted by the LICENSEE in application of Article 2.4 of this AGREEMENT, the LICENSEE will pay to the LICENSOR: 40% of all payments received by it, lump sums, license fees, market values (in the case of cross licenses or exchanges) for all sub-licenses granted to THIRD PARTIES, excluding sums set out in Article 3.5. In no case may the amount receivable by the LICENSOR be less than that which it would have received by contracting directly with the THIRD PARTIES under the conditions agreed with the LICENSEE.

If these conditions make it impossible to conclude a SUB-LICENSE AGREEMENT for economic reasons, the LICENSOR and the LICENSEE will come to an AGREEMENT in a good faith for other conditions to apply to the SUB-LICENSE.

3.5 The sub-licensees shall be liable for the payment of the sum of 100,000 FRANCS ex tax, which sum shall be paid in total to the LICENSOR in respect of patent fees already paid. The sub-licensees must also pay the sum of 50,000 FRANCS ex tax each year, this sum being paid to the LICENSOR in respect of patent fees.

If these conditions make it impossible to conclude a SUB-LICENSE AGREEMENT for economic reasons, the LICENSOR and the LICENSEE will come to an AGREEMENT in a good faith for other conditions to apply to the SUB-LICENSE.

ARTICLE 4: PAYMENT OF LICENSE FEES

4.1 The payment of the license fees due under this AGREEMENT shall be made sixty (60) days after the end of each calendar half-year for the amount corresponding to the sales or sub-license payments for that half-year.

4.2 All payments due from the LICENSEE under this AGREEMENT shall be made by direct bank transfer to the account notified to it by the LICENSOR. All bank charges relating to the said payments shall be the liability of the LICENSEE up until the payments are made to the account of the LICENSOR.

4.3 For the purposes of this AGREEMENT, license fees relating to the NET INCOME paid in a currency other than the French Franc or the Euro must be converted at the average rate of exchange on the last but one Wednesday of the month preceding the month of invoicing, as published by the Banque de France.

4.4 The sums paid to the LICENSOR shall remain its property under all circumstances. VAT shall be invoiced in addition, at the applicable rate, and paid by the LICENSEE.

4.5 Any withholding tax payable by the LICENSEE on the license fees due under this AGREEMENT shall be deducted from the license fees due for the relevant country. The LICENSEE must obtain and keep at the disposal of the LICENSOR proof of payment of such withholding tax. The LICENSEE must assist the LICENSOR to avoid paying double taxation and will on request provide it with any necessary document for this purpose.

4.6 In the case of late payment, the sums due to the LICENSOR shall be increased by a penalty equal to one and a half time the legal rate of interest.

ARTICLE 5: ESTABLISHMENT OF ACCOUNTS

5.1 At the time of payment, the LICENSEE will provide the LICENSOR with a report showing the accounts relating to the license fees. This report will show separate accounts for each country in the TERRITORY and for the relevant period for each AGREEMENT PATENT, the number of LICENSED PRODUCTS sold along with their trade names and the type of PROVISION OF SERVICES carried out, the NET INCOME achieved as well as the license fees due. If no license fee is due, a report shall be provided to that effect. The above-mentioned reports shall be certified as complying by one of the Licensee's managers duly authorized for that purpose. The same obligations apply to the LICENSEE for LICENSED PRODUCTS and PROVISIONS OF SERVICES sold by a sub -licensee, the above-mentioned reports shall, if necessary, be detailed sub-licensee-by-sub-licensee.

5.2 The LICENSEE shall keep separate and detailed accounts so as to allow the calculation and verification of the amount of the license fees due to the LICENSOR under this AGREEMENT. The LICENSOR shall be authorized for the duration of this AGREEMENT plus a further period of three years to carry out an examination, at its expense, of the Licensee's accounts and those of the sub-licensees performed by an independent qualified accountant, chosen by the LICENSOR and approved by the LICENSEE, or in the absence of AGREEMENT by the *Président du Tribunal de Grande Instance de Paris*. The accountant's task will be solely to calculate the license fees. This is exercisable for a maximum period of five years preceding such examination.

In the case of adjustment, the costs of the examination shall be the liability of the LICENSEE from the date when the sums owed by the LICENSEE to the LICENSOR as noted by the accountant shall exceed 5 % of the total sums actually received by the LICENSOR.

ARTICLE 6: WARRANTIES

6.1 The LICENSOR declares and warrants the LICENSEE:

- that the AGREEMENT PATENTS actually exist;
- that he is fully authorized to grant the LICENSE that is the subject of this AGREEMENT.

6.2 The unknown factors, risks and dangers linked to the use of the AGREEMENT PATENTS, in particular the faults that it could conceal or the eviction, with the exception of evictions that are solely attributable to the LICENSOR, which they can demonstrate, shall be the sole responsibility of the LICENSEE who accepts them.

Consequently, the LICENSOR declines any explicit or implicit responsibility towards the LICENSEE, their legal successors, transferees for any direct, indirect or special damages, in particular any operating losses, interruption of activity or lost profits.

The LICENSEE is prevented from having any redress including activating any guarantees and is forbidden from subrogating a THIRD PARTY in its rights of redress against the LICENSOR, its managers, its directors, its employees, its agents, as compensation for any damages that may arise during the implementation or not of the AGREEMENT PATENTS.

6.3 Without prejudice to what is mentioned in Article 6.1 above the LICENSOR does not provide any warranties, whether express or implicit, pertaining to the AGREEMENT PATENTS, in particular regarding their usefulness, their harmlessness or adaptation for any purpose. The LICENSOR does not warrant, either expressly or implicitly, that the use of the AGREEMENT PATENTS as well as the manufacture, sale, use, import,

export and the ownership of the LICENSED PRODUCTS do not breach any patents (other than the AGREEMENT PATENTS), exclusive rights or ownership rights of a THIRD PARTY. It is nevertheless agreed that if proceedings are instituted against the LICENSEE or one of their sub-licensees by a THIRD PARTY which is opposed to a patent that opposes the free use of the LICENSED PRODUCTS or LICENSED PROCESS, the LICENSEE will be authorized to deduct 50% of the amount of the fees that he has paid for his defense or that of his sub-license, the duties and fees defined in paragraphs 3.2 and 3.4. Any possible damages that may be allocated to the LICENSEE at the end of the procedure shall firstly be granted to the LICENSOR up to the amount of the fees deducted for the legal proceedings, the balance shall be irrevocably claimed by the LICENSEE..

6.4 The LICENSEE is the sole party responsible for ensuring that the LICENSED PRODUCTS comply with the applicable laws and regulations, in particular those pertaining to ethics, the treatment of animals and genetically modified organisms.

6.5 This Article 6 shall be applicable notwithstanding the expiration or termination of this AGREEMENT.

ARTICLE 7: INFRINGEMENT

7.1 The LICENSOR and the LICENSEE shall notify one another as soon as they become aware of any infringement of the AGREEMENT PATENTS by a THIRD PARTY. They shall supply one another with all items available to them in order to examine the nature and extent of this.

7.2 If one of the Parties believes that the observed infringement is liable significantly to disrupt the LICENSEE'S use of the AGREEMENT PATENTS, they shall approach the other Party in order to discuss the most appropriate measures in order to bring the infringement to an end.

7.3 If the Parties decide, by joint agreement, that they shall initiate legal proceedings against the THIRD PARTY they shall determine if these legal proceedings should be initiate jointly. The proceedings shall be dealt with jointly. For any issues pertaining to the protection of the AGREEMENT PATENTS, the LICENSOR shall be nominated as the "leader" and shall act following consultation with the LICENSEE and shall take account of any reasonable comments made by the latter. For any matters pertaining to the protection of the LICENSEE'S commercial interests, in particular the assessment of their damages, the latter shall be nominated as "leader" and shall act following consultation with the LICENSOR and shall take account of any reasonable comments made by the latter.

The Parties to the proceedings shall ascertain the fees to be paid between them in advance. The indemnities that may be awarded by the courts to both parties to the AGREEMENT shall be shared between them in the same proportion as their respective external costs incurred in the course of these legal proceedings

7.4 If the LICENSEE would like to initiate legal proceedings and the LICENSOR does not wish to, the LICENSEE may, after having given formal notice to the LICENSOR for which no response has been received, pursue action at its own initiative and in its own name. The fees for such proceedings shall be payable by the sole LICENSEE. The awards, including any possible damages of a punitive nature, shall be irrevocably acquired by the LICENSEE.

It is, however, agreed that after deducting external costs incurred by the LICENSEE for successfully win the legal proceedings, the indemnities, to the exclusion of indemnities of a punitive nature, allocated to LICENSEE shall be included in the NET INCOME and shall be subject to payment of royalty to the LICENSOR at the applicable rate in accordance with this AGREEMENT.

It is furthermore agreed that the LICENSOR reserves the right to intervene at their cost and risk.

7.5 If the LICENSOR wishes to initiate legal proceedings and the LICENSEE does not wish to, the LICENSOR may then pursue matters at its own initiative and in its own name. The fees for such proceedings shall be payable by the sole LICENSOR. The awards, including any possible damages of a punitive nature, shall be irrevocably and wholly acquired by the LICENSOR.

This provision does not however prevent the LICENSEE from taking part in proceedings, at its expense, in order to obtain compensation rightly due for damages.

7.6 If an action by the LICENSEE in accordance with Article 7.4 above must be declared to be inadmissible because of the plaintiffs inability to act or if it can reasonably be anticipated that the LICENSEE plans to take in accordance with Article 7.4 above, is declared inadmissible for this reason, the LICENSOR shall then provide the LICENSEE upon request and in a timely manner, all powers required for them to act in the name and on behalf of the LICENSOR.

The costs pertaining to this action shall be payable by the LICENSEE. The indemnities that may be allocated at the end of the proceedings shall be split as set out in Article 7.4 above.

7.7 The Parties jointly undertake to supply all documents, powers of attorney and signatures that may be required in order to carry out their actions successfully in accordance with the terms of this Article.

ARTICLE 8: CONFIDENTIALITY AND EXCHANGE OF INFORMATION

8.1 For the duration of this AGREEMENT, each Party undertakes to notify the other Party promptly of any information they may obtain or develop relating to the harmlessness and/or usefulness of any LICENSED PRODUCT in particular any information regarding any serious effect which one can reasonably believe is linked to the use of the LICENSED PRODUCT.

8.2 For the duration of this AGREEMENT plus a period of five years and regardless of it being terminated prematurely, the Parties cannot disclose, directly or indirectly, any confidential information received by the other Party within the framework of this AGREEMENT or its preparation, without prior consent of the other Party. The information are deemed confidential if they are disclosed:

- in any written form (on paper or electronically) and clearly designated as being confidential; or
- in verbal form, insofar as its confidentiality is confirmed in writing within 30 calendar days; or
- in the form of samples, specimens or other biological materials that are formally designated as being confidential at the latest 30 days after they have been supplied.

The Parties are only authorized to disclose confidential information if it is directly and strictly necessary: a) to the development and use of the LICENSED PRODUCTS or the LICENSED PROCESS; b) to obtain administrative authorizations for use; c) in order to comply with and respond to the requirements of the governmental authorities.

In such an instance, the Parties must take reasonable measures to ensure that any unauthorized use or disclosure shall be carried out by individuals to whom the confidential information will be entrusted and specifically drawing their attention to the confidential nature of this information. With regards to its own staff, each Party shall only be authorized to entrust the said information to members linked to them by a confidentiality obligation that is at least equivalent to the effects of the confidentiality obligation set out in this Article.

The confidentiality obligation in this Article shall not apply to information a) that is or becomes accessible to the public, or b) that is already in the possession of the recipient Party at the time it is entrusted to them by the other Party, the onus being on them to provide proof of this or c) which shall subsequently, excluding any contractual breach, be entrusted to the recipient Party by a THIRD PARTY not belonging to the public authority, the onus being on the recipient party to provide proof of this or d) which is not independently developed by the employees of the recipient Party which has not been advised of the said information in accordance with this AGREEMENT, the onus being on them to provide proof of this.

8.3 Any public announcement or disclosure regarding the terms of this AGREEMENT may not be made, directly or indirectly, by any of the Parties, except where required by Law, without first having obtained the written AGREEMENT from the other Party on the principle and content of this disclosure or announcement.

ARTICLE 9: ENTRY INTO FORCE AND TERM

9.1 This AGREEMENT shall be deemed applicable from the AGREEMENT DATE as indicated at the foot of this document and must be read and interpreted accordingly. Unless it has been terminated in compliance with the provisions set forth below and without prejudice to the provisions in Articles 6, 8 and 11 of this AGREEMENT, the latter shall remain in force until the expiry or invalidation of the last AGREEMENT PATENT.

9.2 The expiry of the AGREEMENT upon expiration of the last AGREEMENT PATENT in compliance with this Article 9.1 will not prohibit the LICENSEE from continuing to making, sell and use the LICENSED PRODUCTS and PROVISIONS OF SERVICES without having to pay any subsequent fees.

9.3 If one of the parties is in breach in their performance or one or more of the obligations imposed on it by this AGREEMENT and if it fails to rectify the breach within 90 days following receipt of a notification from the other Party concerning the said breach, the other Party will be authorized to terminate this AGREEMENT lawfully, at the fault of the Party in breach and at any time, merely upon delivery of a notification to the party in breach. This shall be without prejudice to the other rights and remedies to which the injured Party may be entitled by virtue of the breach, in particular the right to compensation for damages to which this infringement and this termination give rise.

9.4 The LICENSEE acknowledges the LICENSOR's right to terminate this AGREEMENT immediately by simply sending notice of termination if the LICENSEE contests the validity of all or any of the AGREEMENT PATENTS before a court or patents office.

9.5 Either Party may terminate this AGREEMENT without fault if judicial proceedings are instituted against the other Party, once the trustee has expressly or implicitly relinquished continuing with the AGREEMENT, provided that a notification is sent by the Party wishing to terminate this AGREEMENT to the other Party sixty (60) days before the said termination comes into effect.

9.6 At the end of the AGREEMENT or in the case of premature termination of the same for a reason other than termination due to fault on the part of the LICENSOR, the LICENSOR shall retain any sums it has received on the basis of this AGREEMENT, while the LICENSEE shall remain bound to pay all sums due upon expiry of this AGREEMENT and on the basis of any use thereof which has not been paid for.

9.7 The anticipated termination of this AGREEMENT shall lead to the termination of the LICENSE, after which the LICENSEE will be prohibited from using the AGREEMENT PATENTS.

9.8 The LICENSEE may terminate the AGREEMENT simply by notice without owing the LICENSOR any compensation. Such termination may be effected in particular if the AGREEMENT PATENTS are not issued or not issued with a satisfactory scope either in geographical or technical terms or if the use of the license is not economically viable. In the case of termination, the LICENSOR shall substitute the LICENSEE in all the sub-licensing AGREEMENTs signed by the latter. Furthermore, the LICENSEE will not owe any of the sums set forth in Articles 3.1 to 3.5 and 10.1 as of the date of termination.

ARTICLE 10: PATENTS

10.1 Subject to the provisions set forth in Article 10.2 below, the LICENSOR shall ensure that the AGREEMENT PATENTS are issued and maintained. The LICENSOR shall regularly inform the LICENSEE of the state of proceedings relating to the issuances of the AGREEMENT PATENTS and shall consult it in all decisions that are likely to affect the existence or the scope of the monopoly provided by the AGREEMENT PATENTS. The LICENSOR shall consult the LICENSEE in particular concerning the decisions to extend the priority application to foreign countries and concerning the defense in the case of opposition or interferences. The LICENSOR shall provide the LICENSEE with copies of the main communications exchanged with its patents counsels and those exchanged with the patent offices.

The LICENSEE shall reimburse the LICENSOR, subject to having been consulted in advance on the timeliness of the commitment and having received the relevant supporting documents, for a 20% share of the direct expenses incurred by the latter from the date of signature of this AGREEMENT for having the AGREEMENT PATENTS issued and maintained for the countries encompassed by the Munich Convention, the US, Canada and Japan. The said share may not be lower than 50,000 Francs ex tax, per year.

For countries not mentioned above and in respect of which the LICENSEE has requested industrial property protection, the LICENSEE shall reimburse the LICENSOR, subject to having been consulted in advance on the timeliness of the commitment and having received the relevant supporting documents, for all of the direct expenses incurred by the latter for having the AGREEMENT PATENTS issued and maintained. The LICENSEE may at any time—subject to a notice period of six months- cease to pay the above mentioned expenses without constituting a contractual breach, in which case the LICENSOR will be released from its obligations to maintain the AGREEMENT PATENTS.

10.2 In the event that the LICENSOR should wish to abandon a AGREEMENT PATENT, it shall inform the LICENSEE, who may at its own expense maintain the said AGREEMENT PATENT. In such a case, it will be understood that ownership of the LICENSOR'S rights will be transferred to the LICENSEE and that the latter will cease to owe the LICENSOR any fees in respect of the country concerned.

The information mentioned above shall be sent by registered letter with confirmation of receipt and shall contain all the relevant information in the LICENSOR's possession that will facilitate an assessment of the usefulness of maintaining the AGREEMENT PATENTS which the LICENSOR wishes to abandon. The LICENSEE will have thirty (30) days upon receipt of this information for submitting its decision to the LICENSOR on maintaining the AGREEMENT PATENTS of its choice. After this deadline or in the absence of a reply by the LICENSEE by the expiry of the deadline, the LICENSOR will be free to abandon said AGREEMENT PATENT.

ARTICLE 11: TRADE MARKS, TRADE NAMES AND PRODUCT MARKING

None of the provisions of the AGREEMENT can lead to the right to use, for any promotional activity, the name, trade name, trade mark or any other designation or distinctive mark of the other party, including the above in contracted or abridged form or through imitation, without the express written consent of the other party.

The LICENSEE may affix, or have affixed, on every LICENSED PRODUCT, the number of the AGREEMENT PATENT, whenever the legislation of a country so requires as well as the statement "sub-license from the Institut Pasteur".

This Article 11 shall continue to apply notwithstanding the expiration or termination of this AGREEMENT.

ARTICLE 12: MISCELLANEOUS

12. 1 This document and its appendices and also any document referred to herein shall bind the parties and their respective successors in law. It may only be altered by way of an amendment hereto duly signed by an authorized representative of each party or their successors in law, with the exception of the appendices, which may be unilaterally updated, provided the AGREEMENT so provides.

12.2 This AGREEMENT is accepted by the LICENSEE having regard to its shareholding as of the date of signature indicated at the bottom. In the event of a change of control—i.e. 50% or more of the voting rights benefiting an INDUSTRIAL GROUP the LICENSOR shall be entitled to cancel it within 60 days of the effective date of this change. This AGREEMENT cannot be transferred or assigned to a THIRD PARTY by one of the parties without the prior AGREEMENT of the other party, unless it is assigned or assigned jointly with the transfer or assignment of all of the activities of the assigning party. Any proposed assignment or transfer shall be notified to the other party by the party proposing such an assignment or such transfer at least sixty (60) days before its execution. In any case, the assignor will be the guarantor with respect to the other party of compliance with the terms of this AGREEMENT by the assignee for the five years following the assignment.

12.3 The titles and paragraphs of this AGREEMENT have been arranged on the grounds of convenience. In no circumstances can they be used for the purpose of interpreting the terms of the AGREEMENT. Unless specifically provided for otherwise, any reference to an Article includes all the sub-divisions of the said Article; a reference to one (several) of the given subdivision(s) does not cover the other subdivisions not referred to.

12.4 Any notification or communication authorized or required within the context of this AGREEMENT shall be deemed as duly accomplished, provided it has been carried out on a postage paid basis by registered letter with acknowledgement of receipt or by any other means of equivalent function to the following addresses:

For the LICENSOR: Institut Pasteur
Direction de la Valorisation et des Partenariats Industriels
25, rue du Dr ROUX
75724 PARIS cedex 15

For the LICENSEE: Cellectis S.A.
28, rue du Dr ROUX
75724 PARIS cedex 15

Any notification shall be deemed to have been effected on the date on which it is actually received by its addressee unless the date of receipt is a public holiday in which case it will be deemed to have been received on the first working day following the public holiday.

12.5 Should some provision of this AGREEMENT prove to be contrary to law, and thus null and void, the validity of this AGREEMENT will not be affected in consequence and the parties shall meet in order to replace the invalid provision by a lawful provision of equivalent effect. In the absence of AGREEMENT being reached on the wording of such a provision and if it is manifest that the importance of the invalid clause is such that, in its absence, the parties would have refrained from entering into the AGREEMENT, the AGREEMENT shall cease at the initiative of one or other of the parties subject to compliance with formalities equivalent to those laid down in Section 9.3 above.

12.6 The waiver by one or other of the parties of the execution of any of the provisions of this AGREEMENT does not, in any way, incorporate or imply any waiver in respect of the implementation of the other obligations. In any case, the fact that one or other of the parties abstains from calling for the execution of an obligation, which the said party may demand, cannot be interpreted as a waiver on its part of the execution of the said obligation, regardless of the duration of its abstention.

ARTICLE 13: DISPUTES- LAW- REGISTRATION

This AGREEMENT will be subject to French law.

ln the event of a difficulty arising between the parties in relation to the interpretation or execution of this AGREEMENT, the parties shall attempt to settle their difference on an amicable basis. In the event of the disagreement persisting, the Paris Courts (Tribunaux de Paris) shall have exclusive competence.

If the dispute affects fees or any sum of money in compensation for the LICENSE, this sum shall remain blocked for the duration of the dispute in an interest-bearing account, opened for this purpose by the party from whom the payment is claimed.

Full powers shall be given to the holder of a copy of this AGREEMENT for the purpose of procuring its fiscal registration and its registration in the national patent registers.

Made in Paris, in four (4) original copies. [Handwritten text: 19 June 2000]

[Signature] [Signature]

CELLECTIS INSTITUT PASTEUR

Exhibit 4.1.1

AMENDMENT NO. 1 TO THE PATENT LICENSE AGREEMENT NO. C-00061901

BETWEEN

L'Institut Pasteur, a public interest foundation, 25, rue du Docteur Roux, 75015 Paris, represented by Mr. Jean Castex, adjunct General Manager for administration and finance, and by Mr. Christian POLICARD, Director of Business Development and Industrial Partnerships.

Hereafter referred to as "IP" or the "LICENSOR", acting both on its own behalf and on behalf of:

- **Université Pierre et Marie Curie**,
  4, place de Jussieu,
  75252 Paris Cedex 05,
  Hereafter referred to as "UPMC",
- **Le Centre National de la Recherche Scientifique**,
  3, rue Michel-Ange,
  75794 Paris Cedex 16
  Hereafter referred to as "CNRS".

Jointly also referred to as the "LICENSOR",

Party of the first part,

AND:

CELLECTIS, a public limited company with a capital of 123,463.48 euros, headquartered at 28, rue du Docteur Roux, 75724 Paris cedex 15, represented by Mr. André Choulika, acting as Chief Executive Officer

Hereafter referred to as "CELLECTIS" or the "LICENSEE",

Party of the second part.

The LICENSOR and LICENSEE are hereafter referred to as the "Parties".

RECITALS:

The parties signed a patent and patent application license agreement on June 19, 2000 related to the gene of the I-*Sce* I enzyme, the expression of the I-*Sce* I enzyme and its use.

Article 2.6 of the agreement stipulates that the IMPROVEMENTS achieved by the LICENSOR be granted under an exclusive license to the LICENSEE in accordance with the terms and restrictions of the contract, for no additional charge.

The LICENSOR has now achieved a technological improvement which it wishes in this amendment to grant to the Licensee.

It is thus agreed as follows:

ARTICLE 1

The Parties agree to add to Article 1.2, "AGREEMENT PATENTS", U.S. patent application no. US 275,638 filed on March 15, 2001 and titled "Characterization of the I-SpomI Endonuclease from fission yeast", including the PCT extension of this application, published under no. WO 02/074965, the patent applications and patents resulting therefrom, any patent applications claiming priority over one of the aforementioned applications, any divisional applications, any continuing applications or any applications for re-issue filed on the basis of the aforementioned patents and patent applications.

The LICENSOR agrees to provide all KNOW-HOW pertaining thereto, notably the biological material containing the coding sequences for endonuclease I-SpomI and the sequences corresponding to the cleavage site for endonuclease I-SpomI.

ARTICLE 2

The other provisions of the AGREEMENT remain unchanged and continue to apply between the Parties.

This amendment shall enter into force on the date of filing of the priority patent application on March 15, 2001.

Signed in Paris on [Handwritten text: December 20, 2002]
In 2 original copies.

CELLECTIS **INSTITUT PASTEUR**

Exhibit 4.1.2

AMENDMENT NO. 2 TO THE PATENT LICENSE AGREEMENT NO. C-00061901

BETWEEN:

L'Institut Pasteur, a public interest foundation, 25, rue du Docteur Roux, 75015 Paris, represented by Mr. Jean Castex, adjunct General Manager for administration and finance, and by Mr. Christian POLICARD, Director of Business Development and Industrial Partnerships.

Hereafter referred to as "IP" or the "LICENSOR", acting both on its own behalf and on behalf of:

- **Université Pierre et Marie Curie**,
  4, place de Jussieu,
  75252 Paris cedex 05,
  Hereafter referred to as "UPMC",
- **Institut Curie,**
  26, rue d'Ulm,
  75248 Paris cedex 05,
  Hereafter referred to as "IC",
- **Le Centre National de la Recherche Scientifique**,
  3, rue Michel-Ange,
  75794 Paris cedex 16
  Hereafter referred to as "CNRS".

Jointly also referred to as the "LICENSOR",

Party of the first part,

AND:

CELLECTIS, a public limited company with a capital of 122,363.47 euros, headquartered at 28, rue du Docteur Roux, 75724 Paris cedex 15, represented by Mr. André Choulika, acting as Chief Executive Officer

Hereafter referred to as "CELLECTIS" or the "LICENSEE",

Party of the second part.

The LICENSOR and LICENSEE are hereafter referred to as the "Parties".

RECITALS:

IP is the co-owner, along with UPMC, IC and CNRS, of patents and patent applications related to the gene of the I-Sce I enzyme, the expression of the I-S*ce* I enzyme and its use.

UPMC, IC and CNRS have empowered IP, who accepts this, to represent them and negotiate in their name any license agreement with CELLECTIS and any amendments thereto.

On June 19, 2000, the Parties signed licensing agreement no. C-00061901 (hereafter "the AGREEMENT") in which the LICENSOR grants the LICENSEE operation rights to the patents and patent applications mentioned above.

Following discussions and exchanges between the Parties, they determined that it would be useful to modify the provisions of the AGREEMENT.

It is thus agreed as follows:

ARTICLE 1

1.1 The Parties agree that the words defined in Article 1, "DEFINITIONS", of the AGREEMENT, as they are used in this amendment, have the same definitions as in the AGREEMENT and form an integral part of this amendment.

1.2 The following definitions apply for the purposes of this amendment, it being understood when permitted by context that the singular shall be considered to include the plural and vice versa:

1.2.1 By "*I-SceI and/or I-Spom I*" the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061901 signed between the Parties.

1.2.2 By "PGN", the Parties agree to mean the technologies claimed by AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061906 signed between the Parties.

1.2.3 By "Mulligan", the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061905 signed between the Parties.

1.2.4 For the sole purposes of Articles 3.4 and 3.5 as modified by this amendment, the word "TOOL" will have the definition stated below:

By "Tool", the Parties agree to mean the use by the Licensee's sub-licensee of the LICENSED PROCESSES or LICENSED PRODUCTS for internal purposes or as part of the research or development process conducted by the sub-licensee.

ARTICLE 2

Article 2.4 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of that same article:

"2.4 The LICENSEE may only grant sub-licenses to third parties for the rights which it receives under this Agreement with the prior AGREEMENT of the LICENSOR. If the LICENSOR does not communicate its disagreement within twenty-one days from the notification of a sub-licensing project, it shall be considered to have agreed.

The LICENSOR may refuse to grant prior agreement for a sub-license only for serious cause.

The following would constitute serious cause justifying IP's refusal to agree: a sub-licensing agreement between the LICENSEE and a THIRD PARTY containing provisions which are contrary to the ethics, image or intellectual property of the LICENSOR."

ARTICLE 3

Article 3.4 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of the same article:

"3.4.1 For sub-licenses concerning a LICENSED PATENT for the use of TOOLS granted by the Licensee under Article 2.4 of this Agreement, the LICENSEE will pay the LICENSOR 40% of any compensation it receives, lump sums, royalties, market values (for cross-licensing or exchanges) for all sub-licenses granted to THIRD PARTIES."

3.4.2 For sub-licenses concerning LICENSED PATENT other than those mentioned in Article 3.4.1 above, granted by the Licensee under Article 2.4 of this AGREEMENT, the LICENSEE will pay to the LICENSOR 40% of any compensation it receives, lump sums, royalties, market values (for cross-licensing or exchanges) for all sub-licenses granted to THIRD PARTIES, excluding the amounts stipulated in Article 3.5, without the amount of the royalties owed to the LICENSOR being less than:

- 2% of the net revenues of the sub-licensee for the *ISCEI and/or I-Spom I* technologies, Mulligan and PGN granted together to the same sub-licensee
- 1% of the net revenues of the sub-licensee for *ISCEI and/or I-Spom I* technologies granted alone or with Mulligan to the same sub-licensee.

ARTICLE 4

Article 3.5 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of the same article:

"3.5 The sub-licensees of the LICENSEE, falling into the category of sub-licensees under article 3.4.2, for each sub-licensing agreement signed, will be required to pay an amount of FIFTEEN THOUSAND TWO HUNDRED AND FORTY THREE EUROS EX TAX (15,243 EUROS ex tax) which will be passed on in full to the LICENSOR as patent fees already incurred. These same sub-licensees must also pay an amount of SEVEN THOUSAND SIX HUNDRED TWENTY ONE EUROS EX TAX (7,621 EUROS ex tax) each year, which will be passed on to the Licensor as patent fees.

The LICENSEE's sub-licensees, falling into the category of sub-licensees under article 3.4.1, will not be required to pay any amount as patent fees.

ARTICLE 5

The last sentence of article 10.1 par. 2 § is modified as follows:

"This share must not be less than FIFTEEN THOUSAND TWO HUNDRED FORTY THREE EUROS EX TAX (15,243 EUROS ex tax) per year."

ARTICLE 6

Article 2.6 of the licensing Agreement is modified by the following provisions, which supersede all previous provisions of the same article:

"The IMPROVEMENTS achieved by the LICENSOR are exclusively licensed to the LICENSEE for a period of 5 (five) years following the date of signature of Amendment no. 2 to this AGREEMENT.

"The LICENSOR will inform the LICENSEE of the existence and contents of the IMPROVEMENTS.

"Following the 5 (five) year period, the Parties will come together to mutually agree on the terms of access to the IMPROVEMENTS."

ARTICLE 7

The last sentence of article 1.5 of the Agreement is modified as follows:

"Patents filed to protect IMPROVEMENTS will be included in the AGREEMENT PATENTS in accordance with the provisions of article 2.6 of this AGREEMENT."

ARTICLE 8

This amendment will enter into force on the date of its signature.

The Agreement's other provisions remain unchanged and in force between the Parties.

Signed in Paris on [Handwritten text: September 8, 2003]
in 2 original copies.

CELLECTIS **INSTITUT PASTEUR**

PATENT LICENSE AGREEMENT n° C-00061906

BETWEEN:

L'Institut Pasteur,
Foundation recognized as having public utility,
25-28, rue du Docteur Roux,
75724 Paris cedex 15,
represented by Mr. Christian POLICARD,
Director of Development and Industrial Partnerships.

Hereafter referred to as "IP" or the "LICENSOR",

Party of the first part

AND:

CELLECTIS

Public limited company with capital of 250,000 Francs
with its registered office at 3, rue François Mouthon, Paris 75015
represented by Mr. André Choulika, acting in the capacity of Chairman and Managing Director

Hereafter referred to as the "LICENSEE",

Party of the second part.

The LICENSOR and the LICENSEE are hereafter referred to as the "Parties".

RECITALS:

IP is owner of patents and patent applications relating to a method of homologous recombination. IP has already granted exploitation rights for these patents and patent application to third parties for specific applications and now wishes to share this technology with a new industrial partner.

CELLECTIS is a recently-created company, which has as its activity the domain of genomics and anti-viral therapy, the production of genomically-modified organisms, with respect to offering services to third parties, the sale of molecular biology products and reagents, the development of new therapeutic strategies, alone or in cooperation with pharmaceutical laboratories.

CELLECTIS wishes to be able to develop, within the context of its technological platform, the LICENSOR's patents and patent applications above whilst respecting the rights already granted to third parties.

It has therefore been agreed as follows between the Parties:

ARTICLE 1: DEFINITIONS

The following definitions apply for the purposes of the present AGREEMENT, it being understood that one the one had, the singular is understood, when the context so permits, as the plural, and inversely, and on the other hand, masculine is understood as feminine in the same conditions.

1.1 AFFILIATE

"Affiliate" is understood as any company, firm, group of persons or other entity, which de *jure* ou *de facto,* directly or indirectly, controls another entity or is controlled by it, or is under common control with it, control being understood as holding over fifty percent (50%) of the voting shares of a company (or any other percentage that a foreign company is authorised to hold in a third party national company with respect to the legislation of the latter's country) or as having decision-making power, in the case of a company without legal status.

1.2 AGREEMENT PATENTS

"AGREEMENT PATENTS" are understood as:

The French patents application serial No. 89 03630 filed on 20 March 1989, published under No. 2 646 438 and titled "*procédé de remplacement spécifique d'une copie d'un gène present dans le genome receveur par l'intégration d'un gène different de celui où se fait l'intégration*", the PCT extension of the application, published under the No. WO 90 11 354 and any foreign patent applications, division applications, continuation applications, any reissue application, made on the basis of the patent applications cited above, and the corresponding patents issued which shall be automatically included in APPENDIX A to the present AGREEMENT.

1.3 FIELD

IP has already granted to THIRD PARTIES an exclusive license under the AGREEMENT PATENTS in the field of homologous recombination applied to cytokines genes, to hormones and to human growth factors.

Consequently, the FIELD of this AGREEMENT concerns the field of homologous recombination applied to any genes excluding cytokines, hormones and human growth factors.

1.4 LICENSE

"LICENSE" is understood as the grant by the LICENSOR to the LICENSEE of exploitation rights for the AGREEMENT PATENTS in accordance with the provisions of the present document (the "AGREEMENT") in particular as covered in Article 2.

1.5 IMPROVEMENT

"IMPROVEMENT" is understood as any improvements or innovations, whether patentable or not, made to the LICENSED PRODUCTS and/or LICENSED PROCESS by the LICENSOR, and depending on the AGREEMENT PATENTS. The IMPROVEMENTS constitute, with the AGREEMENT PATENTS, the licensed technology. The patents filed to protect IMPROVEMENTS shall be included as they are filed in the AGREEMENT PATENTS.

1.6 LICENSEE

The "LICENSEE" is understood as the LICENSEE as defined above and all its AFFILIATES taken collectively; the LICENSEE is authorized to extend the benefits of the rights conferred upon it by the present AGREEMENT to its AFFILIATES, as long as it itself continues to assume liability for respect of the obligations conferred upon its by the present AGREEMENT, both for itself and its AFFILIATES.

1.7 PROVISION OF SERVICES

"PROVISION OF SERVICES" is understood as the performance by the LICENSEE in favour of a THIRD PARTY of provision of services, implementing any LICENSED PRODUCT or LICENSED PROCESS.

1.8 LICENSED PRODUCT

"LICENSED PRODUCT" is understood as any composition or any product, the exploitation of which would constitute, without a license, an infringement of the AGREEMENT PATENTS.

1.9 LICENSED PROCESS

"LICENSED PROCESS" is understood as any process, the implementation of which would constitute, without a license, an infringement of the AGREEMENT PATENTS.

1.10 NET INCOME

"NET INCOME" is understood as the gross income, royalties (or market value corresponding to any form of non-monetary remuneration) which the LICENSEE accepts to receive in compensation for PROVISIONS OF SERVICES or LICENSED PRODUCTS which the LICENSEE receives from SALES or PROVISION OF

SERVICES relating to the LICENSED PRODUCTS or LICENSED PROCESSES, or even in compensation for R&D SOLD, with deductions for the elements below insofar as the corresponding sums are paid or allocated and form part of the price invoiced:

i) discounts or reductions for quantity actually granted and deducted in proportionate shares in accordance with the normal practices of the profession;

ii) credits granted for the LICENSED PRODUCTS returned or refused within the appropriate periods by clients;

iii) taxes really paid by the LICENSEE relating to the sale or delivery of the LICENSED PRODUCTS;

iv) subsidy or payment by a THIRD PARTY of the costs relating to personnel, supplies and travel incurred for the completion of the research program.

The definition above may not be interpreted in such a manner to include sums collected by the LICENSEE by virtue of research collaborations agreements with THIRD PARTIES on R&D SOLD if these agreements do not involved the implementation of the AGREEMENT PATENTS, in which case, the sums collected shall be included in the NET INCOME.

1.11 R&D SOLD

"R&D SOLD" is understood as a research AGREEMENT with transfer to a THIRD PARTY of the exploitation rights for the LICENSED PRODUCTS or LICENSED PROCESS. The following in particular are excluded from R&D SOLD:

• research agreement without transfer of the exploitation rights for LICENSED PRODUCT or LICENSED PROCESS.

• research agreement subsidized by a national state or international organization, or charitable foundation.

1.12 KNOW-HOW

"KNOW-HOW'' is understood as all knowledge and data, including technical, strategic and commercial information, methods, supplies and products including the organisms and micro-organisms belonging to the LICENSOR, patented or not patented, and which it holds before signature of the AGREEMENT or which it develops or acquires after signature of the present AGREEMENT. The list of KNOW HOW is in APPENDIX B to the present AGREEMENT.

1.13 TERRITORY

"TERRITORY" is understood as the whole world.

1.14 THIRD PARTIES

"THIRD PARTIES" are understood as any entity other than the parties to the present AGREEMENT and their AFFILIATES.

1.15 SALE

"SALE" is understood as the transfer by the LICENSEE to a THIRD PARTY of any property or disposal right for the LICENSED PRODUCTS. A SALE becomes effective from when it is invoiced by the LICENSEE.

1.16 INDUSTRIAL GROUP

"INDUSTRIAL GROUP" is understood as any company or group of companies exercising an economic activity which products material assets by the transformation and implementation of raw materials into a finished or semi-finished product.

ARTICLE 2: LICENSE GRANT

2.1 The LICENSOR grants, subject to the reservations and conditions stipulated in the present document, to the LICENSEE, which accepts, an exclusive license under the AGREEMENT PATENTS to make, have made, use and sell the LICENSED PRODUCTS and/or implement or have implemented the LICENSED PROCESS in the TERRITORY in the FIELD during the term of the present AGREEMENT.

2.2 The LICENSOR grants to the LICENSEE an immediate, complete and free access to the KNOW-HOW.

2.3 The LICENSEE may only grant sub-licenses for the rights it receives by virtue of the present AGREEMENT to any THIRD PARTY with the prior approval of the LICENSOR. If the LICENSOR does not indicate its disagreement within a period of one month from the date of notification of a planned sub-license, it shall be deemed to have given its approval.

2.4 The IMPROVEMENTS made by the LICENSOR are granted with an exclusive license to the LICENSEE according to the terms and restrictions of the present AGREEMENT and at no additional price.

The LICENSOR shall inform the LICENSEE of any patent it files in the FIELD after the present AGREEMENT takes effect, no later than one month after such a filing.

Consequently, the term exclusive is understood for the purposes of the present AGREEMENT as the LICENSOR being prohibited from exploiting or having exploited or granting a license or exploitation rights under the IMPROVEMENTS to a THIRD PARTY.

ARTICLE 3: CONSIDERATION

3.1 Under this AGREEMENT the LICENSEE will pay to the LICENSOR on the date of the third anniversary of the coming into force of this AGREEMENT a lump sum, non-reimbursable and non-deductible from future license fees, of 50,000 FRANCS ex tax.

3.2 Under this AGREEMENT the LICENSEE will pay to the LICENSOR license fees equal to 3% of the NET INCOME generated in the TERRITORY.

3.3 In reimbursement of the license fees already paid, the LICENSEE will pay to the

LICENSOR:

- The sum of 50,000 FRANCS ex tax, on the date of the first anniversary of the coming into force of this AGREEMENT,
- The sum of 100,000 FRANCS ex tax, on the date of the second anniversary of the coming into force of this AGREEMENT,
- The sum of 100,000 FRANCS ex tax on the date of the third anniversary of the coming into force of this AGREEMENT.

3.4 Under the sub-licenses granted by the LICENSEE in application of Article 2.4 of this AGREEMENT, the LICENSEE will pay to the LICENSOR: 40% of all payments received by it, lump sums, license fees, market values (in the case of cross licenses or exchanges) for all sub-licenses granted to THIRD PARTIES, excluding sums set out in Article 3.5. In no case may the amount receivable by the LICENSOR be less than that which it would have received by contracting directly with the THIRD PARTIES under the conditions agreed with the LICENSEE.

If these conditions make it impossible to conclude a SUB-LICENSE AGREEMENT for economic reasons, the LICENSOR and the LICENSEE will come to an AGREEMENT in a good faith for other conditions to apply to the SUB-LICENSE.

ARTICLE 4: PAYMENT OF LICENSE FEES

4.1 The payment of the license fees due under this AGREEMENT shall be made sixty (60) days after the end of each calendar half-year for the amount corresponding to the sales or sub-license payments for that half-year.

4.2 All payments due from the LICENSEE under this AGREEMENT shall be made by direct bank transfer to the account notified to it by the LICENSOR. All bank charges relating to the said payments shall be the liability of the LICENSEE up until the payments are made to the account of the LICENSOR.

4.3 For the purposes of this AGREEMENT, license fees relating to the NET INCOME paid in a currency other than the French Franc or the Euro must be converted at the average rate of exchange on the last but one Wednesday of the month preceding the month of invoicing, as published by the Banque de France.

4.4 The sums paid to the LICENSOR shall remain its property under all circumstances. VAT shall be invoiced in addition, at the applicable rate, and paid by the LICENSEE.

4.5 Any withholding tax payable by the LICENSEE on the license fees due under this AGREEMENT shall be deducted from the license fees due for the relevant country. The LICENSEE must obtain and keep at the disposal of the LICENSOR proof of payment of such withholding tax. The LICENSEE must assist the LICENSOR to avoid paying double taxation and will on request provide it with any necessary document for this purpose.

4.6 In the case of late payment, the sums due to the LICENSOR shall be increased by a penalty equal to one and a half time the legal rate of interest.

ARTICLE 5: ESTABLISHMENT OF ACCOUNTS

5.1 At the time of payment, the LICENSEE will provide the LICENSOR with a report showing the accounts relating to the license fees. This report will show separate accounts for each country in the TERRITORY and for the relevant period for each AGREEMENT PATENT, the number of LICENSED PRODUCTS sold along with their trade names and the type of PROVISION OF SERVICES carried out, the NET INCOME achieved as well as the license fees due. If no license fee is due, a report shall be provided to that effect. The above-mentioned reports shall be certified as complying by one of the Licensee's managers duly authorized for that purpose. The same obligations apply to the LICENSEE for LICENSED PRODUCTS and PROVISIONS OF SERVICES sold by a sub-licensee, the above-mentioned reports shall, if necessary, be detailed sub-licensee-by-sub-licensee.

5.2 The LICENSEE shall keep separate and detailed accounts so as to allow the calculation and verification of the amount of the license fees due to the LICENSOR under this AGREEMENT. The LICENSOR shall be authorized for the duration of this AGREEMENT plus a further period of three years to carry out an examination, at its expense, of the Licensee's accounts and those of the sub-licensees performed by an independent qualified accountant, chosen by the LICENSOR and approved by the LICENSEE, or in the absence of AGREEMENT by the *Président du Tribunal de Grande Instance de Paris*. The accountant's task will be solely to calculate the license fees. This is exercisable for a maximum period of five years preceding such examination.

In the case of adjustment, the costs of the examination shall be the liability of the LICENSEE from the date when the sums owed by the LICENSEE to the LICENSOR as noted by the accountant shall exceed 5 % of the total sums actually received by the LICENSOR.

ARTICLE 6: WARRANTIES

6.1 The LICENSOR declares and warrants the LICENSEE:

- that the AGREEMENT PATENTS actually exist;
- that he is fully authorized to grant the LICENSE that is the subject of this AGREEMENT.

6.2 The unknown factors, risks and dangers linked to the use of the AGREEMENT PATENTS, in particular the faults that it could conceal or the eviction, with the exception of evictions that are solely attributable to the LICENSOR, which they can demonstrate, shall be the sole responsibility of the LICENSEE who accepts them.

Consequently, the LICENSOR declines any explicit or implicit responsibility towards the LICENSEE, their legal successors, transferees for any direct, indirect or special damages, in particular any operating losses, interruption of activity or lost profits.

The LICENSEE is prevented from having any redress including activating any guarantees and is forbidden from subrogating a THIRD PARTY in its rights of redress against the LICENSOR, its managers, its directors, its employees, its agents, as compensation for any damages that may arise during the implementation or not of the AGREEMENT PATENTS.

6.3 Without prejudice to what is mentioned in Article 6.1 above the LICENSOR does not provide any warranties, whether express or implicit, pertaining to the AGREEMENT PATENTS, in particular regarding their usefulness, their harmlessness or adaptation for any purpose. The LICENSOR does not warrant, either expressly or implicitly, that the use of the AGREEMENT PATENTS as well as the manufacture, sale, use, import, export and the ownership of the LICENSED PRODUCTS do not breach any patents (other than the AGREEMENT PATENTS), exclusive rights or ownership rights of a THIRD PARTY. It is nevertheless agreed that if proceedings are instituted against the LICENSEE or one of their sub-licensees by a THIRD PARTY which is opposed to a patent that opposes the free use of the LICENSED PRODUCTS or LICENSED PROCESS, the LICENSOR will provide its assistance to the LICENSEE at LICENSOR's costs.

6.4 The LICENSEE is the sole party responsible for ensuring that the LICENSED PRODUCTS comply with the applicable laws and regulations, in particular those pertaining to ethics, the treatment of animals and genetically modified organisms.

6.5 This Article 6 shall be applicable notwithstanding the expiration or termination of this AGREEMENT.

ARTICLE 7: INFRINGEMENT

7.1 The LICENSOR and the LICENSEE shall notify one another as soon as they become aware of any infringement of the AGREEMENT PATENTS by a THIRD PARTY. They shall supply one another with all items available to them in order to examine the nature and extent of this.

7.2 If one of the Parties believes that the observed infringement is liable significantly to disrupt the LICENSEE'S use of the AGREEMENT PATENTS, they shall approach the other Party in order to discuss the most appropriate measures in order to bring the infringement to an end.

7.3 If the Parties decide, by joint agreement, that they shall initiate legal proceedings against the THIRD PARTY they shall determine if these legal proceedings should be initiate jointly. The proceedings shall be dealt with jointly. For any issues pertaining to the protection of the AGREEMENT PATENTS, the LICENSOR shall be nominated as the "leader" and shall act following consultation with the LICENSEE and shall take account of any reasonable comments made by the latter. For any matters pertaining to the protection of the LICENSEE'S commercial interests, in particular the assessment of their damages, the latter shall be nominated as "leader" and shall act following consultation with the LICENSOR and shall take account of any reasonable comments made by the latter.

The Parties to the proceedings shall ascertain the fees to be paid between them in advance. The indemnities that may be awarded by the courts to both parties to the AGREEMENT shall be shared between them in the same proportion as their respective external costs incurred in the course of these legal proceedings

7.4 If the LICENSEE would like to initiate legal proceedings and the LICENSOR does not wish to, the LICENSEE may, after having given formal notice to the LICENSOR for which no response has been received, pursue action at its own initiative and in its own name. The fees for such proceedings shall be payable by the sole LICENSEE. The awards, including any possible damages of a punitive nature, shall be irrevocably acquired by the LICENSEE.

It is, however, agreed that after deducting external costs incurred by the LICENSEE for successfully win the legal proceedings, the indemnities, to the exclusion of indemnities of a punitive nature, allocated to LICENSEE shall be included in the NET INCOME and shall be subject to payment of royalty to the LICENSOR at the applicable rate in accordance with this AGREEMENT.

It is furthermore agreed that the LICENSOR reserves the right to intervene at their cost and risk.

7.5 If the LICENSOR wishes to initiate legal proceedings and the LICENSEE does not wish to, the LICENSOR may then pursue matters at its own initiative and in its own name. The fees for such proceedings shall be payable by the sole LICENSOR. The awards, including any possible damages of a punitive nature, shall be irrevocably and wholly acquired by the LICENSOR.

This provision does not however prevent the LICENSEE from taking part in proceedings, at its expense, in order to obtain compensation rightly due for damages.

7.6 If an action by the LICENSEE in accordance with Article 7.4 above must be declared to be inadmissible because of the plaintiffs inability to act or if it can reasonably be anticipated that the LICENSEE plans to take in accordance with Article 7.4 above, is declared inadmissible for this reason, the LICENSOR shall then provide the LICENSEE upon request and in a timely manner, all powers required for them to act in the name and on behalf of the LICENSOR.

The costs pertaining to this action shall be payable by the LICENSEE. The indemnities that may be allocated at the end of the proceedings shall be split as set out in Article 7.4 above.

7.7 The Parties jointly undertake to supply all documents, powers of attorney and signatures that may be required in order to carry out their actions successfully in accordance with the terms of this Article.

ARTICLE 8: CONFIDENTIALITY AND EXCHANGE OF INFORMATION

8.1 For the duration of this AGREEMENT, each Party undertakes to notify the other Party promptly of any information they may obtain or develop relating to the harmlessness and/or usefulness of any LICENSED PRODUCT in particular any information regarding any serious effect which one can reasonably believe is linked to the use of the LICENSED PRODUCT.

8.2 For the duration of this AGREEMENT plus a period of five years and regardless of it being terminated prematurely, the Parties cannot disclose, directly or indirectly, any confidential information received by the other Party within the framework of this AGREEMENT or its preparation, without prior consent of the other Party. The information are deemed confidential if they are disclosed:

• in any written form (on paper or electronically) and clearly designated as being confidential; or

• in verbal form, insofar as its confidentiality is confirmed in writing within 30 calendar days; or

• in the form of samples, specimens or other biological materials that are formally designated as being confidential at the latest 30 days after they have been supplied.

The Parties are only authorized to disclose confidential information if it is directly and strictly necessary: a) to the development and use of the LICENSED PRODUCTS or the LICENSED PROCESS; b) to obtain administrative authorizations for use; c) in order to comply with and respond to the requirements of the governmental authorities.

In this instance, the Parties must take reasonable measures to ensure that any unauthorized use or disclosure shall be carried out by individuals to whom the confidential information will be entrusted and specifically drawing their attention to the confidential nature of this information. With regards to its own staff, each Party shall only be authorized to entrust the said information to members linked to them by a confidentiality obligation that is at least equivalent to the effects of the confidentiality obligation set out in this Article.

The confidentiality obligation in this Article shall not apply to information a) that is or becomes accessible to the public, or b) that is already in the possession of the recipient Party at the time it is entrusted to them by the other Party, the onus being on them to provide proof of this or c) which shall subsequently, excluding any contractual breach, be entrusted to the recipient Party by a THIRD PARTY not belonging to the public authority, the onus being on the recipient party to provide proof of this or d) which is not independently developed by the employees of the recipient Party which has not been advised of the said information in accordance with this AGREEMENT, the onus being on them to provide proof of this.

8.3 Any public announcement or disclosure regarding the terms of this AGREEMENT may not be made, directly or indirectly, by any of the Parties, except where required by Law, without first having obtained the written AGREEMENT from the other Party on the principle and content of this disclosure or announcement.

ARTICLE 9: ENTRY INTO FORCE AND TERM

9.1 This AGREEMENT shall be deemed applicable from the AGREEMENT DATE as indicated at the foot of this document and must be read and interpreted accordingly. Unless it has been terminated in compliance with the provisions set forth below and without prejudice to the provisions in Articles 6, 8 and 11 of this AGREEMENT, the latter shall remain in force until the expiry or invalidation of the last AGREEMENT PATENT.

9.2 The expiry of the AGREEMENT upon expiration of the last AGREEMENT PATENT in compliance with this Article 9.1 will not prohibit the LICENSEE from continuing to making, sell and use the LICENSED PRODUCTS and PROVISIONS OF SERVICES without having to pay any subsequent fees.

9.3 If one of the parties is in breach in their performance or one or more of the obligations imposed on it by this AGREEMENT and if it fails to rectify the breach within 90 days following receipt of a notification from the other Party concerning the said breach, the other Party will be authorized to terminate this AGREEMENT lawfully, at the fault of the Party in breach and at any time, merely upon delivery of a notification to the party in breach. This shall be without prejudice to the other rights and remedies to which the injured Party may be entitled by virtue of the breach, in particular the right to compensation for damages to which this infringement and this termination give rise.

9.4 The LICENSEE acknowledges the LICENSOR's right to terminate this AGREEMENT immediately by simply sending notice of termination if the LICENSEE contests the validity of all or some of the AGREEMENT PATENTS before a court or patents office.

9.5 Either Party may terminate this AGREEMENT without fault if judicial proceedings are instituted against the other Party, once the trustee has expressly or implicitly relinquished continuing with the AGREEMENT, provided that a notification is sent by the Party wishing to terminate this AGREEMENT to the other Party sixty (60) days before the said termination comes into effect.

9.6 At the end of the AGREEMENT or in the case of premature termination of the same for a reason other than termination due to fault on the part of the LICENSOR, the LICENSOR shall retain any sums it has received on the basis of this AGREEMENT, while the LICENSEE shall remain bound to pay all sums due upon expiry of this AGREEMENT and on the basis of any use thereof which has not been paid for.

9.7 The anticipated termination of this AGREEMENT shall lead to the termination of the LICENSE, after which the LICENSEE will be prohibited from using the AGREEMENT PATENTS.

9.8 The LICENSEE may terminate the AGREEMENT simply by notice without owing the LICENSOR any compensation. Such termination may be effected in particular if the AGREEMENT PATENTS are not issued or not issued with a satisfactory scope either in geographical or technical terms or if the use of the license is not economically viable. In the case of termination, the LICENSOR shall substitute the LICENSEE in all the sub-licensing AGREEMENTs signed by the latter. Furthermore, the LICENSEE will not owe any of the sums set forth in Articles 3.1 to 3.4 and 10.1 as of the termination date.

ARTICLE 10: PATENTS

10.1 Subject to the provisions set forth in Article 10.2 below, the LICENSOR shall ensure that the AGREEMENT PATENTS are issued and maintained. The LICENSOR shall regularly inform the LICENSEE of the state of proceedings relating to the issuances of the AGREEMENT PATENTS and shall consult it in all decisions that are likely to affect the existence or the scope of the monopoly provided by the AGREEMENT PATENTS. The LICENSOR shall consult the LICENSEE in particular concerning the decisions to extend the priority application to foreign countries and concerning the defense in the case of opposition or interferences. The LICENSOR shall provide the LICENSEE with copies of the main communications exchanged with its patents counsels and those exchanged with the patent offices.

The LICENSEE shall reimburse the LICENSOR, subject to having been consulted in advance on the timeliness of the commitment and having received the relevant supporting documents, for a 20% share of the direct expenses incurred by the latter from the date of signature of this AGREEMENT for having the AGREEMENT PATENTS issued and maintained for the countries encompassed by the Munich Convention, the US, Canada and Japan. The said share may not be lower than 50,000 Francs ex tax, per year.

For countries not mentioned above and in respect of which the LICENSEE has requested industrial property protection, the LICENSEE shall reimburse the LICENSOR, subject to having been consulted in advance on the timeliness of the commitment and having received the relevant supporting documents, for all of the direct expenses incurred by the latter for having the AGREEMENT PATENTS issued and maintained. The LICENSEE may at any time—subject to a notice period of six months- cease to pay the above mentioned expenses without constituting a contractual breach, in which case the LICENSOR will be released from its obligations to maintain the AGREEMENT PATENTS.

10.2 In the event that the LICENSOR should wish to abandon a AGREEMENT PATENT, it shall inform the LICENSEE, who may at its own expense maintain the said AGREEMENT PATENT. In such a case, it will be understood that ownership of the LICENSOR'S rights will be transferred to the LICENSEE and that the latter will cease to owe the LICENSOR any fees in respect of the country concerned.

The information mentioned above shall be sent by registered letter with confirmation of receipt and shall contain all the relevant information in the LICENSOR's possession that will facilitate an assessment of the usefulness of maintaining the AGREEMENT PATENTS which the LICENSOR wishes to abandon. The LICENSEE will have thirty (30) days upon receipt of this information for submitting its decision on maintaining the AGREEMENT PATENTS of its choice. After this deadline or in the absence of a reply by the LICENSEE by the expiry of the deadline, the LICENSOR will be free to abandon said AGREEMENT PATENT.

ARTICLE 11: TRADE MARKS, TRADE NAMES AND PRODUCT MARKING

None of the provisions of the AGREEMENT can lead to the right to use, for any promotional activity, the name, trade name, trade mark or any other designation or distinctive mark of the other party, including the above in contracted or abridged form or through imitation, without the express written consent of the other party.

The LICENSEE may affix, or have affixed, on every LICENSED PRODUCT, the number of the AGREEMENT PATENT, whenever the legislation of a country so requires as well as the statement "sub-license from the Institut Pasteur".

This Article 11 shall continue to apply notwithstanding the expiration or termination of this AGREEMENT.

ARTICLE 12: MISCELLANEOUS

12.1 This document and its appendices and also any document referred to herein shall bind the parties and their respective successors in law. It may only be altered by way of an amendment hereto duly signed by an authorized representative of each party or their successors in law, with the exception of the appendices, which may be unilaterally updated, provided the AGREEMENT so provides.

12.2 This AGREEMENT is accepted by the LICENSEE having regard to its shareholding as of the date of signature indicated at the bottom. In the event of a change of control—i.e. 50% or more of the voting rights benefiting an INDUSTRIAL GROUP the LICENSOR shall be entitled to cancel it within 60 days of the effective date of this change. This AGREEMENT cannot be transferred or assigned to a THIRD PARTY by one of the parties without the prior AGREEMENT of the other party, unless it is assigned or assigned jointly with the transfer or assignment of all of the activities of the assigning party. Any proposed assignment or transfer shall be notified to the other party by the party proposing such an assignment or such transfer at least sixty (60) days before its execution. In any case, the assignor will be the guarantor with respect to the other party of compliance with the terms of this AGREEMENT by the assignee for the five years following the assignment.

12.3 The titles and paragraphs of this AGREEMENT have been arranged on the grounds of convenience. In no circumstances can they be used for the purpose of interpreting the terms of the AGREEMENT. Unless specifically provided for otherwise, any reference to an Article includes all the sub-divisions of the said Article; a reference to one (several) of the given subdivision(s) does not cover the other subdivisions not referred to.

12.4 Any notification or communication authorized or required within the context of this AGREEMENT shall be deemed as duly accomplished, provided it has been carried out on a postage paid basis by registered letter with acknowledgement of receipt or by any other means of equivalent function to the following addresses:

For the LICENSOR: Institut Pasteur
Direction de la Valorisation et des Partenariats Industriels
25, rue du Dr ROUX
75724 PARIS cedex 15

For the LICENSEE: Cellectis S.A.
28, rue du Dr ROUX
75724 PARIS cedex 15

Any notification shall be deemed to have been effected on the date on which it is actually received by its addressee unless the date of receipt is a public holiday in which case it will be deemed to have been received on the first working day following the public holiday.

12.5 Should some provision of this AGREEMENT prove to be contrary to law, and thus null and void, the validity of this AGREEMENT will not be affected in consequence and the parties shall meet in order to replace the invalid provision by a lawful provision of equivalent effect. In the absence of AGREEMENT being reached on the wording of such a provision and if it is manifest that the importance of the invalid clause is such that, in its absence, the parties would have refrained from entering into the AGREEMENT, the AGREEMENT shall cease at the initiative of one or other of the parties subject to compliance with formalities equivalent to those laid down in Section 9.3 above.

12.6 The waiver by one or other of the parties of the execution of any of the provisions of this AGREEMENT does not, in any way, incorporate or imply any waiver in respect of the implementation of the other obligations. In any case, the fact that one or other of the parties abstains from calling for the execution of an obligation, which the said party may demand, cannot be interpreted as a waiver on its part of the execution of the said obligation, regardless of the duration of its abstention.

ARTICLE 13: DISPUTES- LAW- REGISTRATION

This AGREEMENT will be subject to French law.

ln the event of a difficulty arising between the parties in relation to the interpretation or execution of this AGREEMENT, the parties shall attempt to settle their difference on an amicable basis. In the event of the disagreement persisting, the Paris Courts (*Tribunaux de Paris*) shall have exclusive jurisdiction.

If the dispute affects fees or any sum of money in compensation for the LICENSE, this sum shall remain blocked for the duration of the dispute in an interest-bearing account, opened for this purpose by the party from whom the payment is claimed.

Full powers shall be given to the holder of a copy of this AGREEMENT for the purpose of procuring its fiscal registration and its registration in the national patent registers.

Made in Paris, in four (4) original copies. [Handwritten text: October 19, 2000]

[Signature] [Signature]

CELLECTIS INSTITUT PASTEUR

Exhibit 4.2.1

AMENDMENT NO. 1 TO THE PATENT LICENSE AGREEMENT NO. C-00061906

BETWEEN:

L'Institut Pasteur,
Foundation recognized as having public utility,
25-28, rue du Docteur Roux,
75724 Paris cedex 15,
represented by Mr. Christian POLICARD,
Director of Development and Industrial Partnerships.

Hereafter referred as to as "IP" or the "LICENSOR",

Party of the first part

AND:

CELLECTIS

Public limited company with capital with a capital of 122,363.47 euros,
with its registered office at at 28, rue du Docteur Roux, 75724 Paris cedex 15,
represented by Mr. André Choulika, acting in the capacity of CEO

Hereafter referred to as "CELLECTIS" or the "LICENSEE",

Party of the second part.

The LICENSOR and the LICENSEE are hereafter referred to as the "Parties".

RECITALS:

IP owns patents and patent applications relating to a method of homologous recombination.

On June 19, 2000, the Parties signed licensing agreement no. C-00061906 (hereafter the "AGREEMENT"), by which the LICENSOR grants the LICENSEE exploitation rights under the above mentioned patents and patent applications.

After discussions and exchanges between the Parties, they have decided to modify the provisions of the AGREEMENT.

It is thus agreed as follows:

ARTICLE 1

1.1 The Parties agree that the words defined in Article 1, "DEFINITIONS", of the AGREEMENT, as they are used in this amendment, have the same definitions as in the AGREEMENT and form an integral part of this amendment.

1.2 The following definitions apply for the purposes of this amendment, it being understood when permitted by context that the singular shall be considered to include the plural and vice versa:

1.2.1 By "*I-SceI and/or I-Spom I*" the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061901 signed between the Parties.

1.2.2 By "PGN", the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061906 signed between the Parties.

1.2.3 By "Mulligan", the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061905 signed between the Parties.

1.2.4 For the sole purposes of articles 3.4 and 3.5 as modified by this amendment, the word "TOOL" will have the definition stated below:

By "TOOL", the Parties agree to mean the use by the LICENSEE'S SUB-LICENSEE of the LICENSED PROCESSES or LICENSED PRODUCTS for internal purposes or as part of the research or development process conducted by the sub-licensee.

ARTICLE 2

Article 2.4 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of that same article:

"2.4 The LICENSEE may only grant sub-licenses to THIRD PARTIES for the rights which it receives under this Agreement with the prior AGREEMENT of the LICENSOR. If the LICENSOR does not communicate its disagreement within twenty-one days from the notification of a sub-licensing project, it shall be considered to have agreed.

The LICENSOR may refuse to grant prior agreement for a sub-license only for serious cause.

The following would constitute serious cause justifying IP's refusal to agree: a sub-licensing Amendment between the LICENSEE and a THIRD PARTY containing provisions which are contrary to the ethics, image or intellectual property of the LICENSOR."

ARTICLE 3

Article 3.4 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of the same article:

"3.4.1 For sub-licenses concerning a LICENSED PATENT for the use of TOOLS granted by the LICENSEE under Article 2.4 of this AGREEMENT, the LICENSEE will pay the LICENSOR 40% of any compensation it receives, lump sums, royalties, market values (for cross-licensing or exchanges) for all sub-licenses granted to THIRD PARTIES."

3.4.2 For sub-licenses concerning LICENSED PATENTS other than those mentioned in Article 3.4.1 above, granted by the LICENSEE under Article 2.4 of this AGREEMENT, the LICENSEE will pay to the LICENSOR 40% of any compensation it receives, lump sums, royalties, market values (for cross-licensing or exchanges) for all sub-licenses granted to THIRD PARTIES, excluding the amounts stipulated in Article 3.5, without the amount of the royalties owed to the LICENSOR being less than:

• 2% of the net income of the sub-licensee for the *ISCEI and/or I-Spom I* technologies, Mulligan and PGN granted together to the same sub-licensee;

• 1% of the net income of the sub-licensee for ISCEI and/or I-Spom I technologies granted alone or with Mulligan to the same sub-licensee.

ARTICLE 4

The last sentence of article 10.1 par. 2 is modified as follows:

"This share must not be less than 7,621 EUROS ex tax per year."

ARTICLE 5

Article 2.6 of the licensing AGREEMENT is modified by the following provisions, which supersede all previous provisions of the same article:

"The IMPROVEMENTS achieved by the LICENSOR are exclusively licensed to the LICENSEE for a period of 5 (five) years following the date of signature of Amendment no. 1 to this AGREEMENT.

"The LICENSOR will inform the LICENSEE of the existence and contents of the IMPROVEMENTS.

"Following the 5 year period, the Parties will come together to mutually agree on the terms of access to the IMPROVEMENTS."

ARTICLE 6

The last sentence of article 1.5 of the AGREEMENT is modified as follows:

"Patents filed to protect IMPROVEMENTS will be included in the AGREEMENTS PATENTS under the AGREEMENT in accordance with the provisions of Article 2.6 of this AGREEMENT."

ARTICLE 7

This amendment will enter into force on the date of its signature.

The other provisions of the AGREEMENT remain unchanged and in force between the Parties.

Signed in Paris on [Handwritten text: September 8, 2003]

in 2 original copies.

CELLECTIS **INSTITUT PASTEUR**

AMENDMENT NO. 2 TO THE PATENT LICENSE AGREEMENT NO. C-00061906

BETWEEN:

L'Institut Pasteur, a public interest foundation, 25, rue du Docteur Roux, 75015 Paris, represented by Mr. Jean Castex, adjunct General Manager for administration and finance, and by Mr. Christian POLICARD, Director of Business Development and Industrial Partnerships.

Hereafter referred to as "IP" or the "LICENSOR",

Party of the first part,

AND:

CELLECTIS, a public limited company with a capital of 122,363.47 euros, headquartered at 102, route de Noisy, 93235 Romainville cedex, represented by Mr. André Choulika, acting as Chief Executive Officer

Hereafter referred to as "CELLECTIS" or the "LICENSEE",

Party of the second part.

The LICENSOR and LICENSEE are hereafter referred to as the "Parties".

RECITALS:

IP owns patents and patent applications relating to a method of homologous recombination.

On June 19, 2000, the Parties signed the license agreement no. C-00061906 (hereafter the "AGREEMENT"), by which the LICENSOR grants the LICENSEE exploitation rights to the patents and patent applications mentioned above.

The Agreement was the subject of a first amendment signed on September 8, 2003 and an email dated September 26, 2003 modifying the FIELD of the AGREEMENT.

After discussions and exchanges between the Parties, they have decided to modify the provisions of the AGREEMENT.

It is thus agreed as follows:

ARTICLE 1

1.1 The Parties agree that the words defined in Article 1, "DEFINITIONS", of the AGREEMENT, as they are used in this amendment, have the same definitions as in the AGREEMENT and form an integral part of this amendment.

1.2 The following definitions apply for the purposes of this amendment, it being understood when permitted by context that the singular shall be considered to include the plural and vice versa:

1.2.1 By "*I-SceI and/or I-Spom I*" the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061901 signed between the Parties.

1.2.2 By “PGN”, the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061906 signed between the Parties.

1.2.3 By “Mulligan”, the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061905 signed between the Parties.

ARTICLE 2

Article 1.3 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of the same article:

1.3 FIELD

The FIELD of the AGREEMENT covers the field of homologous recombination applied to all genes other than those of cytokines, hormones and human growth factors.

This exclusion does not apply in either of the following cases:

(i) As part of the creation of test animals used as a research and medication screening and validation tool;

(ii) As part of use combined with the PGN patents on the one hand and I-SceI and/or I-Spom I and/or Mulligan on the other hand, excluding applications for Erythropoietin (EPO).

ARTICLE 3

Under this Amendment, the LICENSEE will pay the LICENSOR on the date of signing of this amendment a fixed, non-refundable and non-deductible payment of 50,000 EUROS ex tax.

ARTICLE 4

This amendment will enter into force on the date of its signature.

The AGREEMENT’s other provisions remain unchanged and in force between the Parties.

Signed in Paris on [Handwritten text: June 24, 2004]

in 2 original copies.

CELLECTIS **INSTITUT PASTEUR**

Received on July 2, 2004

INSTITUT PASTEUR

Paris, July 1, 2004

Technology Transfer Department

Mrs. Isabelle Pelletier-Bressag
Business Development
CELLECTIS SA
102 route de Noisy
93235 ROMAINVILLE CEDEX

Our ref.: JPS-CPT/138-04
Your ref.: BD_COU_040625_I

From: Christine Phan

Telephone: 01.45.68.81.92
Fax: 01.40.61.37.32
Email: cphan@pasteur.fr

Case handled by: Jean-Pierre Saintouil

SUBJECT: Amendment no. 2 to patent licensing contract no. C-00061906

Dear Madam,

Please find attached an original copy of Amendment no. 2 to Patent Licensing Contract no. C-00061906 signed by Messrs. C. Policard and J. Castex.

Please accept our most distinguished regards.

Christine Phan
Marketing Assistant

Department of Business Development and Industrial Partnerships

25-26 rue du Docteur Roux
75724 Paris cedex 15
Telephone: +33 (0)1 45 68 81 06

Exhibit 4.2.3

AMENDMENT NO. 3 TO THE PATENT LICENSE AGREEMENT NO. C-00061906

BETWEEN:

L'Institut Pasteur, a public interest foundation, 25, rue du Docteur Roux, 75015 Paris, represented by Mr. Jean Castex, adjunct General Manager for administration and finance,

Hereafter referred to as "IP" or the "Licensor",

Party of the first part,

AND:

CELLECTIS, CELLECTIS

Public limited company with capital with a capital of 122,363.47 euros, with its registered office at 102, route de Noisy, 93235 Romainville cedex, represented by Mr. André Choulika, acting in the capacity of CEO

Hereafter referred to as "CELLECTIS" or the "LICENSEE",

Party of the second part.

The LICENSOR and LICENSEE are hereafter referred to as the "Parties".

RECITALS:

IP owns patents and patent applications relating to a method of homologous recombination.

On June 19, 2000, the Parties signed license agreement no. C-00061906 (hereafter the "AGREEMENT"), by which the LICENSOR grants the LICENSEE exploitation rights to the above mentioned patents and patent applications.

The AGREEMENT was the subject of a first amendment signed on September 8, 2003 and a second amendment dated June 24, 2004 modifying the FIELD of the AGREEMENT.

After discussions and exchanges between the Parties, they have decided to modify the provisions of the AGREEMENT.

It is thus agreed as follows:

ARTICLE 1

1.1 The Parties agree that the words defined in Article 1, "DEFINITIONS", of the AGREEMENT, as they are used in this amendment, have the same definitions as in the AGREEMENT and form an integral part of this amendment.

ARTICLE 2

Article 1.3 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of the same article:

1.2 FIELD

FIELD of the AGREEMENT covers the field of homologous recombination applied to all genes other than those that code for Erythropoietin (EPO).

ARTICLE 3

Article 2.1 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of the same article:

2.1 The LICENSOR grants, under the terms and conditions specified herein, to the LICENSEE, who accepts this, an exclusive license for the AGREEMENT PATENTS under the AGREEMENT to make, have made, use and sell the LICENSED PRODUCTS and/or implement or have implemented the LICENSED PROCESSES in the TERRITORY within the FIELD during the term of this AGREEMENT.

ARTICLE 4

Under this Amendment, the LICENSEE will pay the LICENSOR, 60 days from the date of signature of this Amendment, a fixed, non-refundable and non-deductible payment of 100,000 EUROS ex tax.

ARTICLE 5

This Amendment will enter into force on the date of its signature.

The AGREEMENT's other provisions remain unchanged and in force between the Parties.

Signed in Paris on [Handwritten text: August 24, 2005]
in 2 original copies.

CELLECTIS INSTITUT PASTEUR

Exhibit 4.2.4

SCHEDULE A

AMENDMENT NO. 4 TO PATENT LICENSING AGREEMENT NO. C-00061906

BETWEEN:

INSTITUT PASTEUR, a public interest foundation, headquartered at 25, rue du Docteur Roux, 75015 Paris,

Hereafter referred to as the "**LICENSOR**"

Party of the first part

AND:

CELLECTIS, a public limited company, headquartered at 102, route de Noisy, 93235 Romainville Cedex,

Hereafter referred to as **"CELLECTIS"** or the **"LICENSEE",**

Party of the second part.

The LICENSOR and LICENSEE are hereafter referred to as the "**Parties".**

RECITALS:

Institut Pasteur owns patents and patent applications concerning a homologous recombination method.

On June 19, 2000, the Parties signed the license agreement no. C-00061906 (hereafter the "AGREEMENT"), by which the LICENSOR grants the LICENSEE exploitation rights to the above mentioned patents and patent applications.

The AGREEMENT was the subject of a first amendment dated September 9, 2003, a second amendment dated June 24, 2004 modifying the FIELD of the AGREEMENT and a third amendment dated August 24, 2005.

After discussions and exchanges between the Parties, they have decided to modify the provisions of the AGREEMENT.

It is thus agreed as follows:

ARTICLE 1

The Parties agree that the words defined in article 1—"DEFINITIONS" of the AGREEMENT which are not modified by this amendment shall have the same definitions as in the AGREEMENT and form an integral part of this amendment.

ARTICLE 2

Article 1 of the AGREEMENT is supplemented by the following provision:

1.2 FIELD

The FIELD of the AGREEMENT is extended to Erythropoietin (hereafter EPO).

ARTICLE 3

As an exception to the provisions of paragraph 1.2 as stated in article 2 above, the LICENSEE acknowledges that the LICENSOR has directly granted a license for the AGREEMENT PATENTS under the AGREEMENT to the company TRANSKARIOTIC Therapies, Inc now the company SHIRE Pharmaceuticals Group Plc, in the sole domain of Erythropoietin.

The LICENSEE agrees toward to LICENSOR to not interfere with the rights granted by the LICENSOR to the company SHIRE Pharmaceutical Group Plc.

ARTICLE 4

In the three (3) months following the signing of this amendment, the LICENSEE will pay to the LICENSOR the amount of 100,000 euros as an advance for the royalties that will be owed by the LICENSEE to the LICENSOR for the sublicenses relating to EPO.

ARTICLE 5

Within the framework of the provisions of Article 7 of the Agreement, the LICENSEE shall pursue charges for the infringement of the AGREEMENT PATENTS under the AGREEMENT against potential infringers.

In application of articles 7.1, 7.2 and 7.3, the LICENSOR agrees to cooperate with the LICENSEE in order to define the legal, scientific or patent arguments that may be used to determine patent infringement and defend the validity or scope of the AGREEMENT PATENTS under the AGREEMENT.

The LICENSEE will negotiate in order to grant sub-licenses, in accordance with Article 2.3 and, in the event of failure of the negotiations entered into, may pursue patent infringers identified under paragraphs 7.3, 7.4, 7.5, 7.6 and 7.7 of the Agreement. The LICENSOR may participate in the proceedings or not, as it prefers, in accordance with these same provisions of the AGREEMENT.

In accordance with the provisions of Article 7.7 of the AGREEMENT, the LICENSOR agrees to provide all documents, powers and signatures that may be required by the LICENSEE to complete the actions taken.

ARTICLE 6

The Parties have decided to create a joint monitoring committee made up of four members for the purpose of (i) monitoring mutual exchanges of information concerning the implementation of Articles 2.2 and 2.4 of the AGREEMENT, which either of the Parties has identified, (ii) examine any IMPROVEMENT and/or KNOW-HOW that is identified by either of the Parties, and (iii) monitor patent infringement cases as set forth in article 5 above.

Any IMPROVEMENT or KNOW-HOW will be subject to Articles 2.2 and 2.4 (modified by amendment no. 1) of the AGREEMENT.

Within fifteen (15) days following the signing of this amendment, each of the Parties will inform the other Party of the names of two committee representatives. This committee must meet within the fifteen (15) days following its formation and define its rules of procedure, which it will immediately notify to the Parties.

ARTICLE 7

The LICENSOR grants the LICENSEE a modification to the royalty rate specified in Article 3.4 of the Agreement for the sub-licenses, with the following conditions:

- 40% of all compensation received by the LICENSEE as discussed in Article 3.4 of the Agreement for the part of the amounts collected by the LICENSEE over the year which is lesser or equal to ONE MILLION EUROS (1,000,000€)
- 30% of all compensation received by the LICENSEE as discussed in Article 3.4 of the Agreement for the part of the amounts collected by the LICENSEE over the year which is between ONE MILLION EUROS (1,000,000€) and TWO MILLION EUROS (2,000,000€)
- 25% of all compensation received by the LICENSEE as discussed in Article 3.4 of the Agreement for the part of the amounts collected by the LICENSEE over the year which is between TWO MILLION EUROS (2,000,000€) and FOUR MILLION EUROS (4,000,000€)
- 20% of all compensation received by the LICENSEE as discussed in Article 3.4 of the Agreement for the part of the amounts collected by the LICENSEE over the year which is greater than FOUR MILLION EUROS (4,000,000€).

ARTICLE 8

Within the framework of article 7 of the AGREEMENT, in the event that the LICENSOR does not wish to pursue a patent infringer and that a favorable outcome has been found for the LICENSEE, either through a transaction, or through the award of a sub-license, or by a legal decision, the Parties agree to grant the LICENSEE, as a bonus, a revision of the rates stipulated in Article 7 of this amendment, as follows:

- 38% of all compensation received by the LICENSEE as discussed in Article 3.4 of the Agreement for the part of the amounts collected by the LICENSEE over the year which is lesser or equal to ONE MILLION EUROS (1,000,000€)
- 28% of all compensation received by the LICENSEE as discussed in Article 3.4 of the Agreement for the part of the amounts collected by the LICENSEE over the year which is between ONE MILLION EUROS (1,000,000€) and TWO MILLION EUROS (2,000,000€)
- 24% of all compensation received by the LICENSEE as discussed in Article 3.4 of the Agreement for the part of the amounts collected by the LICENSEE over the year which is between TWO MILLION EUROS (2,000,000€) and FOUR MILLION EUROS (4,000,000€)

- 19% of all compensation received by the LICENSEE as discussed in Article 3.4 of the Agreement for the part of the amounts collected by the LICENSEE over the year which is greater than FOUR MILLION EUROS (4,000,000€).

ARTICLE 9

This amendment shall enter into force on the date of its signature.

ARTICLE 10

The provisions of the AGREEMENT and the amendments which are not modified by this amendment shall remain unchanged and in force between the Parties.

Signed in Paris on [Handwritten text: December 27, 2007]
In 2 original copies.

For CELLECTIS **For INSTITUT PASTEUR**

PATENT LICENSE AGREEMENT n° C-00061905

BETWEEN:

L'Institut Pasteur,
Foundation recognized as having public utility,
25-28, rue du Docteur Roux,
75724 Paris cedex 15,
represented by Mr. Christian POLICARD,
Director of Development and Industrial Partnerships.

Hereafter referred to as the IP or the "LICENSOR", acting both on its own behalf and on behalf of:

- **Boston Children's Hospital,**
  300 Longwood Avenue
  Boston, MA 02115
  USA

  Hereafter referred to as the "BCH".

Jointly also designated the "LICENSOR",

Party of the first part

AND:

CELLECTIS

Public limited company with capital of 250,000 Francs
with its registered office at 3, rue François Mouthon, Paris 75015
represented by Mr. André Choulika, acting in the capacity of Chairman and Managing Director

Hereafter referred to as the "LICENSEE",

Party of the second part.

The LICENSOR and the LICENSEE are hereafter referred to as the "Parties".

RECITALS:

IP filed two provisional patents applications in the United States whom inventors are Mr. Richard Mulligan and Mr. André Choulika relating to process of homologous recombination using meganucleases. IP has agreed to share with BCH exploitation rights of the inventions of theses patent applications and now wishes to share its rights under this technology with a industrial partner.

The BCH has given a mandate to the IP, which accepts it, to represent it and negotiate in its name any license agreement with the company CELLECTIS.

CELLECTIS is a recently-created company, which has as its activity the domain of genome and anti-viral therapy, the production of genomically-modified organisms, with respect to offering services to third parties, the sale of molecular biology products and reagents, the development of new therapeutic strategies, alone or in cooperation with pharmaceutical laboratories.

CELLECTIS wishes to be able to develop, within the context of its technological platform, the LICENSOR's patents and patent applications above whilst respecting the rights already granted to third parties.

It has therefore been agreed as follows between the Parties:

ARTICLE 1: DEFINITIONS

The following definitions apply for the purposes of the present AGREEMENT, it being understood that one the one had, the singular is understood, when the context so permits, as the plural, and inversely, and on the other hand, masculine is understood as feminine in the same conditions.

1.1 AFFILIATE

"Affiliate" is understood as any company, firm, group of persons or other entity, which de *jure* ou *de facto,* directly or indirectly, controls another entity or is controlled by it, or is under common control with it, control being understood as holding over fifty percent (50%) of the voting shares of a company (or any other percentage that a foreign company is authorised to hold in a third party national company with respect to the legislation of the latter's country) or as having decision-making power, in the case of a company without legal status.

1.2 AGREEMENT PATENTS

"AGREEMENT PATENTS" are understood as:

The U.S. provisional patents applications titled "Homologous recombination and/or gene repair involving in the in vivo excision of targeting DNA" and "Homologous recombination and/or gene repair involving the induction of double stranded DNA cleavage at the chromosomal target site", filed in United States on 3 February 1999, any foreign patents application, division application, continuation applications, any reissue application in U.S. or anywhere else in the world, made on the basis of the patent applications cited above, the list of which is attached in APPENDIX A to the present AGREEMENT, and the corresponding patents issued which shall be automatically included in APPENDIX A to the present AGREEMENT.

1.3 FIELD

"FIELD" of the AGREEMENT is understood as any application of the LICENSED PRODUCTS and LICENSED PROCESS.

1.4 LICENSE

"LICENSE" is understood as the grant by the LICENSOR to the LICENSEE of exploitation rights for the AGREEMENT PATENTS in accordance with the provisions of the present document (the "AGREEMENT") in particular as covered in Article 2.

1.5 IMPROVEMENT

"IMPROVEMENT" is understood as any improvements or innovations, whether patentable or not, made to the LICENSED PRODUCTS and/or LICENSED PROCESS by the LICENSOR, and depending on the AGREEMENT PATENTS. The IMPROVEMENTS constitute, with the AGREEMENT PATENTS, the licensed technology. The patents filed to protect IMPROVEMENTS shall be included as they are filed in the AGREEMENT PATENTS.

1.6 LICENSEE

The "LICENSEE" is understood as the LICENSEE as defined above and all its AFFILIATES taken collectively; the LICENSEE is authorized to extend the benefits of the rights conferred upon it by the present AGREEMENT to its AFFILIATES, as long as it itself continues to assume liability for respect of the obligations conferred upon its by the present AGREEMENT, both for itself and its AFFILIATES.

1.7 PROVISION OF SERVICES

"PROVISION OF SERVICES" is understood as the performance by the LICENSEE in favour of a THIRD PARTY of provision of services, implementing any LICENSED PRODUCT or LICENSED PROCESS.

1.8 LICENSED PRODUCT

"LICENSED PRODUCT" is understood as any composition or any product, the exploitation of which would constitute, without a license, an infringement of the AGREEMENT PATENTS.

1.9 LICENSED PROCESS

"LICENSED PROCESS" is understood as any process, the implementation of which would constitute, without a license, an infringement of the AGREEMENT PATENTS.

1.10 NET INCOME

"NET INCOME" is understood as the gross income, royalties (or market value corresponding to any form of non-monetary remuneration) which the LICENSEE accepts to receive in compensation for PROVISIONS OF SERVICES or LICENSED PRODUCTS which the LICENSEE receives from SALES or PROVISION OF SERVICES relating to the LICENSED PRODUCTS or LICENSED PROCESSES, or even in compensation for R&D SOLD, with deductions for the elements below insofar as the corresponding sums are paid or allocated and form part of the price invoiced:

i) discounts or reductions for quantity actually granted and deducted in proportionate shares in accordance with the normal practices of the profession;

ii) credits granted for the LICENSED PRODUCTS returned or refused within the appropriate periods by clients;

iii) taxes really paid by the LICENSEE relating to the sale or delivery of the LICENSED PRODUCTS;

iv) subsidy or payment by a THIRD PARTY of the costs relating to personnel, supplies and travel incurred for the completion of the research program.

The definition above may not be interpreted in such a manner to include sums collected by the LICENSEE by virtue of research collaborations agreements with THIRD PARTIES on R&D SOLD if these agreements do not involved the implementation of the AGREEMENT PATENTS, in which case, the sums collected shall be included in the NET INCOME.

1.11 R&D SOLD

"R&D SOLD" is understood as a research AGREEMENT with transfer to a THIRD PARTY of the exploitation rights for the LICENSED PRODUCTS or LICENSED PROCESS. The following in particular are excluded from R&D SOLD:

- research agreement without transfer of the exploitation rights for LICENSED PRODUCT or LICENSED PROCESS.
- research agreement subsidized by a national state or international organization, or charitable foundation.

1.12 KNOW-HOW

"KNOW-HOW" is understood as all knowledge and data, including technical, strategic and commercial information, methods, supplies and products including the organisms and micro-organisms belonging to the LICENSOR, patented or not patented, and which it holds before signature of the AGREEMENT or which it develops or acquires after signature of the present AGREEMENT. The list of KNOW HOW is in APPENDIX B to the present AGREEMENT.

1.13 TERRITORY

"TERRITORY" is understood as the whole world.

1.14 THIRD PARTIES

"THIRD PARTIES" are understood as any entity other than the parties to the present AGREEMENT and their AFFILIATES.

1.15 SALE

"SALE" is understood as the transfer by the LICENSEE to a THIRD PARTY of any property or disposal right for the LICENSED PRODUCTS. A SALE becomes effective from when it is invoiced by the LICENSEE.

1.16 INDUSTRIAL GROUP

"INDUSTRIAL GROUP" is understood as any company or group of companies exercising an economic activity which products material assets by the transformation and implementation of raw materials into a finished or semi-finished product.

ARTICLE 2: LICENSE GRANT

2.1 The LICENSOR grants, subject to the reservations and conditions stipulated in the present document, to the LICENSEE, which accepts, an exclusive license subject to Article 2.1(i) below, under the AGREEMENT PATENTS to make, have made, use and sell the LICENSED PRODUCTS and/or implement or have implemented the LICENSED PROCESS in the TERRITORY in the FIELD during the term of the present AGREEMENT.

2.1 (i) This license is non-exclusive for the LICENSED PROCESS applied to human gene therapy.

Consequently, the term exclusive is understood for the purposes of the present AGREEMENT as the LICENSOR being prohibited from exploiting or having exploited or granting a license or exploitation rights under the AGREEMENT PATENTS to a THIRD PARTY in the FIELD, subject to the restriction described in Article 2.1(i) above.

However, it is agreed by the Parties that, assuming IP has the possibility to grant exploitation rights of the AGREEMENT PATENTS for applications to the human gene therapy, it will immediately inform the LICENSEE, who may obtain said exploitation rights, by amendment to the present AGREEMENT.

2.2 The LICENSOR grants to the LICENSEE an immediate, complete and free access to the KNOW-HOW.

2.3 The LICENSEE shall be diligent and do its utmost to design, develop and obtain the administrative authorizations necessary to sell the LICENSED PRODUCTS and LICENSED PROCESS. It is expressly agreed that maintaining the exclusive nature of the LICENSE as defined above in paragraph 2.1 has as a sine qua non condition, the respect for the aforementioned obligation.

The LICENSEE must ensure the LICENSOR receives, within a period of three months from the date of signature of the present AGREEMENT, a plan giving figures, details and a timeline for the development and commercial perspectives for the AGREEMENT PATENTS, for the first twelve months from the date of signature of the present AGREEMENT. The LICENSEE shall spontaneously inform the LICENSOR of any event occurring or which it anticipates which shall be of such a nature as to compromise or substantially delay these perspectives; it shall provide detailed explanations on the measures it intends to take to restore the initial perspectives. After the first twelve months the LICENSEE, upon LICENCOR's request, must ensure the LICENSOR receives an update of the aforementioned document.

2.4 The LICENSEE may only grant sub-licenses for the rights it receives by virtue of the present AGREEMENT to any THIRD PARTY with the prior approval of the LICENSOR. If the LICENSOR does not indicate its disagreement within a period of one month from the date of notification of a planned sub-license, it shall be deemed to have given its approval.

2.5 The LICENSEE in the AGREEMENT undertakes, for a period of seven years after signature of the AGREEMENT, to grant at least three sub-licenses for the AGREEMENT PATENTS. If not, the AGREEMENT shall lose its exclusive nature.

2.6 The IMPROVEMENTS made by the LICENSOR are granted with an exclusive license to the LICENSEE according to the terms and restrictions of the present AGREEMENT and at no additional price. The LICENSOR shall have no obligation with respect to the LICENSEE concerning the IMPROVEMENTS made by the LICENSOR after the LICENSE has been converted to a non-exclusive LICENSE in the case of Article 2.5.

The LICENSOR shall inform the LICENSEE of any patent it files in the FIELD after the present AGREEMENT takes effect, no later than one month after such a filing.

Consequently, the term exclusive is understood for the purposes of the present AGREEMENT as the LICENSOR being prohibited from exploiting or having exploited or granting a license or exploitation rights under the IMPROVEMENTS to a THIRD PARTY.

ARTICLE 3: CONSIDERATION

3.1 Under this AGREEMENT the LICENSEE will pay to the LICENSOR on the date of the third anniversary of the coming into force of this AGREEMENT a lump sum, non-reimbursable and non-deductible from future license fees, of 100,000 FRANCS ex tax.

3.2 Under this AGREEMENT the LICENSEE will pay to the LICENSOR license fees equal to 5% of the NET INCOME generated in the TERRITORY.

3.3 In reimbursement of the license fees already paid, the LICENSEE will pay to the LICENSOR:

- The sum of 200,000 FRANCS ex tax, on the date of the second anniversary of the coming into force of this AGREEMENT,
- The sum of 300,000 FRANCS ex tax, on the date of the third anniversary of the coming into force of this AGREEMENT.

3.4 Under the sub-licenses granted by the LICENSEE in application of Article 2.4 of this AGREEMENT, the LICENSEE will pay to the LICENSOR: 40% of all payments received by it, lump sums, license fees, market values (in the case of cross licenses or exchanges) for all sub-licenses granted to THIRD PARTIES, excluding sums set out in Article 3.5. In no case may the amount receivable by the LICENSOR be less than that which it would have received by contracting directly with the THIRD PARTIES under the conditions agreed with the LICENSEE.

If these conditions make it impossible to conclude a SUB-LICENSE AGREEMENT for economic reasons, the LICENSOR and the LICENSEE will come to an AGREEMENT in a good faith for other conditions to apply to the SUB-LICENSE.

3.5 The sub-licensees shall be liable for the payment of the sum of 100,000 FRANCS ex tax, which sum shall be paid in total to the LICENSOR in respect of patent fees already paid. The sub-licensees must also pay the sum of 50,000 FRANCS ex tax each year, this sum being paid to the LICENSOR in respect of patent fees.

If these conditions make it impossible to conclude a SUB-LICENSE AGREEMENT for economic reasons, the LICENSOR and the LICENSEE will come to an AGREEMENT in a good faith for other conditions to apply to the SUB-LICENSE.

ARTICLE 4: PAYMENT OF LICENSE FEES

4.1 The payment of the license fees due under this AGREEMENT shall be made sixty (60) days after the end of each calendar half-year for the amount corresponding to the sales or sub-license payments for that half-year.

4.2 All payments due from the LICENSEE under this AGREEMENT shall be made by direct bank transfer to the account notified to it by the LICENSOR. All bank charges relating to the said payments shall be the liability of the LICENSEE up until the payments are made to the account of the LICENSOR.

4.3 For the purposes of this AGREEMENT, license fees relating to the NET INCOME paid in a currency other than the French Franc or the Euro must be converted at the average rate of exchange on the last but one Wednesday of the month preceding the month of invoicing, as published by the Banque de France.

4.4 The sums paid to the LICENSOR shall remain its property under all circumstances. VAT shall be invoiced in addition, at the applicable rate, and paid by the LICENSEE.

4.5 Any withholding tax payable by the LICENSEE on the license fees due under this AGREEMENT shall be deducted from the license fees due for the relevant country. The LICENSEE must obtain and keep at the disposal of the LICENSOR proof of payment of such withholding tax. The LICENSEE must assist the LICENSOR to avoid paying double taxation and will on request provide it with any necessary document for this purpose.

4.6 In the case of late payment, the sums due to the LICENSOR shall be increased by a penalty equal to one and a half time the legal rate of interest.

ARTICLE 5: ESTABLISHMENT OF ACCOUNTS

5.1 At the time of payment, the LICENSEE will provide the LICENSOR with a report showing the accounts relating to the license fees. This report will show separate accounts for each country in the TERRITORY and for the relevant period for each AGREEMENT PATENT, the number of LICENSED PRODUCTS sold along with their trade names and the type of PROVISION OF SERVICES carried out, the NET INCOME achieved as well as the license fees due. If no license fee is due, a report shall be provided to that effect. The above-mentioned reports shall be certified as complying by one of the Licensee's managers duly authorized for that purpose. The same obligations apply to the LICENSEE for LICENSED PRODUCTS and PROVISIONS OF SERVICES sold by a sub-licensee, the above-mentioned reports shall, if necessary, be detailed sub-licensee-by-sub-licensee.

5.2 The LICENSEE shall keep separate and detailed accounts so as to allow the calculation and verification of the amount of the license fees due to the LICENSOR under this AGREEMENT. The LICENSOR shall be authorized for the duration of this AGREEMENT plus a further period of three years to carry out an examination, at its expense, of the Licensee's accounts and those of the sub-licensees performed by an independent qualified accountant, chosen by the LICENSOR and approved by the LICENSEE, or in the absence of AGREEMENT by the *Président du Tribunal de Grande Instance de Paris*. The accountant's task will be solely to calculate the license fees. This is exercisable for a maximum period of five years preceding such examination.

In the case of adjustment, the costs of the examination shall be the liability of the LICENSEE from the date when the sums owed by the LICENSEE to the LICENSOR as noted by the accountant shall exceed 5 % of the total sums actually received by the LICENSOR.

ARTICLE 6: WARRANTIES

6.1 The LICENSOR declares and warrants the LICENSEE:

- that the AGREEMENT PATENTS actually exist;
- that he is fully authorized to grant the LICENSE that is the subject of this AGREEMENT.

6.2 The unknown factors, risks and dangers linked to the use of the AGREEMENT PATENTS, in particular the faults that it could conceal or the eviction, with the exception of evictions that are solely attributable to the LICENSOR, which they can demonstrate, shall be the sole responsibility of the LICENSEE who accepts them.

Consequently, the LICENSOR declines any explicit or implicit responsibility towards the LICENSEE, their legal successors, transferees for any direct, indirect or special damages, in particular any operating losses, interruption of activity or lost profits.

The LICENSEE is prevented from having any redress including activating any guarantees and is forbidden from subrogating a THIRD PARTY in its rights of redress against the LICENSOR, its managers, its directors, its employees, its agents, as compensation for any damages that may arise during the implementation or not of the AGREEMENT PATENTS.

6.3 Without prejudice to what is mentioned in Article 6.1 above the LICENSOR does not provide any warranties, whether express or implicit, pertaining to the AGREEMENT PATENTS, in particular regarding their usefulness, their harmlessness or adaptation for any purpose. The LICENSOR does not warrant, either expressly or implicitly, that the use of the AGREEMENT PATENTS as well as the manufacture, sale, use, import, export and the ownership of the LICENSED PRODUCTS do not breach any patents (other than the AGREEMENT PATENTS), exclusive rights or ownership rights of a THIRD PARTY. It is nevertheless agreed that if proceedings are instituted against the LICENSEE or one of their sub-licensees by a THIRD PARTY which is opposed to a patent that opposes the free use of the LICENSED PRODUCTS or LICENSED PROCESS, the LICENSOR will provide its assistance to the LICENSEE at LICENSOR’s costs.

6.4 The LICENSEE is the sole party responsible for ensuring that the LICENSED PRODUCTS comply with the applicable laws and regulations, in particular those pertaining to ethics, the treatment of animals and genetically modified organisms.

6.5 This Article 6 shall be applicable notwithstanding the expiration or termination of this AGREEMENT.

ARTICLE 7: INFRINGEMENT

7.1 The LICENSOR and the LICENSEE shall notify one another as soon as they become aware of any infringement of the AGREEMENT PATENTS by a THIRD PARTY. They shall supply one another with all items available to them in order to examine the nature and extent of this.

7.2 If one of the Parties believes that the observed infringement is liable significantly to disrupt the LICENSEE'S use of the AGREEMENT PATENTS, they shall approach the other Party in order to discuss the most appropriate measures in order to bring the infringement to an end.

7.3 If the Parties decide, by joint agreement, that they shall initiate legal proceedings against the THIRD PARTY they shall determine if these legal proceedings should be initiate jointly. The proceedings shall be dealt with jointly. For any issues pertaining to the protection of the AGREEMENT PATENTS, the LICENSOR shall be nominated as the "leader" and shall act following consultation with the LICENSEE and shall take account of any reasonable comments made by the latter. For any matters pertaining to the protection of the LICENSEE'S commercial interests, in particular the assessment of their damages, the latter shall be nominated as "leader" and shall act following consultation with the LICENSOR and shall take account of any reasonable comments made by the latter.

The Parties to the proceedings shall ascertain the fees to be paid between them in advance. The indemnities that may be awarded by the courts to both parties to the AGREEMENT shall be shared between them in the same proportion as their respective external costs incurred in the course of these legal proceedings

7.4 If the LICENSEE would like to initiate legal proceedings and the LICENSOR does not wish to, the LICENSEE may, after having given formal notice to the LICENSOR for which no response has been received, pursue action at its own initiative and in its own name. The fees for such proceedings shall be payable by the sole LICENSEE. The awards, including any possible damages of a punitive nature, shall be irrevocably acquired by the LICENSEE.

It is, however, agreed that after deducting external costs incurred by the LICENSEE for successfully win the legal proceedings, the indemnities, to the exclusion of indemnities of a punitive nature, allocated to LICENSEE shall be included in the NET INCOME and shall be subject to payment of royalty to the LICENSOR at the applicable rate in accordance with this AGREEMENT.

It is furthermore agreed that the LICENSOR reserves the right to intervene at their cost and risk.

7.5 If the LICENSOR wishes to initiate legal proceedings and the LICENSEE does not wish to, the LICENSOR may then pursue matters at its own initiative and in its own name. The fees for such proceedings shall be payable by the sole LICENSOR. The awards, including any possible damages of a punitive nature, shall be irrevocably and wholly acquired by the LICENSOR.

This provision does not however prevent the LICENSEE from taking part in proceedings, at its expense, in order to obtain compensation rightly due for damages.

7.6 If an action by the LICENSEE in accordance with Article 7.4 above must be declared to be inadmissible because of the plaintiff's inability to act or if it can reasonably be anticipated that the LICENSEE plans to take in accordance with Article 7.4 above, is declared inadmissible for this reason, the LICENSOR shall then provide the LICENSEE upon request and in a timely manner, all powers required for them to act in the name and on behalf of the LICENSOR.

The costs pertaining to this action shall be payable by the LICENSEE. The indemnities that may be allocated at the end of the proceedings shall be split as set out in Article 7.4 above.

7.7 The Parties jointly undertake to supply all documents, powers of attorney and signatures that may be required in order to carry out their actions successfully in accordance with the terms of this Article.

ARTICLE 8: CONFIDENTIALITY AND EXCHANGE OF INFORMATION

8.1 For the duration of this AGREEMENT, each Party undertakes to notify the other Party promptly of any information they may obtain or develop relating to the harmlessness and/or usefulness of any LICENSED PRODUCT in particular any information regarding any serious effect which one can reasonably believe is linked to the use of the LICENSED PRODUCT.

8.2 For the duration of this AGREEMENT plus a period of five years and regardless of it being terminated prematurely, the Parties cannot disclose, directly or indirectly, any confidential information received by the other Party within the framework of this AGREEMENT or its preparation, without prior consent of the other Party. The information are deemed confidential if they are disclosed:

- in any written form (on paper or electronically) and clearly designated as being confidential; or
- in verbal form, insofar as its confidentiality is confirmed in writing within 30 calendar days; or
- in the form of samples, specimens or other biological materials that are formally designated as being confidential at the latest 30 days after they have been supplied.

The Parties are only authorized to disclose confidential information if it is directly and strictly necessary: a) to the development and use of the LICENSED PRODUCTS or the LICENSED PROCESS; b) to obtain administrative authorizations for use; c) in order to comply with and respond to the requirements of the governmental authorities.

In such an instance, the Parties must take reasonable measures to ensure that any unauthorized use or disclosure shall be carried out by individuals to whom the confidential information will be entrusted and specifically drawing their attention to the confidential nature of this information. With regards to its own staff, each Party shall only be authorized to entrust the said information to members linked to them by a confidentiality obligation that is at least equivalent to the effects of the confidentiality obligation set out in this Article.

The confidentiality obligation in this Article shall not apply to information a) that is or becomes accessible to the public, or b) that is already in the possession of the recipient Party at the time it is entrusted to them by the other Party, the onus being on them to provide proof of this or c) which shall subsequently, excluding any contractual breach, be entrusted to the recipient Party by a THIRD PARTY not belonging to the public authority, the onus being on the recipient party to provide proof of this or d) which is not independently developed by the employees of the recipient Party which has not been advised of the said information in accordance with this AGREEMENT, the onus being on them to provide proof of this.

8.3 Any public announcement or disclosure regarding the terms of this AGREEMENT may not be made, directly or indirectly, by any of the Parties, except where required by Law, without first having obtained the written AGREEMENT from the other Party on the principle and content of this disclosure or announcement.

ARTICLE 9: ENTRY INTO FORCE AND TERM

9.1 This AGREEMENT shall be deemed applicable from the AGREEMENT DATE as indicated at the foot of this document and must be read and interpreted accordingly. Unless it has been terminated in compliance with the provisions set forth below and without prejudice to the provisions in Articles 6, 8 and 11 of this AGREEMENT, the latter shall remain in force until the expiry or invalidation of the last AGREEMENT PATENT.

9.2 The expiry of the AGREEMENT upon expiration of the last AGREEMENT PATENT in compliance with this Article 9.1 will not prohibit the LICENSEE from continuing to making, sell and use the LICENSED PRODUCTS and PROVISIONS OF SERVICES without having to pay any subsequent fees.

9.3 If one of the parties is in breach in their performance or one or more of the obligations imposed on it by this AGREEMENT and if it fails to rectify the breach within 90 days following receipt of a notification from the other Party concerning the said breach, the other Party will be authorized to terminate this AGREEMENT lawfully, at the fault of the Party in breach and at any time, merely upon delivery of a notification to the party in breach. This shall be without prejudice to the other rights and remedies to which the injured Party may be entitled by virtue of the breach, in particular the right to compensation for damages to which this infringement and this termination give rise.

9.4 The LICENSEE acknowledges the LICENSOR's right to terminate this AGREEMENT immediately by simply sending notice of termination if the LICENSEE contests the validity of all or any of the AGREEMENT PATENTS before a court or patents office.

9.5 Either Party may terminate this AGREEMENT without fault if judicial proceedings are instituted against the other Party, once the trustee has expressly or implicitly relinquished continuing with the AGREEMENT, provided that a notification is sent by the Party wishing to terminate this AGREEMENT to the other Party sixty (60) days before the said termination comes into effect.

9.6 At the end of the AGREEMENT or in the case of premature termination of the same for a reason other than termination due to fault on the part of the LICENSOR, the LICENSOR shall retain any sums it has received on the basis of this AGREEMENT, while the LICENSEE shall remain bound to pay all sums due upon expiry of this AGREEMENT and on the basis of any use thereof which has not been paid for.

9.7 The anticipated termination of this AGREEMENT shall lead to the termination of the LICENSE, after which the LICENSEE will be prohibited from using the AGREEMENT PATENTS.

9.8 The LICENSEE may terminate the AGREEMENT simply by notice without owing the LICENSOR any compensation. Such termination may be effected in particular if the AGREEMENT PATENTS are not issued or not issued with a satisfactory scope either in geographical or technical terms or if the use of the license is not economically viable. In the case of termination, the LICENSOR shall substitute the LICENSEE in all the sub-licensing AGREEMENTs signed by the latter. Furthermore, the LICENSEE will not owe any of the sums set forth in Articles 3.1 to 3.5 and 10.1 as of the date of termination.

ARTICLE 10: PATENTS

10.1 Subject to the provisions set forth in Article 10.2 below, the LICENSOR shall ensure that the AGREEMENT PATENTS are issued and maintained. The LICENSOR shall regularly inform the LICENSEE of the state of proceedings relating to the issuances of the AGREEMENT PATENTS and shall consult it in all decisions that are likely to affect the existence or the scope of the monopoly provided by the AGREEMENT PATENTS. The LICENSOR shall consult the LICENSEE in particular concerning the decisions to extend the priority application to foreign countries and concerning the defense in the case of opposition or interferences. The LICENSOR shall provide the LICENSEE with copies of the main communications exchanged with its patents counsels and those exchanged with the patent offices.

The LICENSEE shall reimburse the LICENSOR, subject to having been consulted in advance on the timeliness of the commitment and having received the relevant supporting documents, for a 50% share of the direct expenses incurred by the latter from the date of signature of this AGREEMENT for having the AGREEMENT PATENTS issued and maintained for the countries encompassed by the Munich Convention, the US, Canada and Japan. The said share may not be lower than 50,000 Francs ex tax, per year.

For countries not mentioned above and in respect of which the LICENSEE has requested industrial property protection, the LICENSEE shall reimburse the LICENSOR, subject to having been consulted in advance on the timeliness of the commitment and having received the relevant supporting documents, for all of the direct expenses incurred by the latter for having the AGREEMENT PATENTS issued and maintained. The LICENSEE may at any time—subject to a notice period of six months- cease to pay the above mentioned expenses without constituting a contractual breach, in which case the LICENSOR will be released from its obligations to maintain the AGREEMENT PATENTS.

10.2 In the event that the LICENSOR should wish to abandon a AGREEMENT PATENT, it shall inform the LICENSEE, who may at its own expense maintain the said AGREEMENT PATENT. In such a case, it will be understood that ownership of the LICENSOR'S rights will be transferred to the LICENSEE and that the latter will cease to owe the LICENSOR any fees in respect of the country concerned.

The information mentioned above shall be sent by registered letter with confirmation of receipt and shall contain all the relevant information in the LICENSOR's possession that will facilitate an assessment of the usefulness of maintaining the AGREEMENT PATENTS which the LICENSOR wishes to abandon. The LICENSEE will have thirty (30) days upon receipt of this information for submitting its decision to the LICENSOR on maintaining the AGREEMENT PATENTS of its choice. After this deadline or in the absence of a reply by the LICENSEE by the expiry of the deadline, the LICENSOR will be free to abandon said AGREEMENT PATENT.

ARTICLE 11: TRADE MARKS, TRADE NAMES AND PRODUCT MARKING

None of the provisions of the AGREEMENT can lead to the right to use, for any promotional activity, the name, trade name, trade mark or any other designation or distinctive mark of the other party, including the above in contracted or abridged form or through imitation, without the express written consent of the other party.

The LICENSEE may affix, or have affixed, on every LICENSED PRODUCT, the number of the AGREEMENT PATENT, whenever the legislation of a country so requires as well as the statement "sub-license from the Institut Pasteur".

This Article 11 shall continue to apply notwithstanding the expiration or termination of this AGREEMENT.

ARTICLE 12: MISCELLANEOUS

12. 1 This document and its appendices and also any document referred to herein shall bind the parties and their respective successors in law. It may only be altered by way of an amendment hereto duly signed by an authorized representative of each party or their successors in law, with the exception of the appendices, which may be unilaterally updated, provided the AGREEMENT so provides.

12.2 This AGREEMENT is accepted by the LICENSEE having regard to its shareholding as of the date of signature indicated at the bottom. In the event of a change of control—i.e. 50% or more of the voting rights benefiting an INDUSTRIAL GROUP the LICENSOR shall be entitled to cancel it within 60 days of the effective date of this change. This AGREEMENT cannot be transferred or assigned to a THIRD PARTY by one of the parties without the prior AGREEMENT of the other party, unless it is assigned or assigned jointly with the transfer or assignment of all of the activities of the assigning party. Any proposed assignment or transfer shall be notified to the other party by the party proposing such an assignment or such transfer at least sixty (60) days before its execution. In any case, the assignor will be the guarantor with respect to the other party of compliance with the terms of this AGREEMENT by the assignee for the five years following the assignment.

12.3 The titles and paragraphs of this AGREEMENT have been arranged on the grounds of convenience. In no circumstances can they be used for the purpose of interpreting the terms of the AGREEMENT. Unless specifically provided for otherwise, any reference to an Article includes all the sub-divisions of the said Article; a reference to one (several) of the given subdivision(s) does not cover the other subdivisions not referred to.

12.4 Any notification or communication authorized or required within the context of this AGREEMENT shall be deemed as duly accomplished, provided it has been carried out on a postage paid basis by registered letter with acknowledgement of receipt or by any other means of equivalent function to the following addresses:

For the LICENSOR: Institut Pasteur
Direction de la Valorisation et des Partenariats Industriels
25, rue du Dr ROUX
75724 PARIS cedex 15

For the LICENSEE: Cellectis S.A.
28, rue du Dr ROUX
75724 PARIS cedex 15

Any notification shall be deemed to have been effected on the date on which it is actually received by its addressee unless the date of receipt is a public holiday in which case it will be deemed to have been received on the first working day following the public holiday.

12.5 Should some provision of this AGREEMENT prove to be contrary to law, and thus null and void, the validity of this AGREEMENT will not be affected in consequence and the parties shall meet in order to replace the invalid provision by a lawful provision of equivalent effect. In the absence of AGREEMENT being reached on the wording of such a provision and if it is manifest that the importance of the invalid clause is such that, in its absence, the parties would have refrained from entering into the AGREEMENT, the AGREEMENT shall cease at the initiative of one or other of the parties subject to compliance with formalities equivalent to those laid down in Section 9.3 above.

12.6 The waiver by one or other of the parties of the execution of any of the provisions of this AGREEMENT does not, in any way, incorporate or imply any waiver in respect of the implementation of the other obligations. In any case, the fact that one or other of the parties abstains from calling for the execution of an obligation, which the said party may demand, cannot be interpreted as a waiver on its part of the execution of the said obligation, regardless of the duration of its abstention.

ARTICLE 13: DISPUTES- LAW- REGISTRATION

This AGREEMENT will be subject to French law.

ln the event of a difficulty arising between the parties in relation to the interpretation or execution of this AGREEMENT, the parties shall attempt to settle their difference on an amicable basis. In the event of the disagreement persisting, the Paris Courts (Tribunaux de Paris) shall have exclusive competence.

If the dispute affects fees or any sum of money in compensation for the LICENSE, this sum shall remain blocked for the duration of the dispute in an interest-bearing account, opened for this purpose by the party from whom the payment is claimed.

Full powers shall be given to the holder of a copy of this AGREEMENT for the purpose of procuring its fiscal registration and its registration in the national patent registers.

Made in Paris, in four (4) original copies. [Handwritten text: 19 June 2000]

[Signature] [Signature]

CELLECTIS INSTITUT PASTEUR

AMENDMENT N0 1 TO THE PATENT LICENSE AGREEMENT n° C-00061905

BETWEEN:

L'Institut Pasteur,
Foundation recognized as having public utility,
25-28, rue du Docteur Roux,
75724 Paris cedex 15,
represented by Mr. Christian POLICARD,
Director of Development and Industrial Partnerships.

Hereafter referred to as the IP or the "LICENSOR", acting both on its own behalf and on behalf of:

- **Boston Children's Hospital,**
  300 Longwood Avenue
  Boston, MA 02115
  USA

  Hereafter referred to as the "BCH".

Jointly also designated the "LICENSOR",

Party of the first part

AND:

CELLECTIS

Public limited company with capital with a capital of 122,363.47 euros, with its registered office at at 28, rue du Docteur Roux, 75724 Paris cedex 15, represented by Mr. André Choulika, acting in the capacity of CEO

Hereafter referred to as "CELLECTIS" or the "LICENSEE",

Party of the second part.

The LICENSOR and the LICENSEE are hereafter referred to as the "Parties".

RECITALS:

IP filed two provisional patents applications in the United States whom inventors are Mr. Richard Mulligan and Mr. André Choulika relating to process of homologous recombination using meganucleases. IP has agreed to share with BCH exploitation rights of the inventions of theses patent applications and now wishes to share its rights under this technology with a industrial partner.

The BCH has given a mandate to the IP, which accepts it, to represent it and negotiate in its name any license agreement with the company CELLECTIS.

On June 19, 2000, the Parties signed the license patent agreement no. C-00061905 (hereafter the "AGREEMENT"), pursuant to which the LICENSOR grants the LICENSEE exploitation rights to the above mentioned patents and patent applications.

After discussions and exchanges between the Parties, they have decided to modify provisions of the AGREEMENT.

It has therefore been agreed as follows between the Parties:

ARTICLE 1

1.1. The Parties agree that the words defined in Article 1, "DEFINITIONS", of the AGREEMENT, as they are used in this amendment, have the same definitions as in the AGREEMENT and form an integral part of this amendment.

1.2. The following definitions apply for the purposes of this amendment, it being understood when permitted by context that the singular shall be considered to include the plural and vice versa:

1.2.1. By "*I-SceI and/or I-Spom I*" the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061901 signed between the Parties.

1.2.2. By "PGN", the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061906 signed between the Parties.

1.2.3. By "Mulligan", the Parties agree to mean the technologies claimed by the AGREEMENT PATENTS of LICENSE AGREEMENT no. C-00061905 signed between the Parties.

1.2.4. For the sole purposes of articles 3.4 and 3.5 as modified by this amendment, the word "TOOL" will have the definition stated below:

By "TOOL", the Parties agree to mean the use by the LICENSEE's sub-licensee of the LICENSED PROCESSES or LICENSED PRODUCTS for internal purposes or as part of the research or development process conducted by the sub-licensee.

ARTICLE 2

Article 2.4 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of that same article:

"2.4 The LICENSEE may only grant sub-licenses to any THIRD PARTY for the rights which it receives under this AGREEMENT with the prior agreement of the LICENSOR. If the LICENSOR does not communicate its disagreement within twenty-one days from the notification of a sub-licensing project, it shall be considered to have agreed.

The LICENSOR may refuse to grant prior agreement for a sub-license only for serious cause.

The following would constitute serious cause justifying IP's refusal to agree: a sub-licensing agreement between the LICENSEE and a THIRD PARTY containing provisions which are contrary to the ethics, image or intellectual property of the LICENSOR."

ARTICLE 3

Article 3.4 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of the same article:

3.4.1. For sub-licenses concerning a LICENSED PATENT for the use of TOOLS granted by the LICENSEE under Article 2.4 of this AGREEMENT, the LICENSEE will pay the LICENSOR 40% of any compensation it receives, lump sums, royalties, market values (for cross-licensing or exchanges) for all sub-licenses granted to THIRD PARTIES."

3.4.2 For sub-licenses concerning LICENSED PATENTS other than those mentioned in Article 3.4.1 above, granted by the LICENSEE under Article 2.4 of this AGREEMENT, the LICENSEE will pay to the LICENSOR 40% of any compensation it receives, lump sums, royalties, market values (for cross-licensing or exchanges) for all sub-licenses granted to THIRD PARTIES, excluding the amounts stipulated in Article 3.5, without the amount of the royalties owed to the LICENSOR being less than:

- 2% of the net incomes of the sub-licensee for the ISCEI and/or I-Spom I technologies, Mulligan and PGN granted together to the same sub-licensee;
- 1% of the net incomes of the sub-licensee for *ISCEI* technologies granted alone or with Mulligan to the same sub-licensee.

ARTICLE 4

Article 3.5 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of the same article:

3.5 The sub-licensees of the LICENSEE, falling into the category of sub-licensees under article 3.4.2, for each sub-licensing agreement signed, will be required to pay an amount of 15,243 EUROS ex tax which will be passed on in full to the LICENSOR as patent fees already incurred. These same sub-licensees must also pay an amount of 7,621 EUROS ex tax each year, which will be passed on to the LICENSOR as patent fees.

The LICENSEE's sub-licensees, falling into the category of sub-licensees under article 3.4.1, will not be required to pay any amount as patent fees.

ARTICLE 5

The last sentence of Article 10.1 §2 is modified as follow:

"This share must not be less than 15,243 EUROS ex tax per year."

ARTICLE 6

Article 2.6 of the AGREEMENT is modified by the following provisions, which supersede all previous provisions of the same article:

"The IMPROVEMENTS achieved by the LICENSOR are exclusively licensed to the LICENSEE for a period of 5 (five) years following the date of signing of Amendment no. 1 to this AGREEMENT.

"The LICENSOR will inform the LICENSEE of the existence and contents of the IMPROVEMENTS.

"Following the 5 (five) year period, the Parties will come together to mutually agree on the terms of access to the IMPROVEMENTS."

ARTICLE 7

The last sentence of Article 1.5 of the AGREEMENT is modified as follows:

"Patents filed to protect IMPROVEMENTS will be included in the AGREEMENT PATENTS in accordance with the provisions of Article 2.6 of this AGREEMENT."

ARTICLE 8

This amendment will enter into force on the date of its signature.

The Agreement's other provisions remain unchanged and in force between the Parties.

Signed in Paris on [Handwritten text: September 8, 2003]
in 2 original copies.

CELLECTIS **INSTITUT PASTEUR**

PATENT & TECHNOLOGY LICENSE AGREEMENT
AGT. NO. A2014-1834

This Patent & Technology License Agreement ("PTLA") is by and between the Licensor and the Licensee identified below (collectively, "Parties", or singly, "Party").

Licensor owns, controls and/or has the right to license/sublicense the Licensed Subject Matter (defined in Exhibit A). Licensee desires to secure the right and license to use, develop, manufacture, market, and commercialize the Licensed Subject Matter. Licensor desires to have the Licensed Subject Matter developed, exploited and used for the benefit of Licensee, the inventors, Licensor, and the public.

NOW, THEREFORE, in consideration of the mutual covenants and premises herein contained, the Parties hereby agree as follows:

The Terms and Conditions of this PTLA are attached hereto as Exhibit A (the "Terms and Conditions"). In the event of a conflict between provisions of this PTLA and the Terms and Conditions, the provisions in this PTLA shall govern. Unless defined in this PTLA, capitalized terms used in this PTLA shall have the meanings given to them in the Terms and Conditions. The section numbers used in the left hand column in the table below correspond to the section numbers in the Terms and Conditions.

1. Definitions

Effective Date	August 1 2014
Licensor	Ohio State Innovation Foundation, with an address at 1524 North High Street, Columbus, OH 43201.
Licensee	Cellectis, a French *Société Anonyme*, with its principal place of business at 8 rue de la Croix Jarry, 75013 Paris, France
Territory	all countries and all regions Worldwide
Field of Use	Field of Use: any and all activities (including without limitation research, development and commercialization) for Cancer Immunotherapy

Patent Rights

App. No./ Date of Filing	Title	Inventor(s)	Jointly Owned? (Y/N; if Y, with whom?)	Prosecution Counsel
PCT/US2014/036684 05/02/2014, T2013-213	CSI-Specific chimeric Antigen Receptor Engineered Immune Cells	Yu, Jianhua; Hofmeister, Craig; Chu, Jianhong	☐ Yes, w/[whom] ☒ No	Meunier Carlin & Curfman
61/819,141 05/03/2013, T2013-213	Chimeric Antigen Receptor (CAR) Engineered Natural Killer Cells for Cancer Immunotherapy	Yu, Jianhua; Hofmeister, Craig; Chu, Jianhong	☐ Yes, w/[whom] ☒ No	[Law firm]
61/876,492 09/11/2013, T2013-213	Chimeric Antigen Receptor (CAR) Engineered Natural Killer Cells for Cancer Immunotherapy (P2)	Yu, Jianhua; Hofmeister, Craig; Chu, Jianhong	☐ Yes, w/[whom] ☒ No	[Law firm]

Diligence Milestones, Fees and Deadlines

2.4, 3	**Milestone Events**	**Milestone Fees** Due by the Quarterly Payment Deadline for the Contract Quarter in which the milestone events are achieved. For clarification, each milestone payment will be due only once upon the occurrence of the first respective mentioned milestone event.	**Deadlines**
	1. First CAR screening to identify lead candidates concluded for Licensed Product covered by a Valid Claim	$0	August 1, 2015, subject to 20.3
	2. In vitro proof of concept completed for Licensed Product covered by a Valid Claim	$0	August 1, 2016, subject to 20.3
	3. In vivo proof of concept completed for Licensed Product covered by a Valid Claim	$0	August 1, 2017, subject to 20.3
	4. Filing of IND (or an equivalent Regulatory Authority application, if filed outside of the US) for Licensed Product covered by a Valid Claim	0	August 1, 2018, subject to 20.3
	5. Dosing of first patient in a Regulatory Authority-approved Phase 1 Clinical Trial of Licensed Product covered by a Valid Claim	$100,000 US	Within 12 months of receiving IND approval or approval from an equivalent Regulatory Authority
	6. Dosing of first patient in an Regulatory Authority-approved Phase II Clinical Trial of Licensed Product covered by a Valid Claim	$150,000 US	None
	7. Dosing of first patient in a Regulatory Authority-approved Phase III Clinical Trial of Licensed Product covered by a Valid Claim	$200,000 US	None
	8. Regulatory Approval of Licensed Product covered by a Valid Claim in a major licensed territory (US, EU or JP).	$1,000,000 US	None
	9. Regulatory Approval of Licensed Product covered by a Valid Claim in Russia, China, Brazil or India.	$500,000 US	None

Compensation

3	**Patent expenses due upon Effective Date**	Current estimated amount. Licensee's obligations to pay all past and future patent expenses pursuant to Section 6 (Patent Expenses and Prosecution) will not be limited by such amount. $390.00US	**Based on invoices received and approved as of: [Date]** August 31st 2014
3	**Upfront Fee**	$100,000US due on Effective Date	
3	**License Maintenance Fees**	$0 US for Contract Year ending 2014 $20,000 US per Contract Year thereafter until first sale of Licensed Product covered by a Valid Claim $0 US after first sale of Licensed Product	

3	**Sublicense Fees**	None	
3.1	**Running royalty rate (applies to Sales of Licensed Product covered by Valid Claims by Licensee, Affiliates and Sublicensees**	On Net Sales of Licensed Products and/or Licensed Processes covered by a Valid Claim	1.5%; provided, however that the Running royalty rate applicable to Net Sales by a Sublicensee shall be the lesser of (a) 1.5% (or any reduced royalty pursuant to Section 20.2 of this PTLA) of the Sublicensee's Net Sales or (b) fifteen percent (15%) of the Royalty Sublicensing Consideration received by Licensee from such Sublicensees
3.1	**Minimum Annual Royalties**	Starting on January 1st of the Contract Year following the first Sale of Licensed Product covered by a Valid Claim: US$100,000.00 (US$ One Hundred thousand) per Contract Year.	

18. Notices

Licensee Contacts	**Licensor Contacts**
Contact for Notice: Attn: CEO 8 rue de la Croix Jarry, 75013 Paris—France Fax: NA Phone: NA E-mail: NA	Contact for Notice: Attn: President 1524 N. High Street Columbus, OH 43201 Fax: 614-292-8907 Phone: 614-292-1315 E-mail: techlicensing@osu.edu
Accounting contact: Attn: CEO 8, rue de la Croix Jarry, 75013 Paris - France Fax: NA Phone: NA E-mail: NA	Payment and reporting contact: Checks payable to "Ohio State Innovation Foundation" Attn: Accounting/Compliance 1524 N. High Street Columbus, OH 43201 Fax: 614-292-8907 Phone: 614-292-1315 E-mail: OSIFcompliance@osu.edu
Patent prosecution contact: Attn: Espinasse Sylvain 8, rue de la Croix Jarry, 75013 Paris - France Fax: NA Phone: NA E-mail: sylvain.espinasse@cellectis.com	OSIF Patent Coordinator 1524 N. High Street Columbus, OH 43201 Fax: 614-292-8907 Phone: 614-292-1315 E-mail: tlcip@osu.edu
Business development contact: Attn: Julia Berretta 8, rue de la Croix Jarry, 75013 Paris—France Fax: +33 (0)1 81 69 16 06 Phone:+33 (0)1 81 69 16 51 E-mail: julia.berretta@cellectis.com	Patent prosecution contact: Attn: Brian Giles [Address] Fax: [Fax number] Phone: 1-678-869-7744 E-mail: bgiles@mcciplaw.com

For Licensor Administrative Purposes Only

Changes to Standard Form Terms and Conditions	There have not been any revisions to Licensor's standard form Terms and Conditions, except for revisions to the following sections: 1, 2.1, 2.2, 2.3, 2.4, 3.1, 4, 5.4, 5.5, 6.1, 7.1, 7.3, 8, 9.2, 10, 11.1, 11.2, 12,13, 14, 15, 17, 19.4, and 19.8.

20. Special Provision. The Parties hereby agree to the following special provisions (if any) set forth in this Section 20 with respect to this PTLA.

20.1 Milestone Definitions

"**Phase I Clinical Trial**" means any clinical study conducted to initially evaluate the safety, metabolism, pharmacologic actions, side effects associated with and if possible early evidence of effectiveness of Licensed Product in humans.

"**Phase II Clinical Trial**" means any clinical study conducted to evaluate the effectiveness of Licensed Product for a particular indication or indications in patients with the disease or condition under study and to determine the common short-term side effects and risks associated with License Product

"**Phase III Clinical Trial**" means any clinical study conducted to gather the additional information about the effectiveness and safety that is needed to evaluate the overall benefit-risk relationship of Licensed Product.

"**Regulatory Approval**" means the approval needed by the Regulatory Authority for a particular national jurisdiction to market, Sell and use a Licensed Product or Licensed Service in that national jurisdiction.

"**Regulatory Authority**" means the governmental authority responsible for granting any necessary licenses or approvals for the marketing, Sale and use of a Licensed Product or Licensed Service in a particular national jurisdiction, including without limitation FDA, European Medicines Agency or Koseisho (i.e., the Japanese Ministry of Health and Welfare).

20.2 Stacking of Royalty Payments. In the event that a Licensed Product / Licensed Process cannot be used, developed, manufactured, marketed, and/or commercialized without infringing the issued patent or patents owned or controlled by a third party ("Third Party Patents"), and if Licensee (or its Affiliates and Sublicensees) pays a royalty to such third party for rights to use such Third Party Patents in connection with the Sale of Licensed Products / Licensed Processes (the "Third Party Royalty Payment"), then 50% of such Third Party Royalty Payment may be credited against the running royalties payable on the Net Sales for those Licensed Products which practice the Third Party Patents, but in no event shall such credits reduce the royalty rate payable to Licensor below 0.5% of such Net Sales.

By way of example, if Licensee makes a Third Party Royalty Payment under this Section of 1%, then a credit of 0.5% will be applied towards running royalties payable hereunder, reducing the royalties payable on Net Sales with respect to such Sale from 1.5% to 1.0%. If Licensee wishes to invoke this provision, written notification must be provided to Licensor indicating the identity of the Third Party, the rate of the Third Party Royalty Payment, and a description of the Third Party Patents that will be / are incorporated into the Licensed Product / Licensed Process. If such Third Party Patents license agreement with Licensee includes a royalty stacking provision of like intent to the present Section, the royalty rate reduction provided for in this section will be calculated as if such provision in such other license were absent. Any such deductions from Licensee shall be detailed to Licensor, upon Licensor's request.

20.3 Milestone Extension Option. Licensee shall have the option to extend the deadlines for all those Milestone Events specified in said Section 2.4,3 in six (6) months increments with a maximum extension of two (2) years by paying the following milestone extension Fees:

lst six (6) month extension fee - $0 US
2nd six (6) month extension fee- $12,500 US
3rd six (6) month extension fee- $25,000 US
4th six (6) month extension fee- $50,000 US

This option may only be exercised at a time when Licensee is in compliance with all of its obligations under the Agreement, including having met all milestones with deadlines prior to the date such notice is given (without giving effect to the extension resulting from the exercise of such option). In order to exercise this option, Licensee must provide Licensor written notice of its exercise of this option accompanied by payment of the milestone extension fee. Such notice must contain an affirmation from the Licensee that it is in compliance with all of its obligations under the Agreement, that it is currently Diligently Commercializing Licensed Products or Licensed Services and that it reasonably expects to meet the milestone deadlines as extended by the exercise of such option. Upon such payment and exercise, each of the future milestones deadline dates shall be extended by the duration of the extension.

21. No Other Promises and Agreements: Representation by Counsel. Each Party expressly represents and warrants and does hereby state and represent that no promise or agreement which is not herein expressed has been made to it in executing this PTLA except those explicitly set forth herein and in the Terms and Conditions, and that such Party is not relying upon any statement or representation of the other Party or its representatives except those explicitly set forth herein and in the Terms and Conditions. Each Party is relying on its own judgment and has had the opportunity to be represented by a legal counsel. Each Party hereby represents and warrants that it understands and agrees to all terms and conditions set forth in this PTLA and said Terms and Conditions.

22. Deadline for Execution by Licensee. If this PTLA is executed first by a Party (the "Initiating party") and is not executed by the other Party and received by the Initiating Party at the address and in the manner set forth in Section 18 of the Terms and Conditions within sixty (60) days of the date of signature set forth under the Initiating Party's signature below, then this PTLA shall be null and void and of no further effect.

IN WITNESS WHEREOF, the Parties hereto have caused their duly authorized representatives to execute this PTLA.

LICENSOR: OHIO STATE INNOVATION FOUNDATION	LICENSEE: Cellectis SA
BY: /s/ Erin Bender	BY: /s/ André CHOULIKA
Name: Erin Bender Title: Vice President	NAME: André CHOULIKA TITLE: Chief Executive Officer
DATE: 23 October 2014	DATE: October 15, 2014

EXHIBIT A
TERMS AND CONDITIONS OF THE PTLA

These Terms and Conditions of the PTLA ("Terms and Conditions") are incorporated by reference into the PTLA to which they are attached. All Section references in these Terms and Conditions shall be references to provisions in these Terms and Conditions unless explicitly stated otherwise.

1. Definitions.

"**Affiliate**" means any business entity more than 50% owned by Licensee, any business entity which owns more than 50% of Licensee, or any business entity that is more than 50% owned by a business entity that owns more than 50% of Licensee.

"**Agreement**" means collectively (i) these Terms and Conditions, and (ii) the PTLA.

"**Confidential Information**" means all information that is of a confidential and proprietary nature to Licensor or Licensee and provided by one Party ("Discloser") or made available to the other Party ("Recipient") under the Agreement, and this Agreement.

"**Contract Quarter**" means the three-month periods ending on March 31, June 30, September 30, and December 31. "Contract Year" means the 12-month periods ending on December 31.

"**Effective Date**", "**Field of Use**", "**Inventors**" (or singly, "**Inventor**"), "**Licensee**", "**Licensor**", "**Prosecution Counsel**", and "**Territory**" mean, respectively, the date indicated as the Effective Date, the field indicated as the Field of Use, the inventors identified in the definition of Patent Rights, the Party identified as the Licensee, the Party identified as the Licensor, the law firm or attorney who is handling the prosecution of the Patent Rights, and the territory, all as identified in Section 1 of the PTLA.

"**Government**" means any agency, department or other unit of the United States of America or the State of Ohio.

"**Gross Consideration**" means all cash and non-cash consideration (e.g., securities).

"**Licensed Process**" means a method, procedure, process, performance of a service, or other subject matter: (i) whose practice, use, sale, or offer for sale is covered in whole or in part by a Valid Claim of the Patent Rights; and/or (ii) that uses, incorporates, is made with, is created from, is derived or developed from the use of any Licensed Products or modifications of, enhancements to, and/or derivatives of the Licensed Products.

"**Licensed Product**" means any product, apparatus, kit, portion, part, or component thereof: (i) whose manufacture, use, sale, offer for sale or import is covered in whole or in part by a Valid Claim of the Patent Rights; (ii) that is made by using a Licensed Process or another Licensed Product; and/or (iii) that is derived or developed from a Licensed Process or another Licensed Product.

"**Licensed Subject Matter**" means Patent Rights.

"**Milestone Fees**" means all Fees identified as Milestone fees in Sections 2.4, 3 of the PTLA.

"**Net Sales**" means the Gross Consideration received by Licensee, its Affiliates and Sublicensees from the Sale of Licensed Products and Licensed Processes, less the following items directly attributable to the Sale of such Licensed Products and Licensed Processes that are specifically identified on the invoice for such Sale and borne by the Licensee, its Affiliates or Sublicensees as the seller: (a) discounts and rebates actually granted; (b) sales, value added, use and other taxes and government charges actually paid, excluding income taxes; (c) import and export duties actually paid; (d) freight, transport, packing and transit insurance charges actually paid or allowed; and (e) other amounts actually refunded, allowed or credited due to rejections or returns, but not exceeding the original invoiced amount.

"**PTLA**" means the particular Patent & Technology License Agreement to which these Terms and Conditions are attached and incorporated.

"**Patent Rights**" means: (a) the patents and patent applications listed in Section 1 of the PTLA; (b) all non-provisional patent applications that claim priority to any of the provisional applications listed in Section 1 of the PTLA to the extent the claims of such non-provisional applications are entitled to claim priority to such provisional applications; (c) all divisional(s), continuation(s) and continuations-in-part (excluding new matter and claims containing new matter) of the non-provisional patent applications identified in (a) and (b) above, to the extent that claims of such continuations-in-part are entitled to claim priority to at least one of the patent applications identified in (a) or (b) above; (d) all reissues, reexaminations, extensions, and foreign counterparts of any of the patents or patent applications identified in (a), (b) or (c), above; and (e) any patents that issue with respect to any of the patent applications listed in (a), (b), (c) or (d), above.

"**Quarterly Payment Deadline**" means the day that is forty-five (45) days after the last day of any particular Contract Quarter.

"**Royalty Sublicensing Consideration**" means the earned royalties received by the Licensee or its Affiliate, directly or indirectly, from any Sublicensee in consideration for the Net Sales.

"**Sell, Sale or Sold**" means any transfer or other disposition of Licensed Products or Licensed Processes for which consideration is received by Licensee, its Affiliates or Sublicensees. A Sale of Licensed Products or Licensed Processes will be deemed completed at the time Licensee or its Affiliate or its Sublicensee receives such consideration.

"**Sublicense Agreement**" means any agreement or arrangement pursuant to which Licensee (or an Affiliate or Sublicensee) grants to any third party any of the license or sublicense rights granted to the Licensee under the Agreement.

"**Sublicense Fee**" means the fee specified in Section 3 of the PTLA.

"**Sublicensee**" means any entity that enters into an agreement or arrangement with Licensee or receives a sublicense grant from Licensee under the Licensed Subject Matter, to manufacture, have manufactured, offer for Sale, Sell, lease, use, practice, and/or import the Licensed Product and/or Licensed Process.

"**Valid Claim**" means any issued claim of the Patent Rights that has not expired, or been finally held as invalid or unenforceable by a court or administrative body of competent jurisdiction from which no appeal can be or is taken, as well as any pending claim of the Patent Rights that has not been finally and conclusively rejected from which no appeal can be or is taken.

2. License Grant and Commercialization.

2.1 **Grant**.

(a) Licensor grants to Licensee a royalty-bearing exclusive license under Patent Rights, to make, have made, distribute, have distributed, use, offer for Sale, Sell, lease, loan and/or import Licensed Products and Licensed Processes in the Field of Use in the Territory.

(b) [Intentionally left blank]

(c) This grant is subject to: (l)the payment by Licensee to Licensor of all consideration required under the Agreement; (2) any rights of, or obligations to, the Government (subject to clause 11.2 herein); and (3) rights retained by Licensor to (i) publish the scientific findings from research related to the Licensed Subject Matter, (ii) use the Licensed Subject Matter for teaching, research, education, and other educationally-related purposes, and (iii) grant rights to, and transfer material embodiments of, the Licensed Subject Matter to other academic institutions or non-profit research institutions for the purposes identified in clauses (i) and (ii) above.

(d) Licensor reserves all rights not expressly granted in the Agreement including, but not limited to, any other licenses, implied or otherwise, to any patents or other rights of Licensor, regardless of whether such patents or other rights are dominant or subordinate to any rights expressly granted in the Agreement, or are required to exploit any rights expressly granted in the Agreement.

2.2 **Affiliates**. The license granted herein extends to any Licensee's Affiliate listed in Appendix 2 herein and Licensee will be responsible for its Affiliates compliance with the terms herein. For the sake of clarity, any specific reference to "Licensee" herein shall include such Affiliate regardless of whether a specific reference to an "Affiliate" is made in such provision. Licensee may update the list of its Affiliates as set forth in Appendix 2, during the term of this Agreement, upon written notification to Licensor.

2.3 **Sublicensing**. Licensee has the right to grant Sublicense Agreements under the Licensed Subject Matter consistent with the terms of the Agreement, subject to the following:

(a) A Sublicense Agreement shall not exceed the scope and rights granted to Licensee hereunder. Sublicensee must agree in writing to be bound by the applicable terms and conditions of this Agreement and shall indicate that Licensor is a third party beneficiary of the Sublicense Agreement.

(b) Licensee shall deliver to Licensor a summary of each Sublicense Agreement granted by Licensee, Affiliate or Sublicensee, and any modification or termination thereof, within sixty (60) days following the applicable execution, modification, or termination of such Sublicense Agreement. Any such summary shall include relevant information, as reasonably determined by Licensor, for Licensor to evaluate the potential financial consideration the Licensor would obtain from Licensee having entered into such sublicense Agreement as well as any relevant information related to section 2.4 below.

(c) Notwithstanding any such Sublicense Agreement, Licensee will remain primarily liable to Licensor for all of the Licensee's duties and obligations contained in the Agreement. Each Sublicense Agreement will contain a right of termination by Licensee in the event that the Sublicensee breaches the payment or reporting obligations affecting Licensor or any other terms and conditions of the Sublicense Agreement that would constitute a breach of the Agreement if such acts were performed by Licensee.

2.4 **Diligent Commercialization**. Licensee by itself or through its Affiliates and Sublicensees will use diligent and commercially reasonable efforts to commercialize Licensed Products and/or Licensed Processes in the Field of Use within the Territory. Without limiting the foregoing, Licensee will: (a) maintain a bona fide, funded, ongoing and active research, development, manufacturing, marketing, and/or sales program to diligently make, have made, use, sell, and have sold Licensed Products and/or Licensed Processes that are commercially available to the public as soon as commercially practicable, and (b) fulfill the milestone events specified in Section 2.4,3 of the PTLA by the deadlines indicated therein. If the obligations under this Section 2.4,3 are not fulfilled, Licensor may treat such failure as a breach in accordance with Section 7.3(b).

3. **Compensation**. In consideration of rights granted to Licensee, Licensee will pay Licensor all of the fees and royalties set forth in the PTLA and these Terms and Conditions. Each payment will reference the PTLA number and will be sent to Licensor's payment and accounting contact in Section 18 of the PTLA.

3.1 **Royalties**. Licensee will pay running royalties on Net Sales in each Contract Quarter on or before the Quarterly Payment Deadline for such Contract Quarter at the rate set forth in Section 3.1 of the PTLA.

If royalties paid to Licensor do not reach the minimum royalty amounts stated in Section 3.1 of the PTLA in the stated period, then forty-five (45) days after the end of such period, Licensee will pay Licensor an additional amount equal to the difference between the stated minimum royalty amount and the actual royalties paid to Licensor.

4. **Reports and Plans**. Utilizing the report forms in Appendix 1, Licensee will provide to Licensor's payment and reporting contact the following reports, including but not limited to: (a) milestone, commercialization plan update report and annual written progress report on January 31; and (b) quarterly payment and royalty report.

5. **Payment**. Records, and Audits.

5.1 **Payments**. AN amounts referred to in the PTLA are expressed in U.S. dollars without deductions for taxes, assessments, fees, or charges of any kind. Each payment will reference the Agreement number set forth at the beginning of the PTLA. AH payments to Licensor will be made in U.S. dollars by check or wire transfer (Licensee to pay all wire transfer fees) payable to the payee identified in Section 18 and sent to the payment and reporting contact in Section 18. Licensee may not make any tax withholdings from payments to Licensor.

5.2 **Sales Outside the U.S**. If any currency conversion shall be required in connection with the calculation of payments hereunder, such conversion shall be made using the rate used by Licensee for its financial reporting purposes in accordance with Generally Accepted Accounting Principles (or foreign equivalent).

5.3 **Late Payments**. Amounts that are not paid when due will accrue a late charge from the due date until paid, at a rate equal to 1.0% per month (or the maximum allowed by law, if less).

5.4 **Records**. For a period of six (6) years after the Contract Quarter to which the records pertain, Licensee agrees that it and its Affiliates and Sublicensees will each keep complete and accurate records of their Sales, Net Sales, royalty payment calculations, and Milestone Fees in sufficient detail to enable such payments to be determined and audited in accordance with Section 5.5 hereafter.

5.5 **Auditing**. Licensee and its Affiliates will permit Licensor or its representatives, at Licensor's expense, to periodically examine books, ledgers, and records during regular business hours, at Licensee's or its Affiliate's place of business, on at least thirty (30) days advance notice, to the extent necessary to verify any payment or report required under the Agreement. For each Sublicensee, Licensee shall obtain such audit rights for itself and use reasonable efforts to obtain audit rights for Licensor. It is agreed that in the event Licensee does not reasonably obtain Licensor's right to audit a Sublicensee's books, ledgers, and records, Licensee may audit such Sublicensee upon Licensor's reasonable request (and expense). If Licensee conducts an audit of the Sublicensee's records, Licensee will furnish to Licensor a copy of the findings from such audit to the extent affecting any Licensor's payment or report required under the Agreement. No more than one audit of Licensee, each Affiliate, and each Sublicensee shall be conducted under this Section 5.5 in any calendar year. If any amounts due to Licensor have been underpaid, then Licensee shall immediately pay Licensor the amount of such underpayment plus accrued interest due in accordance with Section 5.3. If the amount of underpayment is equal to or greater than 5% of the total amount due for the records so examined, Licensee will pay the cost of such audit. Such audits may, at Licensor's sole discretion, consist of a self-audit conducted by Licensee at Licensee's expense and certified in writing by an authorized officer of Licensee. All information examined pursuant to this Section 5.5 shall be deemed to be the Confidential Information of the Licensee.

6. Patent Expenses and Prosecution.

6.1 **Patent Expenses**. Licensee shall pay Licensor for all past patent expenses as set forth in Section 3 of the PTLA. Licensee shall pay any past patent expenses as well as all future patent expenses incurred by Licensor regarding the Patent Rights within forty-five (45) days after Licensee's receipt of an invoice from Licensor. Patent expense payment delinquencies (whether owed directly to Prosecuting Counsel or to Licensor) will be considered a payment default under Section 7.3(a).

6.2 **Direction of Prosecution**. Licensor shall control the preparation, prosecution and maintenance of the Patent Rights. Licensor will consider input from Licensee regarding thoughts and strategies for the preparation, prosecution and maintenance of the Patent Rights. Licensor will request that copies of all material documents received by Prosecution Counsel from patent offices regarding the Patent Rights and the material documents prepared by Prosecution Counsel for submission to patent offices be provided to Licensee for review and comment prior to filing to the extent practicable under the circumstances.

6.3 **Ownership**. All patent applications and patents will be in the name of Licensor (and any co-owner identified in Section 1 of the PTLA) and owned by Licensor (and such co-owner, if any).

6.4 **Foreign Filings**. In addition to the U.S., the Patent Rights shall, subject to applicable bar dates, be pursued in such foreign countries as Licensee so designates in writing to Licensor in sufficient time to reasonably enable the preparation of such additional filings, and in those foreign countries in which Licensor has filed applications prior to the Effective Date. If Licensee does not choose to pursue patent rights in a particular foreign country and Licensor chooses to do so, Licensee shall so notify Licensor and thereafter said patent application or patent shall no longer be included in the Patent Rights and Licensee shall have no further rights thereto. Licensor shall have the right to make alternative arrangements with Licensee for upfront payment of foreign patent expenses.

6.5 **Withdrawal from Paying Patent Costs**. If at any time Licensee wishes to cease paying for any costs for a particular Patent Right or for patent prosecution in a particular jurisdiction, Licensee must give Licensor at least ninety (90) days prior written notice and Licensee will continue to be obligated to pay for the patent costs which reasonably accrue during said notice period. Thereafter, said patent application or patent shall no longer be included in the Patent Rights and Licensee shall have no further rights thereto.

7. Term and Termination.

7.1 **Term**. Unless earlier terminated as provided herein, the term of the Agreement will commence on the Effective Date and continue until the last to expire Valid Claim or termination of the Patent Rights.

7.2 **Termination by Licensee**. Licensee, at its option, may terminate the Agreement by providing Licensor written notice of termination and such termination will become effective ninety (90) days after receipt of such notice by Licensor.

7.3 **Termination by Licensor**. Licensor, at its option, may immediately terminate the Agreement, or any part of Licensed Subject Matter, or any part of Field of Use, or any part of Territory, or the exclusive nature of the license grant, upon delivery of written notice to Licensee of Licensor's decision to terminate, if any of the following occur:

(a) Licensee becomes in arrears in any payments due under the Agreement, and Licensee fails to make the required payment within sixty (60) days after delivery of written notice from Licensor; or

(b) Licensee is in breach of any non-payment provision of the Agreement, and does not cure such breach within sixty (60) days after delivery of written notice from Licensor; or

(c) Licensee or its Affiliate initiates any proceeding or action to challenge the validity, enforceability, or scope of one or more of the Patent Rights, or assist a third party in pursuing such a proceeding or action. Upon Licensor's request, Licensee shall terminate any Sublicense Agreement with a Sublicensee that initiates any proceeding or action to challenge the validity, enforceability, or scope of one or more of the Patent Rights, or assist a third party in pursuing such a proceeding or action.

7.4 **Other Conditions of Termination**. The Agreement will terminate:

(a) Immediately without the necessity of any action being taken by Licensor or Licensee, (i) if Licensee files a bankruptcy action or becomes bankrupt or insolvent, or (ii) Licensee's Board of Directors elects to liquidate its assets or dissolve its business, or (iii) Licensee ceases its business operations, or (iv) Licensee makes an assignment for the benefit of creditors, or (v) if the business or assets of Licensee are otherwise placed in the hands of a receiver, assignee or trustee, whether by voluntary act of Licensee or otherwise; or

(b) At any time by mutual written agreement between Licensee and Licensor.

7.5 **Effect of Termination**. If the Agreement is terminated for any reason:

(a) All Sublicenses that are granted by Licensee pursuant to this Agreement where the Sublicensee is in compliance with its Sublicense Agreement as of the date of such termination will remain in effect and will be assigned to Licensor, except that Licensor will not be bound to perform any duties or obligations set forth in any Sublicenses that extend beyond the duties and obligations of Licensor set forth in this Agreement; and

(b) Licensee shall cease making, having made, distributing, having distributed, using, selling, offering to sell, leasing, loaning and importing any Licensed Products and performing Licensed Processes by the effective date of termination; and

(c) Licensee immediately shall tender payment of all accrued royalties and other payments due to Licensor as of the effective date of termination; and

(d) Nothing in the Agreement will be construed to release either Party from any obligation that matured prior to the effective date of termination; and

(e) The provisions of Sections 8 (Confidentiality), 9.4 (Cooperation), 11 (Representations and Disclaimers), 12 (Limit of Liability), 13 (Indemnification), 14 (Insurance), 17 (Use of Name), 18 (Notices), and 19 (General Provisions) will survive any termination or expiration of the Agreement. In addition, the provisions of Sections 3 (Compensation), 4 (Reports and Plans), 5 (Payment, Records and Audits), and 6.1 (Patent Expenses) shall survive with respect to all activities and payment obligations accruing prior to the termination or expiration of the Agreement.

8. **Confidentiality**. Recipient will use reasonable care to safeguard the confidentiality of the Confidential Information and will not provide any Confidential Information to third parties without Discloser's prior written consent or use the Confidential Information of the Discloser for any purpose other than as strictly permitted under this Agreement. Recipient will permit its employees to have access to the Confidential Information only on a need-to-know basis, and then only on the basis of a clear understanding by these individuals of the obligations hereunder. Recipient is under no obligation for any Confidential Information which: (a) it can demonstrate by written records was previously and legally known to it; (b) is now, or becomes in the future, public knowledge other than through its own acts or omissions; (c) it independently develops by those not having access to the Confidential Information and which can be proven through verifiable records; (d) it lawfully obtains from a source independent of the Discloser not bound by

confidentiality and restricted use obligations with regard to such Confidential Information; or (e) is required by applicable law to be disclosed provided that if Recipient is required to make any such disclosure of the Discloser's Confidential Information, to the extent it may legally do so, it will give reasonable advance written notice to Discloser of such disclosure and will reasonably cooperate with the Discloser to secure confidential treatment of such information prior to its disclosure (whether through protective orders or otherwise). Neither Party shall make any public announcement regarding this Agreement without the express written consent of the other Party. Licensee and its Affiliates shall only be entitled to disclose, on a need to know basis, Confidential Information, and the existence of this Agreement to an acquirer of all or substantially ail of the assets of the business to which this Agreement pertains or potential Sublicensees provided that Licensee (or its relevant Affiliate) has previously bound such potential acquirer or Sublicensee by confidentiality and restricted use obligations at least as stringent than those set forth in this Agreement. Subject to the exclusions listed above, the Parties' confidentiality obligations under the Agreement will survive termination of the Agreement and will continue for a period of five (5) years thereafter.

9. Infringement and Litigation.

9.1 **Notification**. If either Licensor's designated office for technology commercialization or Licensee becomes aware of any infringement or potential infringement of Patent Rights, each Party shall promptly notify the other of such in writing.

9.2 **Licensee's Enforcement Rights**. Licensee shall have the first right but not the obligation to enforce the Patent Rights against any infringement by a third party in the Field in the Territory, within a period of six (6) months from notice of such infringement. Licensee shall be responsible for payment of ail fees and expenses associated with such enforcement incurred by Licensee and reasonably incurred by Licensor in providing cooperation or joining as a party as provided in Section 9.4. Ten percent (10%) any monetary recovery for actual damages or punitive damages, in excess of Licensee's documented, third-party expenses in enforcing the Patent Rights and amounts actually reimbursed by Licensee to Licensor under this Section 9.2, shall be shared with Licensor.

9.3 **Licensor's Enforcement Rights**. If Licensee does not file suit within six (6) months after a written request by Licensor to initiate an infringement action or earlier if Licensee provides written notice to Licensor that Licensee will not initiate infringement action, then Licensor shall have the right, at its sole discretion, to bring suit to enforce any Patent Right licensed hereunder against the infringing activities, with Licensor retaining all recoveries from such enforcement.

9.4 **Cooperation between Licensor and Licensee**. In any infringement suit or dispute, the Parties agree to cooperate fully with each other in a reasonable manner. If it is necessary to name Licensor as a party in such action, then Licensee must first obtain Licensor's prior written permission, which permission shall not be unreasonably withheld, provided that Licensor shall have reasonable prior input on choice of counsel on any matter where such counsel represents Licensor.

10. Export Compliance. Licensee shall observe all applicable United States and foreign laws and regulations with respect to the research, development, manufacture, marketing and transfer of Licensed Products and related technical data, including, without limitation, the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulation. Licensee hereby represents and covenants that Licensee: (a) is neither a national of, nor controlled by a national of, any country to which the United States prohibits the export or re-export of goods, services, or technology; (b) is not a person specifically designated as ineligible to export from the United States or deal in U.S.-origin goods, services, or technologies; (c) shall not export or re-export, directly or indirectly, any Licensed Products and Licensed Processes to any country or person (including juridical persons) to which the United States prohibits the export of goods, technology or services; and (d) in the event that a United States government license or authorization is required for an export or re-export of goods, services, or technology (including technical information acquired from Licensor under this Agreement and/or any products created by using such technical information or any part

thereof), shall obtain any necessary United States government license or other authorization prior to undertaking the export or re- export. Licensee shall include a provision in its agreements, substantially similar to this Section 10, with its Sublicensees, third party persons or entities who purchase a Licensed Product, requiring that these parties comply with all then-current applicable export laws and regulations and other applicable laws and regulations.

11. Representations and Disclaimers.

11.1 **Licensor Representations**. Subject to Clause 11.2 herein, Licensor represents and warrants to Licensee that to its best knowledge, having conducted a diligence review of the Licensed Subject Matter: (a) Licensor is the owner or agent of the entire right, title, and interest in and to Patent Rights (other than the right, title and interest of any joint owner identified in Section 1 of the PTLA), (b) Licensor has the right to grant the license and sublicense hereunder, and (c) Licensor has not knowingly granted and will not knowingly grant licenses or other rights under the Patent Rights that are in conflict with the terms and conditions in the Agreement.

11.2 **Government Rights**. Licensor represents and warrants that the Licensed Subject Matter have not been developed under a funding agreement with Government. The Agreement is made subject to the Government's rights under any such agreement and under any applicable Government law or regulation and Licensor shall immediately inform Licensee if it becomes aware of any Government's right under the Licensed Subject Matter and this Agreement. To the extent that there is a conflict between any such agreement, such applicable law or regulation and the Agreement, the terms of such Government agreement, and applicable law or regulation, shall prevail.

11.3 **Licensor Disclaimers**. EXCEPT AS SPECIFICALLY SET FORTH IN SECTION 11.1, LICENSEE UNDERSTANDS AND AGREES THAT LICENSOR MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, AS TO THE LICENSED PRODUCTS OR LICENSED PROCESSES OR AS TO THE OPERABILITY OR FITNESS FOR ANY USE OR PARTICULAR PURPOSE, MERCHANTABILITY, SAFETY, EFFICACY, APPROVABILITY BY REGULATORY AUTHORITIES, TIME AND COST OF DEVELOPMENT, PATENTABILITY, NONINFRINGEMENT, AND/OR BREADTH OF PATENT RIGHTS. LICENSOR MAKES NO REPRESENTATION AS TO WHETHER ANY CLAIM OR PATENT WITHIN PATENT RIGHTS IS VALID, OR AS TO WHETHER THERE ARE ANY PATENTS NOW HELD, OR WHICH WILL BE HELD, BY OTHERS OR BY LICENSOR THAT MIGHT BE REQUIRED FOR USE OF PATENT RIGHTS IN THE FIELD OF USE. NOTHING IN THE AGREEMENT WILL BE CONSTRUED AS CONFERRING BY IMPLICATION, ESTOPPEL OR OTHERWISE ANY LICENSE OR RIGHTS TO ANY PATENTS OR TECHNOLOGY OF LICENSOR OTHER THAN THE PATENT RIGHTS, WHETHER SUCH PATENTS ARE DOMINANT OR SUBORDINATE TO THE PATENT RIGHTS SPECIFICALLY DESCRIBED HEREIN.

11.4 **Licensee Representation**. By execution of the Agreement, Licensee represents, acknowledges, covenants and agrees (a) that Licensee has not been induced in any way by Licensor or its employees to enter into the Agreement; (b) that Licensee has been given an opportunity to conduct sufficient due diligence with respect to all items and issues pertaining to this Section 11 (Representations and Disclaimers) and all other matters pertaining to the Agreement; (c) that Licensee has adequate knowledge and expertise, or has utilized knowledgeable and expert consultants, to adequately conduct the due diligence; and (d) that Licensee accepts all risks inherent herein.Licensee represents that it is a duly organized, validly existing entity of the form indicated in Section 1 of the PTLA, and is in good standing under the laws of its jurisdiction of organization as indicated in Section 1 of the PTLA, and has all necessary corporate or other appropriate power and authority to execute, deliver and perform its obligations hereunder.

12. **Limit of Liability**. IN NO EVENT SHALL LICENSEE, LICENSOR, OSU, OR THEIR INVENTORS, OFFICERS, EMPLOYEES, STUDENTS, TRUSTEES, AGENTS, OR AFFILIATED ENTERPRISES, BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, INCIDENTAL, EXEMPLARY, OR PUNITIVE DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS OR REVENUE) ARISING OUT OF OR IN CONNECTION WITH THE AGREEMENT OR ITS SUBJECT MATTER, REGARDLESS OF WHETHER ANY SUCH PARTY KNOWS OR SHOULD KNOW OF THE POSSIBILITY OF SUCH DAMAGES.

13. **Indemnification Obligation**. Licensee agrees to hold harmless, defend and indemnify Licensor, its Affiliates, and their officers, employees, students, inventors, trustees, agents, and consultants ("Indemnified Parties") from and against any liabilities, damages, causes of action, suits, judgments, liens, penalties, fines, losses, costs and expenses (including, without limitation, reasonable attorneys' fees and other expenses of litigation) (collectively "Liabilities") resulting from claims or demands brought by third parties against an Indemnified Party on account of any injury or death of persons, damage to property, or any other damage or loss arising out of or in connection with the Licensee's performance of this Agreement or the exercise or practice by or under authority of Licensee, its Affiliates or their Sublicensees, or third party person or entity who purchases a Licensed Product, of the rights granted hereunder. Licensee shall have no responsibility or obligation under this section for any Liabilities to the extent caused by the gross negligence or willful misconduct by Licensor.

14. **Insurance Requirements**. Prior to any Licensed Product or Licensed Process being used or Sold (including for the purpose of obtaining regulatory approval), by Licensee or an Affiliate, and for a period of five years after the Agreement expires or is terminated, Licensee shall, at its sole cost and expense, procure and maintain commercial general liability insurance in commercially reasonable and appropriate amounts for the Licensed Product or Licensed Process being used or Sold. Licensee shall impose such insurance obligations to its Sublicensees. Such commercial general liability insurance shall provide, without limitation: (a) product liability coverage; and (b) broad form contractual liability coverage for Licensee's indemnification under the Agreement. Upon request by Licensor, Licensee shall provide Licensor with written evidence of such insurance. Additionally, Licensee shall provide Licensor with written notice of at least sixty (60) days prior to Licensee cancelling, not renewing, or materially changing such insurance.

15. **Assignment**. This Agreement is not assignable by Licensee without the prior written consent of Licensor, which consent will not be unreasonably withheld. For any permitted assignment to be effective, (a) Licensee must be in good standing under this Agreement, and (b) the assignee must assume in writing (a copy of which shall be promptly provided to Licensor) all of Licensee's interests, rights, duties and obligations under the Agreement and agree to comply with all terms and conditions of the Agreement as if assignee were an original Party to the Agreement.

16. **Patent Markings**. Licensee agrees that all Licensed Products Sold by Licensee, Affiliates, and Sublicensees will be marked in accordance with each country's patent marking laws, including Title 35, U.S. Code, in the United States.

17. **Use of Name**. Either Party will not use the name, trademarks or other marks of the other Party without the advance written consent of the other Party, which consent may be revoked at any time by the other Party.

18. **Notices**. Any notice or other communication of the Parties required or permitted to be given or made under the Agreement will be in writing and will be deemed effective when sent in a manner that provides confirmation or acknowledgement of delivery and received at the address set forth in Section 18 of the PTLA (or as changed by written notice pursuant to this Section 18). Notices required under the Agreement may be delivered via E-mail provided such notice is confirmed in writing as indicated.

19. General Provisions.

19.1 **Binding Effect**. The Agreement is binding upon and inures to the benefit of the Parties herein, their respective executors, administrators, heirs, permitted assigns, and permitted successors in interest.

19.2 **Construction of Agreement**. Both Parties agree that any ambiguity in the Agreement shall not be construed more favorably toward one Party than the other Party, regardless of which Party primarily drafted the Agreement.

19.3 **Counterparts and Signatures**. The Agreement may be executed in multiple counterparts, each of which shall be deemed an original, but all of which taken together shall constitute one and the same instrument. A Party may evidence its execution and delivery of the Agreement by transmission of a signed copy of the Agreement via facsimile or email.

19.4 **Compliance with Laws**. Licensee and Licensor will comply with all applicable federal, state and local laws and regulations.

19.5 **Governing Law; Jurisdiction**. The Agreement will be construed and enforced in accordance with laws of the State of Ohio, without regard to choice of law and conflicts of law principles. The Parties agree that any claim or cause of action regarding this Agreement shall be brought in a court of competent jurisdiction in Ohio and this is the parties' sole and exclusive process for seeking a remedy for any and all claims and causes of action regarding this Agreement.

19.6 **Modification**. Any modification of the Agreement will be effective only if it is in writing and signed by duly authorized representatives of both Parties.

19.7 **Severability**. If any provision hereof is held to be invalid, illegal or unenforceable in any jurisdiction, the Parties hereto shall negotiate in good faith a valid, legal and enforceable substitute provision that most nearly reflects the original intent of the Parties, and all other provisions hereof shall remain in full force and effect in such jurisdiction and shall be construed in order to carry out the intentions of the Parties hereto as nearly as may be possible. Such invalidity, illegality or unenforceability shall not affect the validity, legality or enforceability of such other provisions in any other jurisdiction, so long as the essential essence of the Agreement remains enforceable.

19.8 **Third Party Beneficiaries**. Nothing in the Agreement, express or implied, is intended to confer any benefits, rights or remedies on any entity, other than the Parties, their affiliates, and their permitted successors and assigns. However, if there is a joint owner of any Patent Rights identified in Section 1 of the PTLA (other than Licensee), then Licensee hereby agrees that the following provisions of these Terms and Conditions extend to the benefit of the co-owner identified therein (excluding the Licensee to the extent it is a co-owner) as if such co-owner was identified in each reference to the Licensor: the retained rights under Section 2.1(d); Section 11.3 (Licensor Disclaimers); Section 12 (Limitation of Liability); Section 13 (Indemnification); Section 14.1 (Insurance Requirements); Section 17 (Use of Name); and Section 19.10 (Sovereign Immunity, if applicable).

19.9 **Waiver**. Neither Party will be deemed to have waived any of its rights under the Agreement unless the waiver is in writing and signed by such Party. No delay or omission of a Party in exercising or enforcing a right or remedy under the Agreement shall operate as a waiver thereof.

19.10 **Sovereign Immunity**. Nothing in the Agreement shall be deemed or treated as any waiver of OSU's sovereign immunity.

19.11 **Cross Default**. In the event that Licensee is a party to any other agreement with Licensor, a default by Licensee of this or any other agreement shall be deemed a default under all other agreements with Licensor and OSU.

19.12 **Entire Agreement**. The Agreement constitutes the entire agreement between the parties regarding the subject matter hereof, and supersedes all prior written or verbal agreements, representations and understandings relative to such matters.

Appendix 1A
OSIF DILIGENCE: MILESTONES, FEES, & DEADLINES

Licensee:_____ Agreement No:_____
Inventor:_____ OSIF's Tech ID No:_____
Period Covered From:_____ Through:_____
Prepared By:_____ Date:_____
Approved By:_____ Date:_____

Milestone Events	Milestone Fees Due by the Quarterly Payment Deadline for the Contract Quarter in which the milestone events are achieved	Deadlines	Date Completed and Short Description of Activity (use space below)
1.	$		
2.	$		
3.	$		
4.	$		
5.	$		

I certify that this report is accurate and complete: _____

Description of Milestone Activities:

Please return one copy of this form along with your report to the following address:
The Ohio State University
Attn: Compliance
Technology Commercialization Office
1524 North High Street
Columbus, OH 43201

If you have questions, please call (614) 292-1315, send a fax to (614) 292-8907 (Attn: Compliance), or send an email to tcocompliance@osu.edu.
Thank you for your prompt attention.

Appendix 1B
OSIF ANNUAL REPORT

Licensee:_____ Agreement No:_____
Inventor:_____ OSIF's Tech ID No:_____
Period Covered From:_____ Through:_____
Prepared By:_____ Date:_____
Approved By:_____ Date:_____

ANNUAL REPORT FOR THE PERIOD

An annual report is due on _____ covering the status of all patent prosecution, commercial development, and licensing activities relating to the invention(s) covered by the above Agreement. (Please refer to the Agreement paragraph _____).

OSIF Tech ID No. _____

Government regulations (Bayh-Dole) require reporting of any request to waive standard U.S. manufacturing requirements. Have you requested such a waiver from a government agency?
☐ Yes ☐ No

If yes, please attach additional information and give the agency name, date requested, and/or date granted.

Submitted By:_____ Date:_____

Title:_____ Phone:_____

Email:_____

Please return one copy of this form along with your report to the following address:
The Ohio State University
Attn: Compliance
Technology Commercialization Office
1524 North High Street
Columbus, OH 43201

If you have questions, please call (614) 292-1315, send a fax to (614) 292-8907 (Attn: Compliance), or send an email to tcocompliance@osu.edu.
Thank you for your prompt attention.

Appendix 1B
OSIF ANNUAL REPORT

For the Period: _____

Patent Activity

License/Sublicense Activity

Description of Commercial Development (see attached form)

Description of any Management Changes

Title	Name	Since (Date)
CEO		
COO		
CFO		
CTO/CMO		

Appendix 1B
OSIF ANNUAL REPORT

For the Period: _____

Description of any Key Other Events

Appendix 1B
OSIF ANNUAL REPORT

For the Period: _____

OSIF COMMERCIAL DEVELOPMENT FORM

Please select the type of product in development, check its current state of development, and completed the fields for the other information in the box. If you have additional information, please attach it to the end of this form.

Therapeutic Products	**Date**
☐ Discovery	_____
☐ Pre-Clinical	_____
☐ Phase 1 Clinical Trials	_____
☐ Phase II Clinical Trials	_____
☐ Phase III Clinical Trials	_____
☐ NDA Submitted	_____
☐ Selling Licensed Products	_____
☐ Other: _____	_____

Drug in Development (brand name, if applicable):
_____
Therapeutic Indication:_____

Hardware/Engineering Products	**Date**
☐ Research	_____
☐ Functioning Prototype	_____
☐ Beta Testing	_____
☐ Pilot Manufacturing Run	_____
☐ Safety Tested	_____
☐ Selling Licensed Products	_____
☐ Other: _____	_____

Product in Development (brand name, if applicable):
_____
Market Addressed:_____

Software	**Date**
☐ In Development	_____
☐ Alpha Testing	_____
☐ Beta Testing	_____
☐ Selling Licensed Products	_____
☐ Other: _____	_____

Tool in Development (brand name, if applicable):
Application:

Copyright/Trademarked Products	**Date**
☐ Functioning Prototype	_____
☐ Alpha Testing	_____
☐ Beta Testing	_____
☐ Selling Licensed Products	_____
☐ Other: _____	_____

Product in Development (brand name, if applicable):
Market Addressed:

Plant Products	**Date**
☐ Discovery	_____
☐ Gvt. Approval Applied For	_____
☐ Gvt. Approval Received	_____
☐ Selling Licensed Products	_____
☐ Other: _____	_____

Product in Development (brand name, if applicable):
_____
Field of Product: _____

Medical Devices/Diagnostics	**Date**
☐ Research	_____
☐ Pre-Clinical	_____
☐ 510(k)/CE Mark Submitted	_____
☐ PMA	_____
☐ Selling Licensed Products	_____
☐ Other: _____	_____

Device/Diagnostic in Development (brand name, if applicable):
_____
Medical Field: _____

Please return one copy of this form along with your report to the following address:
Ohio State Innovation Foundation
Attn: Compliance
Technology Commercialization Office
1524 North High Street
Columbus, OH 43201

If you have questions, please call (614) 292-1315, send a fax to (614) 292-8907 (Attn: Compliance), or send an email to tcocompliance@osu.edu. Thank you for your prompt attention.

Appendix 1C
OSIF QUARTERLY REPORT

Licensee:_____ Agreement No:_____
Inventor:_____ OSIF's Tech ID No:_____
Period Covered From:_____ Through:_____
Prepared By:_____ Date:_____
Approved By:_____ Date:_____

If license covers several major product lines, please prepare a separate report for each line. Then combine all product lines into a summary report.

Report Type:

☐ Single Product Line Report:_____
☐ Multiproduct Summary Report:_____

Page 1 of ____ pages

Product Line Details: Line:_____ Pages: _____ Trade Name: _____

Report Currency: **☐ U.S. Dollars** **☐ Other:**

	Country	Gross Consideration	Allowances	Net Sales[1]	Royalty Rate	Royalty Amount	Royalty Paid Last Year	Next Year Royalty Forecast[2]
1. Total Q1								
2. Total Q2								
3. Total Q3								
4. Total Q4___								
5. Total FY_								
6. Minimum Annual Royalty								
7. Annual Royalty[3] for FY								
8. Amount Paid-to-Date[4]								
9. Amount Payable[5]								

Total Royalty: _____ Conversion Rate: _____ Royalty in U.S. Dollars: _____

[1]means the Gross Consideration paid to, received by, or given to Licensee, Affiliates, and Sublicensees from the Sale of Licensed Products and Licensed Processes, less the following items directly attributable to the Sale of such Licensed Products that are specifically identified on the invoice for such Sale and borne by the Licensee, Affiliates, or Sublicensees as the seller: (a) discounts and rebates actually granted; (b) sales, value added, use and other taxes and government charges actually paid, excluding income taxes; (c) import and export duties actually paid; (d) freight, transport, packing and transit insurance charges actually paid or allowed; and (e) other amounts actually refunded, allowed or credited due to rejections or returns, but not exceeding the original invoiced amount.
[2]The royalty forecast is non-binding and is for OSIF's internal planning purposes only
[3](greater of line 5 or 6)
[4](lines 1+2+3)
[5](line 7-line 8)

Appendix 1C
OSIF QUARTERLY REPORT

Any other consideration due OSIF during this Royalty Period:
Milestones:_____
Minimum Royalties:_____ Sublicense Payments:_____

On a separate page, please indicate the reason for returns or adjustments if significant. Also note any unusual occurrences that affect royalty amounts during this period. To assist OSIF's forecasting, please comment on any significant expected trends in sales volume.

I certify that this report is accurate and complete:_____

Please return one copy of this form along with your report to the following address:
The Ohio State University
Attn: Compliance
Technology Commercialization Office
1524 North High Street
Columbus, OH 43201

If you have questions, please call (614) 292-1315, send a fax to (614) 292-8907 (Attn: Compliance), or send an email to tcocompliance@osu.edu.
Thank you for your prompt attention.

Appendix 2
LICENSEE'S AFFILIATES

CONFIDENTIAL TREATMENT REQUESTED BY CELLECTIS S.A.

LICENSE AGREEMENT

This License Agreement (the "**Agreement**") is entered into as of March 8, 2019 (the "**Effective Date**"), by and among Allogene Therapeutics, Inc., a corporation organized and existing under the laws of the State of Delaware and having a place of business at 210 East Grand Avenue, South San Francisco, California, 94080 ("**Allogene**") and Cellectis SA, a corporation organized and existing under the laws of France and having a place of business at 8 rue de la Croix Jarry, 75013 Paris, France ("**Cellectis**"). Allogene and Cellectis may each be referred to herein individually as a "**Party**" and collectively as the "**Parties**."

WHEREAS, Cellectis and Pfizer, Inc. ("**Pfizer**") entered into a Research Collaboration and License Agreement dated as of June 17, 2014, as amended on December 1, 2016 (the "**Research Collaboration and License Agreement**") pursuant to which Cellectis and Pfizer performed certain research services ("Research Plan Services") according to a defined program (the "Research Program") and a defined plan (the "Research Plan") in connection with a research collaboration during the period from June 18, 2014 to June 17, 2018 (the "Research Term"), and each of Cellectis and Pfizer granted to each other certain licenses and other rights to develop and commercialize specified CAR-T products.

WHEREAS, in connection with the sale by Pfizer to Allogene, of certain assets to which the Research Collaboration and License Agreement relates, Pfizer has assigned the Research Collaboration and License Agreement to Allogene effective as of April 6, 2018 (the "**Assignment**").

WHEREAS, as the Research Plan Services have been completed and the Research Term has expired (both under the Research Collaboration and License Agreement), Allogene and Cellectis have terminated the Research Collaboration and License Agreement.

WHEREAS, notwithstanding such termination, Allogene and Cellectis desire to execute this Agreement, to reflect the ongoing relationship between Cellectis and Allogene, pursuant to which each of Allogene and Cellectis will grant licenses and other rights to the other Party, including certain intellectual property rights that arose as a result of the Research Plan Services, in each case as further set forth herein.

NOW, THEREFORE, in consideration of the mutual promises and covenants set forth below and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

1. DEFINITIONS.

When used in this Agreement, the following capitalized terms will have the meanings set forth in this Article 1. Any terms defined elsewhere in this Agreement will be given equal weight and importance as though set forth in Article 1.

1.1. "**Additional Third Party Licenses**" is defined in Section 5.2.2(b).

1.2. "**Affiliate**" means, with respect to any Person, any other Person that controls, is controlled by or is under common control with such Person. A Person will be regarded as in control of another entity if it owns or controls at least fifty percent (50%) of the equity securities of the subject entity entitled to vote in the election of directors (or, in the case of an entity that is not a corporation, for the election of the corresponding managing authority), provided, however, that the term "Affiliate" will not include subsidiaries or other entities in which a Party or its Affiliates owns a majority of the ordinary voting power necessary to elect a majority of the board of directors or other managing authority, but is restricted from electing such majority by contract or otherwise, until such time as such restrictions are no longer in effect.

1.3. "**Agreement**" is defined in the introduction to this Agreement.

1.4. "**Agreement CAR-T**" means any CAR-T utilizing the Cellectis Technology that is identified, created or developed Targeting an Allogene Target.

1.5. **"Alliance Manager"** is defined in Section 2.3.

1.6. "**Allogene CAR-T Developed IP**" **[*****]

1.7. "**Allogene Diligence Obligation**" is defined in Section 2.2.3.

1.8. "**Allogene Improvements**" **[*****]

1.9. "**Allogene Indemnified Party**" is defined in Section 10.3.

1.10. "**Allogene Know-How**" means any Know-How comprised in the Allogene Technology.

1.11. "**Allogene Licensed Product**" means any product containing an Agreement CAR-T that is claimed or covered by, or was made using or otherwise incorporates, any Licensed Cellectis Intellectual Property.

1.12. "**Allogene Patent Right**" means any Patent Right comprised in the Allogene Technology.

1.13. "**Allogene Target**" means each of the Targets listed on Schedule 1.13 of this Agreement.

1.14. **"Allogene Technology**" [***]

1.15. "**Annual Net Sales**" means, with respect to any Allogene Licensed Product in a Calendar Year during the applicable Royalty Term for such Allogene Licensed Product, the aggregate Net Sales by Allogene, its Affiliates and its Sublicensees from the sale of such Allogene Licensed Product in the Territory during such Calendar Year.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

1.16. "**Applicable Law**" means the laws, statutes, rules, regulations, guidelines, or other requirements that may be in effect from time to time and apply to a Party's activities to be performed under this Agreement, including any such laws, statutes, rules, regulations, guidelines, or other requirements of the FDA or the EMA.

1.17. "**Applicable Allogene Technology**" means any (a) Know-How Controlled by Allogene or its Affiliates that was invented, discovered or developed during the term of the Research Collaboration and License Agreement or the Term and in connection with Allogene's (or Pfizer's or its Affiliates', prior to the Assignment) or its Affiliates' activities under the Research Collaboration and License Agreement or this Agreement and (b) Patent Rights Controlled by Allogene or its Affiliates as of the date of termination of the Research Term, to the extent that such Patent Right claims any Know-How described in clause (a) above, to the extent that such Know-How and Patent Rights are necessary for the further development, manufacture and commercialization of Continuation Products.

1.18. "**Binding Obligation**" means, with respect to a Party (a) any oral or written agreement or arrangement that binds or affects such Party's operations or property, including any assignment, license agreement, loan agreement, guaranty, or financing agreement; (b) the provisions of such Party's charter, bylaws or other organizational documents or (c) any order, writ, injunction, decree or judgment of any court or Governmental Authority entered against such Party or by which any of such Party's operations or property are bound.

1.19. "**Biosimilar Biologic Product**" is defined in Section 5.2.2(a).

1.20. "**Biosimilar Notice**" means a copy of any application submitted by a Third Party to the FDA under 42 U.S.C. § 262(k) of the PHS Act (or, in the case of a country of the Territory outside the United States, any similar law) for Regulatory Approval of a biological product, which application identifies an Allogene Licensed Product as the reference product with respect to such product, and other information that describes the process or processes used to manufacture the biological product.

1.21. "**BLA**" means a Biologics License Application filed with the FDA in the United States with respect to a Licensed Product, as defined in Title 21 of the U.S. Code of Federal Regulations, Section 601.2 et. seq.

1.22. "**Business Day**" means a day other than a Saturday, a Sunday or a day that is a national holiday in the United States.

1.23. "**Calendar Quarter**" means the respective periods of three (3) consecutive calendar months ending on March 31, June 30, September 30 or December 31, for so long as this Agreement is in effect.

1.24. "**Calendar Year**" means each successive period of twelve (12) calendar months commencing on January 1 and ending on December 31.

1.25. "**CAR**" means a chimeric antigen receptor expressed from an experimentally validated Cellectis viral construct with specific molecular architecture and signaling domain sequences.

1.26. "**CAR-T**" means a population of T-cells with a unique set of experimentally validated biologic attributes expressing a CAR construct produced using Cellectis Technology.

1.27. **"Cellectis CAR-T Developed IP"** means Developed IP directed to the manufacture, composition or use of CAR-Ts Targeting a Cellectis Program Target.

1.28. "**Cellectis Improvement**" [***]

1.29. "**Cellectis Indemnified Party**" is defined in Section 10.2.

1.30. "**Cellectis Insolvency Event**" means the occurrence of any of the following: (a) a case is commenced by or against Cellectis under applicable bankruptcy, insolvency or similar laws, (b) Cellectis files for or is subject to the institution of bankruptcy, reorganization, liquidation, receivership or similar proceedings, (c) Cellectis assigns all or a substantial portion of its assets for the benefit of creditors, (d) a receiver or custodian is appointed for Cellectis' business, (e) a substantial portion of Cellectis' business is subject to attachment or similar process, (f) Cellectis suspends or threatens to suspend making payments with respect to all or any class of its debts or (g) anything analogous to any of the events described in the foregoing clauses (a) through (f) occurs under the laws of any applicable jurisdiction.

1.31. "**Cellectis Know-How**" means any Know-How comprised in the Cellectis Technology that was introduced into the Research Program by Cellectis pursuant to the applicable Research Plan under the Research Collaboration and License Agreement.

1.32. "**Cellectis Patent Right**" means any Patent Right comprised in the Cellectis Technology. The Cellectis Patent Rights existing as of June 17, 2014 include those set forth on Schedule 1.32 attached hereto.

1.33. "**Cellectis Product**" means any product incorporating a CAR-T Targeting a Cellectis Program Target which would infringe a Valid Claim of any Licensed Allogene Intellectual Property in the absence of the Licenses from Allogene pursuant to Section 4.2 or that is claimed or covered by, or was made using or otherwise incorporates, any Allogene Intellectual Property or Developed IP.

1.34. "**Cellectis Program Target**" means the Targets listed in Schedule 1.34.

1.35. "**Cellectis Technology**" [***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

1.36. "**Cellectis Third Party Agreement**" means any agreement between Cellectis and any Third Party under which Cellectis obtains rights in or to any Cellectis Licensed Intellectual Property.

1.37. "**Change of Control**" means, with respect to a Party, (a) a merger, reorganization or consolidation of such Party with a Third Party which results in the voting securities of such Party outstanding immediately prior thereto ceasing to represent at least fifty (50%) of the combined voting power of the surviving entity immediately after such merger, reorganization or consolidation, (b) a Third Party becoming the beneficial owner of fifty (50%) or more of the combined voting power of the outstanding securities of such Party or (c) the sale or other transfer to a Third Party of all or substantially all of such Party's business or assets to which this Agreement relates.

1.38. "**Combination Product**" means an Allogene Licensed Product containing an Agreement CAR-T and one or more other therapeutically active ingredients.

1.39. "**Commercialization**" or "**Commercialize**" means activities directed to marketing, promoting, distributing, importing, exporting, using for commercial purposes or selling or having sold an Allogene Licensed Product. Commercialization will not include any activities related to Manufacturing or Development.

1.40. "**Commercially Reasonable Efforts**" [***]

1.41. "**Confidential Information**" of a Party means all Know-How or other information, including proprietary information and materials (whether or not patentable) regarding such Party's technology, products, business or objectives, that is communicated in any way or form by the Disclosing Party to the Receiving Party, either prior to or after the Effective Date of this Agreement (including any information disclosed pursuant to the Research Collaboration and License Agreement), and whether or not such Know-How or other information is identified as confidential at the time of disclosure. The terms and conditions of this Agreement will be deemed to be the Confidential Information of each Party. Cellectis Improvements will be deemed to be the Confidential Information of Cellectis. Allogene Improvements will be deemed to be the Confidential Information of Allogene. Developed IP will be deemed to be the Confidential Information of each Party, except that Allogene CAR-T Developed IP is deemed to be the Confidential Information solely of Allogene, and Cellectis CAR-T Developed IP is deemed to be Confidential Information solely of Cellectis. For clarity, any Pfizer Confidential Information under the Research Collaboration and License Agreement shall be considered Allogene Confidential Information under this Agreement. Any Cellectis Confidential Information provided to Pfizer under the Research Collaboration and License Agreement shall be considered Cellectis Confidential Information under this Agreement.

1.42. "**Continuation Product**" is defined in Section 9.6.3(c).

1.43. "**Control**" or "**Controlled**" means, with respect to any (a) item of information, including Know-How, or (b) intellectual property right, the possession (whether by ownership interest or license, other than pursuant to this Agreement) by a Party of the ability to grant to the other Party access to or a license under such item or right, as provided herein, without violating the terms of any agreement or other arrangements with any Third Party.

1.44. "**Develop**" or "**Development**" means to discover, research or otherwise develop a product, including conducting any pre-clinical, non-clinical or clinical research and any drug development activity, including discovery, research, toxicology, pharmacology and other similar efforts, test method development and stability testing, manufacturing process development, formulation development, delivery system development, quality assurance and quality control development, statistical analysis, clinical studies (including pre- and post-approval studies), development of diagnostic assays in connection with clinical studies, and all activities directed to obtaining any Regulatory Approval, including any marketing, pricing or reimbursement approval.

1.45. "**Developed IP**" [***]

1.46. "**Development Milestone**" is defined in Section 5.1.1.

1.47. "**Development Milestone Payment**" is defined in Section 5.1.1.

1.48. "**Diligence Issue**" is defined in Section 2.2.4.

1.49. "**Disclosing Party**" is defined in Section 7.1.

1.50. "**Effective Date**" is defined in the introduction to this Agreement.

1.51. "**EMA**" means the European Medicines Agency, or any successor agency thereto.

1.52. "**Escalation Process**" is defined in Section 11.11.

1.53. "**FD&C Act**" means the United States Federal Food, Drug, and Cosmetic Act (21 U.S.C. § 301 et seq.), as amended, and the rules and regulations promulgated thereunder.

1.54. "**FDA**" means the United States Food and Drug Administration or any successor agency thereto.

1.55. "**Field**" means human oncologic therapeutic, diagnostic, prophylactic and prognostic purposes.

1.56. "**First Commercial Sale**" means, with respect to any Allogene Licensed Product and any country of the world, the first sale of such Allogene Licensed Product under this Agreement by Allogene, its Affiliates or its Sublicensees to a Third Party in such country, after such Allogene Licensed Product has been granted Regulatory Approval by the competent Regulatory Authorities in such country.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

1.57. "**GAAP**" means United States generally accepted accounting principles, consistently applied.

1.58. "**Generic Competition**" is defined in Section 5.2.2(a).

1.59. "**Governmental Authority**" means any court, agency, department, authority or other instrumentality of any national, state, county, city or other political subdivision.

1.60. "**ICC**" is defined in Section 11.12.

1.61. "**IND**" means an Investigational New Drug Application, as defined in the FD&C Act, that is required to be filed with the FDA before beginning clinical testing of an Allogene Licensed Product or Cellectis Product, as applicable, in human subjects, or an equivalent foreign filing.

1.62. "**Indemnified Party**" is defined in Section 10.4.1.

1.63. "**Indemnifying Party**" is defined in Section 10.4.1.

1.64. "**Joint Developed IP**" is defined in Section 6.1.1(c).

1.65. "**Joint Patent Right**" is defined in Section 6.2.1(d).

1.66. "**Know-How**" means any proprietary invention, discovery, data, information, process, method, technique, material, technology, result or other know-how, whether or not patentable.

1.67. "**Law**" means any law, statute, rule, regulation, order, judgment or ordinance of any Governmental Authority.

1.68. "**Liability**" is defined in Section 10.2.

1.69. "**License**" is defined in Section 4.1.1.

1.70. "**Licensed Cellectis Intellectual Property**" means any and all intellectual property (including Patent Rights and Know-How) Controlled by Cellectis, including the Cellectis Technology, the Cellectis Improvements and Cellectis' interest in the Developed IP, for Allogene to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported and otherwise exploit and Commercialize Allogene Licensed Products.

1.71. "**Licensed Allogene Intellectual Property**" means any and all Allogene Technology, Allogene Improvement, and Allogene's interest in the Developed IP, for Cellectis to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported and otherwise exploit and Commercialize Cellectis Products.

1.72. "**Litigation Conditions**" is defined in Section 10.4.2.

1.73. "**MAA**" means an application with the EMA seeking Regulatory Approval of a Licensed Product in Europe using the EMA's centralized procedure.

1.74. "**Major EU Market Country**" means any of [***].

1.75. "**Major Market Country**" means any Major EU Market Country, [***].

1.76. "**Manufacturing**" or "**Manufacture**" means activities directed to making, producing, manufacturing, processing, filling, finishing, packaging, labeling, quality assurance testing and release, shipping or storage of a product.

1.77. "**Marginal Royalty Rates**" is defined in Section 5.2.

1.78. [***]

1.79. "**Misuse**" means any use of Cellectis Confidential Information or Know-How by Allogene in violation of Allogene's non-use obligations pursuant to this Agreement or outside the scope of the licenses granted hereunder. For the avoidance of doubt, "Misuse" will not include Allogene's disclosure of Cellectis Confidential Information to any Third Party in violation of Article 7.

1.80. "**Misuse Allegation**" is defined in Section 11.11.

1.81. "**Most Advanced Targets**" is defined in Section 2.2.5.

1.82. "**Necessary**" is defined in Section 5.2.2(b).

1.83. "**Net Sales**" [***]

1.83.1. [***]

1.83.2. [***]

1.83.3. [***]

1.84. "**Non-Disclosing Party**" is defined in Section 7.3.2.

1.85. "**Notice of Dispute**" is defined in Section 11.10.1.

1.86. "**Other Cellectis Target**" means the Targets listed in Schedule 1.86.

1.87. **"Other Field"** means anti-tumor adoptive immunotherapy.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

1.88. **"Other Products"** [***]

1.89. **"Other Territory"** means the United States of America together with any additional territories as amended from time to time by Cellectis at the written direction of Servier pursuant to the Servier Agreement.

1.90. "**Party**" and "**Parties**" is defined in the introduction to this Agreement.

1.91. "**Patent Rights**" means any and all (a) patents, (b) pending patent applications, including all provisional applications, substitutions, continuations, continuations-in-part, divisions and renewals, and all patents granted thereon, (c) all patents-of-addition, reissues, reexaminations and extensions or restorations by existing or future extension or restoration mechanisms, including patent term extensions, supplementary protection certificates or the equivalent thereof, (d) inventor's certificates, (e) any other form of government-issued right substantially similar to any of the foregoing and (f) all United States and foreign counterparts of any of the foregoing. The Patent Rights owned by either Party include any Patent Right assigned to such Party pursuant to the provisions of this Agreement.

1.92. "**Person**" means an individual, sole proprietorship, partnership, limited partnership, limited liability partnership, corporation, limited liability company, business trust, joint stock company, trust, incorporated association, joint venture or similar entity or organization, including a government or political subdivision or department or agency of a government.

1.93. "**Phase I Clinical Trial**" means a study of an Allogene Licensed Product in human subjects or patients with the endpoint of determining initial tolerance, safety, metabolism or pharmacokinetic information and clinical pharmacology of such product as and to the extent defined for the United States in 21 C.F.R. § 312.21(a), or its successor regulation, or the equivalent regulation in any other country. A so-called Phase I/II Clinical Trial will be deemed to be a Phase I Clinical Trial unless such study, when completed, allows Allogene to proceed directly to a Phase III Clinical Trial.

1.94. "**Phase II Clinical Trial**" means a study of an Allogene Licensed Product in human patients to determine the safe and effective dose range in a proposed therapeutic indication as and to the extent defined for the United Sates in 21 C.F.R. § 312.21(b), or its successor regulation, or the equivalent regulation in any other country.

1.95. "**Phase III Clinical Trial**" means a study of an Allogene Licensed Product in human patients with a defined dose or a set of defined doses of an Allogene Licensed Product designed to (a) ascertain efficacy and safety of such Allogene Licensed Product for its intended use; (b) define warnings, precautions and adverse reactions that are associated with the Allogene Licensed Product in the dosage range to be prescribed; and (c) support preparing and submitting applications for Regulatory Approval to the competent Regulatory Authorities in a country of the world, as and to the extent defined for the United States in 21 C.F.R.§ 312.21(c), or its successor regulation, or the equivalent regulation in any other country.

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1.96. "**PHS Act**" means the United States Public Health Service Act, as amended, and the rules and regulations promulgated thereunder.

1.97. "**Price Approval**" means, in any country where a Governmental Authority authorizes reimbursement for, or approves or determines pricing for, pharmaceutical products, receipt (or, if required to make such authorization, approval or determination effective, publication) of such reimbursement authorization or pricing approval or determination (as the case may be)

1.98. "**Receiving Party**" is defined in Section 7.1.

1.99. "**Regulatory Approval**" means all technical, medical and scientific licenses, registrations, authorizations and approvals (including approvals of BLAs, MAAs, supplements and amendments, pre- and post- approvals, pricing and Third Party reimbursement approvals, and labeling approvals) of any Regulatory Authority, necessary for the use, Development, Manufacture and Commercialization of a pharmaceutical product in a regulatory jurisdiction. For the sake of clarity, Regulatory Approval will not be achieved for an Allogene Licensed Product in a country until all applicable Price Approvals have also been obtained by Allogene, its Affiliates, sublicensees or distributors, where applicable, for such Allogene Licensed Product in such country.

1.100. "**Regulatory Approval Application**" means any application submitted to an appropriate Regulatory Authority seeking any Regulatory Approval.

1.101. "**Regulatory Authority**" means, with respect to any national, supra-national, regional, state or local regulatory jurisdiction, any agency, department, bureau, commission, council or other governmental entity involved in the granting of a Regulatory Approval for such jurisdiction.

1.102. "**Representative**" is defined in Section 7.2.1.

1.103. "**Research Collaboration and License Agreement**" is defined in the introduction to this Agreement.

1.104. "**Research Plan"** is defined in the introduction of this Agreement.

1.105. **"Research Plan Services"** is defined in the introduction of this Agreement.

1.106. **"Research Program"** is defined in the introduction of this Agreement.

1.107. **"Research Term"** is defined in the introduction of this Agreement.

1.108. "**Royalty Term**" means, on an Allogene Licensed Product-by-Allogene Licensed Product and country-by-country basis, the period of time from the First Commercial Sale of such Allogene Licensed Product in such country until the later of (i) the expiration of

the last Valid Claim that would, but for the license to or ownership by Allogene hereunder, be infringed by the sale of such Allogene Licensed Product in such country; (ii) the loss of regulatory exclusivity for the Allogene Licensed Product in such country or (iii) the tenth (10th) anniversary of the date of the First Commercial Sale of such Allogene Licensed Product in such country, but in no event later than the twentieth (20th) anniversary of the date of the First Commercial Sale in any country.

1.109. "**Rules**" is defined in Section 11.12.

1.110. "**Sales Milestone**" is defined in Section 5.1.2.

1.111. "**Sales Milestone Payment**" is defined in Section 5.1.2.

1.112. "**Sales Threshold**" is defined in Section 5.1.2.

1.113. "**SEC**" means the United States Securities and Exchange Commission.

1.114. **"Servier"** means Les Laboratoires Servier, a corporation organized and existing under the laws of France and having a place of business located at 50 rue Carnot, 92150 Suresnes, France.

1.115. "**Servier Agreement**" means that certain Research, Product Development, Option, License and Commercialization Agreement by and between Servier and Cellectis dated February 7, 2014, as amended and terminated; and the License, Development, Option, and Commercialization Agreement by and between Servier and Cellectis dated March 6, 2019.

1.116. "**Sublicensee**" means any Person to whom Allogene grants or has granted, directly or indirectly, a sublicense of rights licensed by Cellectis to Allogene under this Agreement, in accordance with the provisions of this Agreement.

1.117. "**[***] Patent Rights**" means the Patent Rights set forth on Schedule 9.23 under the headings: CELLECTIS Patent Portfolio on [***], In-licensed Patent applications from [***], In-Licensed patent applications from [***], In-Licensed Patent applications from [***] and In-Licensed Patent Rights from [***]. The value attributed to the [***] Patent Rights corresponds to [***] of the total value of the Cellectis Technology.

1.118. "**Target**" means (a) a specific biological molecule that is identified by a GenBank accession number or similar information, or by its amino acid or nucleic acid sequence, and (b) any biological molecule substantially similar in amino acid or nucleic acid sequence that has substantially the same biological function as a molecule disclosed in clause (a), including any naturally occurring mutant or allelic variant of a molecule disclosed in clause (a), including naturally occurring variants, mutants, transcriptional and post-transcriptional isoforms (e.g., alternative splice variants), and post-translational modification variants (e.g., protein processing, maturation and glycosylation variants); and (c) truncated forms (including fragments thereof) which have a biological function substantially similar to that of any biological molecules disclosed in clause (a) or clause (b).

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1.119. "**Targeting**" means, when used to describe the relationship between a molecule and a Target, that the molecule (a) binds to the Target (or a portion thereof) and (b) is designed or being developed to exert its biological effect in whole or in part through binding to such Target (or such portion thereof).

1.120. "**Term**" is defined in Section 9.2.

1.121. "**Terminated Allogene Licensed Product**" is defined in Section 9.6.1(a).

1.122. "**Terminated Target**" is defined in Section 9.6.1.

1.123. "**Territory**" means the entire world.

1.124. "**Third Party**" means any Person other than Allogene, Cellectis or their respective Affiliates.

1.125. "**Third Party Claim**" is defined in Section 10.4.1.

1.126. "**Trademark**" means any trademark, trade dress, design, logo, slogan, house mark or name used in connection with the Commercialization of any Allogene Licensed Product by Allogene or its Affiliates or Sublicensees hereunder, including any registration or application for registration of any of the foregoing.

1.127. "**Useful**" is defined in Section 5.2.2(b).

1.128. "**Valid Claim**" means, with respect to a particular country, a claim of an issued and unexpired patent right included within the Licensed Intellectual Property or Developed IP that (i) has not been held permanently revoked, unenforceable or invalid by a decision of a court or other governmental authority of competent jurisdiction, which decision is unappealed or unappealable within the time allowed for appeal, and (ii) has not been cancelled, withdrawn, abandoned, disclaimed or admitted to be invalid or unenforceable through reissue, disclaimer or otherwise. An Allogene Licensed Product is "Covered" by a Valid Claim if its referenced activity by Allogene or its Sublicensees would, but for the licenses granted by Cellectis under this Agreement, infringe such Valid Claim.

1.129. **Construction**. Except where the context expressly requires otherwise, (a) the use of any gender herein will be deemed to encompass references to either or both genders, and the use of the singular will be deemed to include the plural (and vice versa), (b) the words "include", "includes" and "including" will be deemed to be followed by the phrase "without limitation," (c) the word "will" will be construed to have the same meaning and effect as the word "shall," (d) any definition of or reference to any agreement, instrument or other document herein will be construed as referring to such agreement, instrument or other document as from time to time amended, supplemented or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein), (e) any reference herein to any Person will be construed to include the Person's successors and assigns, (f) the words "herein", "hereof" and "hereunder", and words of similar import, will be construed to refer to this Agreement in its entirety and not to any particular provision hereof, (g) all references herein to sections or exhibits will be

construed to refer to sections or exhibits of this Agreement, and references to this Agreement include all exhibits hereto, (h) the word "notice" means notice in writing (whether or not specifically stated) and will include notices, consents, approvals and other written communications contemplated under this Agreement, (i) provisions that require that a Party, the Parties or any committee hereunder "agree," "consent" or "approve" or the like will require that such agreement, consent or approval be specific and in writing, whether by written agreement, letter, approved minutes or otherwise (but excluding e-mail and instant messaging), (j) references to any specific law, rule or regulation, or article, section or other division thereof, will be deemed to include the then-current amendments thereto or any replacement or successor law, rule or regulation thereof, (k) any definition of or reference to any agreement, instrument or other document herein will be construed as referring to such agreement, instrument or other document as from time to time amended, supplemented or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein), and (l) the term "or" will be interpreted in the inclusive sense commonly associated with the term "and/or."

2. EXCLUSIVITY AND DILIGENCE OBLIGATIONS.

2.1. **Exclusivity.** Subject to Sections 2.2.5, 4.1.2(e) and 4.5, during the Term of this Agreement, for each Allogene Target, neither Cellectis nor any of its Affiliates will (a) grant, or seek to grant, any right under any Cellectis Technology, Cellectis Improvements, Allogene Improvements licensed to Cellectis pursuant to Section 4.2.2 or Developed IP to any Third Party with respect to such Allogene Target or (b) use any Cellectis Technology, Cellectis Improvements, Allogene Improvements licensed to Cellectis pursuant to Section 4.2.2 or Developed IP to Develop (itself or through or with a Third Party) or Commercialize CAR-Ts Targeting such Allogene Target.

2.2. **Diligence.**

2.2.1. **Allogene Development Diligence**. Allogene will use Commercially Reasonable Efforts to Develop [***] for [***] during the Term. For avoidance of doubt, any actions taken by Allogene's Affiliates or Sublicensees under this Agreement will be treated as actions taken by Allogene in regard to satisfaction of the requirements of this Section 2.2.1.

2.2.2. **Commercial Diligence**. Allogene will use Commercially Reasonable Efforts to Commercialize [***] where Allogene has received Regulatory Approval for [***] in such country. Allogene will have no other diligence obligations with respect to the Commercialization of Allogene Licensed Products under this Agreement. For avoidance of doubt, any actions taken by Allogene's Affiliates or Sublicensees under this Agreement will be treated as actions taken by Allogene in regard to satisfaction of the requirements of this Section 2.2.2.

2.2.3. **Exceptions to Diligence Obligations**. Notwithstanding any provision of this Agreement to the contrary, Allogene will be relieved from and will have no

obligation to undertake any efforts with respect to any diligence obligation under each of the Allogene Targets pursuant to Section 2.2.1 or Section 2.2.2 (each, an "**Allogene Diligence Obligation**") in the event that:

(a) Allogene receives or generates any safety, tolerability or other data reasonably indicating or signaling, as measured by Allogene's safety and efficacy evaluation criteria and methodology, that such Allogene Licensed Product has or would have an unacceptable risk-benefit profile or is otherwise not reasonably suitable for initiation or continuation of clinical trials in humans;

(b) Allogene receives any notice, information or correspondence from any applicable Regulatory Authority, or any applicable Regulatory Authority takes any action, that reasonably indicates that such Allogene Licensed Product is unlikely to receive Regulatory Approval; or

(c) the Allogene Diligence Obligation breach related to such Allogene Target is caused by the negligence, recklessness or intentional acts of Cellectis.

2.2.4. **Assertion of Diligence Obligation Claims**. If Cellectis is, becomes, or reasonably should be aware of facts that might form a reasonable basis that Allogene has failed to meet its Diligence Obligation then Cellectis will promptly notify Allogene in writing of such potential alleged performance failure (each such potential alleged performance failure, a "**Diligence Issue**"). Promptly upon Allogene's receipt of any notice of a Diligence Issue pursuant to this Section 2.2.4, the Allogene Alliance Manager and Cellectis Alliance Manager will meet to discuss the specific nature of such Diligence Issue and seek to identify an appropriate corrective course of action. If, no later than [***] after receipt of such a notice, (a) the Parties have not reached consensus regarding whether Allogene has failed to satisfy the Allogene Diligence Obligations and (b) the Parties' respective Alliance Managers have not agreed upon an appropriate corrective course of action for such Diligence Issue, then such Diligence Issue will be escalated and resolved pursuant to the dispute resolution provisions set forth in Section 11.10. If Cellectis fails to notify Allogene of a Diligence Issue pursuant to this Section 2.2.4 within [***] after the date that Cellectis first discovers or reasonably should have discovered such Diligence Issue, then Allogene will be deemed to have satisfied its Diligence Obligations, with respect to such Diligence Issue.

2.2.5. **Remedies for Breach of Allogene Diligence Obligations**. Subject to Section 2.2.3(c), if Allogene materially breaches any Allogene Diligence Obligation and fails to remedy such breach within ninety (90) days of Allogene's receipt of notice of such breach from Cellectis, then, with respect [***] Allogene Targets, [***] will cease to be an Allogene Target and will become a Cellectis Program Target and with respect to any Allogene Targets other than [***], the applicable Allogene Target(s) will no longer be subject to the exclusivity provisions set forth in Section 2.1 above.

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2.3. **Alliance Manager.** Each of the Parties will appoint a single individual to serve as that Party's alliance manager ("Alliance Manager"). The role of each Alliance Manager will be to facilitate the relationship between the Parties as established by this Agreement.

3. PRODUCT DEVELOPMENT, MANUFACTURING, COMMERCIALIZATION AND REGULATORY MATTERS.

3.1. **General**. As of and from the Effective Date, Allogene will have sole authority over and control of the Development, Manufacture and Commercialization of Allogene Licensed Products Targeting such Allogene Target.

3.2. **Regulatory Approvals**. Allogene or its designated Affiliate(s) will file, in its own name, all Regulatory Approval applications for Allogene Licensed Products Targeting such Allogene Target where Allogene, in its sole discretion, determines it is commercially advantageous to do so. Allogene, or its designated Affiliate(s), will have the sole responsibility for, and sole authority with respect to, communications with any Regulatory Authority regarding any Regulatory Approval Application or any Regulatory Approval for an Allogene Licensed Product once granted. Except to the extent necessary to fulfill its obligations under Section 2.2.1, neither Allogene nor any of its Affiliates will have any obligation to seek Regulatory Approval for any Allogene Licensed Product.

3.3. **Controlof Commercialization Activities**.

3.3.1. **General**. For each Allogene Target, Allogene will have sole and exclusive control over all matters relating to the Commercialization of Allogene Licensed Products Targeting such Allogene Target; and

3.3.2. **Trademarks**. Allogene will select and own all Trademarks used in connection with the Commercialization of any such Allogene Licensed Products, including all goodwill associated therewith. Neither Cellectis nor its Affiliates will use or seek to register, anywhere in the world, any trademarks which are confusingly similar to any Trademarks used by or on behalf of Allogene, its Affiliates or Sublicensees in connection with any Allogene Licensed Product. Nothing in this Section 3.3.2 will be construed to prevent Cellectis from granting Allogene any license or right in and to any trademark, trade dress, design, logo, slogan, house mark or name Controlled by Cellectis.

3.4. **Manufacturing**. Allogene will have the exclusive right (subject to Sections 2.2.4 and 4.5) to Manufacture Allogene Licensed Products Targeting such Allogene Target itself or through one or more Affiliates or Third Parties selected by Allogene. Allogene will have no diligence obligations with respect to the Manufacture of Allogene Licensed Products except to the extent necessary to fulfill the Allogene Diligence Obligations. Allogene will be responsible for 100% of the associated costs for the manufacturing of Allogene Licensed Products.

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3.5. **Allogene Progress Reporting**. Commencing on the Effective Date and until delivery of the first royalty report pursuant to Section 5.4.2, Allogene will provide Cellectis with annual written reports on Allogene's activities to Develop and Commercialize Allogene Licensed Products Targeting such Allogene Target. Any information or written report provided by Allogene to Cellectis pursuant to this Section 3.5 will be deemed to be Allogene's Confidential Information subject to the provisions of Article 7.

3.6. **Rightof First Refusal**.

In the event that Cellectis proposes to enter into any Third Party agreement related to the Development or Commercialization of any CAR Targeting a Cellectis Program Target (each a "**Cellectis Target Product**") in the Field, Cellectis will first provide Allogene with written notice of such proposal, including all material terms and conditions thereof (each a "**Cellectis Target Product Notice**"). For [***] following receipt of the Cellectis Target Product Notice, Allogene will have the option to purchase or license from Cellectis the Cellectis Target Product upon the terms and conditions set forth in the Cellectis Target Product Notice. In the event Allogene elects to purchase or license the Cellectis Target Product from Cellectis, Allogene will give written notice of its election to Cellectis within such [***] and the Parties will negotiate a mutually agreeable agreement for the purchase or license of the Cellectis Target Product within [***]; provided that the timeline for completing the agreement is not delayed by the actions or inactions of Cellectis. If Allogene does not elect to purchase or license the Cellectis Target Product, Cellectis may, within [***] following the expiration of the option right granted to Allogene, transfer or license the Cellectis Target Product to the proposed transferee or any other transferee, provided that this transfer will not be on terms and conditions more favorable to the transferee than those contained in the Cellectis Target Product Notice. In the event that Cellectis does not enter into the Third Party agreement to which the Cellectis Target Product Notice relates, this Section 3.6 will continue to apply with respect to the Cellectis Product Target. This Section 3.6 will be applicable to any potential Third Party agreement that Cellectis proposes entering into during the Term related to the Development or Commercialization of any CAR Targeting a Cellectis Program Target in the Field.

3.7. **Right of Negotiation**. In the event that Cellectis proposes to enter into any Third Party agreement related to the Development or Commercialization of any product Targeting an Other Cellectis Target, Cellectis will provide Allogene with written notice of such intent and will negotiate in good faith with Allogene regarding Allogene's purchase or license of such product Targeting an Other Cellectis Target.

4. LICENSES AND RELATED GRANTS OF RIGHTS.

4.1. **Grantsto Allogene**.

4.1.1. **Exclusive License**. Subject to the terms and conditions of this Agreement, on an Allogene Target-by-Allogene Target basis, Cellectis hereby grants to Allogene and its Affiliates an exclusive (even as to Cellectis) license under the Licensed Cellectis Intellectual Property (excluding [***] Patent Rights), to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported and otherwise exploit and Commercialize Allogene Licensed Products in the Field in the Territory, with the right to sublicense as provided in Section 4.1.4 (the "**License**").

4.1.2. [***] **Patent Rights**.

(a) Subject to the terms and conditions of this Agreement on an Allogene Target-by-Allogene Target basis, Cellectis hereby grants to Allogene and its Affiliates the right to use the [***] engineered by Cellectis to Develop Allogene Licensed Products until the filing of an IND for each Allogene Licensed Product, in the Field.

(b) Subject to the terms and conditions of this Agreement on an Other Product-by-Other Product basis and effective as of October 30, 2015 (or such later date as such Other Product is included hereunder pursuant to the Servier Agreement), Cellectis hereby grants to Allogene and its Affiliates the right to use the [***] engineered by Cellectis pursuant to the Servier Agreement to Develop Other Products, and Cellectis shall further have the obligation to grant the rights set forth in this Section 4.l.2(b) to subcontractors as directed by Allogene pursuant to Section 4.l.5(b) herein, until the filing of an IND for each Other Product, in the Other Field.

(c) Subject to the terms and conditions of this Agreement, on an Allogene Target-by-Allogene Target basis and effective upon the filing of an IND for each individual Allogene Licensed Product developed under Section 4.1.2(a), Cellectis hereby grants to Allogene and its Affiliates an exclusive (even as to Cellectis) license under the [***] Patent Rights, to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported and otherwise exploit and Commercialize such Allogene Licensed Product in the Field in the Territory, with the right to sublicense as provided in Section 4.1.4. Notwithstanding the foregoing, Allogene hereby acknowledges and agrees that Cellectis shall have the right and obligation to grant licenses and rights to a Third Party as set forth in Section 4.1.5(b) and Allogene's license and other rights under the [***] Patent Rights shall be limited accordingly so long as any such agreement remains in effect with such Third Party. For the sake of clarity, the license granted to Allogene by Cellectis herein does not give Allogene the right [***].

(d) Subject to the terms and conditions of this Agreement, on an Other Product-by-Other Product basis and effective upon the filing of an IND for each individual Other Product developed under Section 4.1.2(b), Cellectis hereby grants to Allogene and its Affiliates an exclusive (even as to Cellectis) license under the [***] Patent Rights, to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported and otherwise exploit and Commercialize such Other Product in the Other Field in the Other Territory, and Cellectis shall further have the obligation to grant the licenses and rights set forth in this Section 4.1.2(d) to subcontractors as directed by Allogene pursuant to Section 4.1.5(b) herein. For the sake of clarity, the license granted to Allogene by Cellectis herein does not give Allogene the right [***].

(e) Pursuant to Section 4.1.2(e) of the Research Collaboration and License Agreement, Allogene consented to the license granted by Cellectis to Servier pursuant to the Servier Agreement. Further, the Parties acknowledged and agreed and hereby acknowledge and agree that any rights or licenses that have been granted to Servier at Allogene's request (including any expansions of such rights or licenses, pursuant to the Research Collaboration and License Agreement, that Allogene directs Cellectis in writing to grant to Servier), or that may hereafter be granted by Cellectis to Servier, a subcontractor as directed by Servier, or a Third Party at the request of Allogene, are rights or licenses that were provided to Allogene pursuant to the Research Collaboration and License Agreement or this Agreement, and therefore Cellectis has already received (or, in the future and in accordance with the terms of this Agreement, will have the right to receive) compensation that Cellectis and Allogene have determined is fair and equitable and that Cellectis shall therefore not have the right to any additional payments or compensation from Servier, Allogene or any other person or entity in connection with the foregoing. Without limiting the foregoing, the Parties also agreed and acknowledged that all consideration paid or to be paid, whether one-time payments, milestone payments, royalty payments or otherwise, to Cellectis under the Servier Agreement, the Research Collaboration and License Agreement, or this Agreement shall not be reduced or otherwise modified or amended because of the license granted to Servier or other parties as contemplated thereby.

4.1.3. **License to Cellectis Improvements**. Subject to the terms and conditions of this Agreement, Cellectis hereby grants to Allogene and its Affiliates a non-exclusive, worldwide, sublicensable, royalty-free, perpetual and irrevocable license under any Cellectis Improvements that were solely or jointly invented by the employees, agents or independent contractors of Allogene or its Affiliates to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported and otherwise exploit and Commercialize any products and processes.

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4.1.4. **Right to Sublicense**. Allogene will have the right to grant sublicenses to its Affiliates and Third Parties of any and all licenses granted to Allogene under this Agreement by Cellectis, provided that (a) Allogene will be jointly and severally responsible with its Sublicensees to Cellectis for failure by its Sublicensees to comply with the terms and conditions of this Agreement; (b) each sublicense will include obligations on the Sublicensee that are consistent with the terms of this Agreement; and (c) Allogene will remain responsible for the payment to Cellectis of all Milestone Payments and royalties payable with respect to the activities and Net Sales of any Sublicensee.

4.1.5. **Direct License**

(a) **Direct license to Affiliates**. Allogene may at any time request and authorize Cellectis to grant licenses directly to Affiliates of Allogene by giving written notice designating to which Affiliate a direct license is to be granted. Upon receipt of any such notice, Cellectis will enter into and sign a separate direct license agreement with such designated Affiliate of Allogene. All such direct license agreements will be consistent with the terms and conditions of this Agreement, except for such modifications as may be required by the laws and regulations in the country in which the direct license will be exercised. The Parties further agree to make any amendments to this Agreement that are necessary to conform the combined terms of such direct license agreements and this Agreement to the terms of this Agreement as set forth on the Effective Date. In countries where the validity of such direct license agreements requires prior governmental approval or registration, such direct license agreements will not become binding between the parties thereto until such approval or registration is granted, which approval or registration will be obtained by Allogene. All costs of making such direct license agreement(s), including Cellectis' reasonable attorneys' fees, under this Section 4.1.5 will be borne by Allogene. Cellectis may provide a copy of any such license or similar agreements (and this Agreement) to any direct or indirect licensors to the extent required to comply with the terms of any license agreement to which Cellectis is a party from time to time.

(b) **Direct License to Third Parties.** Allogene may at any time request and authorize Cellectis to grant the rights and licenses set forth in Sections 4.1.2(a), 4.1.2(b), 4.1.2(c) and 4.1.2(d) of this Agreement directly to third parties by giving written notice designating to which Third Party such direct right or license is to be granted. Upon receipt of any such notice, Cellectis will enter into and sign a separate direct license or similar agreement with such designated Third Party, which, to the extent involving [***] Patent Rights licensed to Cellectis by Life Technologies Corporation, must include a license in respect of all of the [***] Patent Rights. All such

direct license or similar agreements will be consistent with the terms and conditions of this Agreement, except for such modifications as may be required by the laws and regulations in the country in which the direct license or right will be exercised. Cellectis may provide a copy of any such license or similar agreements to any of its direct or indirect licensors to the extent required to comply with the terms of any license agreement to which Cellectis is a party from time to time. The parties further agree and acknowledge that no additional consideration would be due to Cellectis from Allogene or such Third Party in respect of the grant of any such license or similar right, and the grant of any such license or similar right shall limit Allogene's license and other rights accordingly so long as any such agreement remains in effect with such Third Party. The parties acknowledge and agree that any rights or licenses that may hereafter be granted by Cellectis at the request of Allogene as contemplated by the immediately preceding sentence are rights or licenses that were previously provided to Allogene pursuant to this Agreement in accordance with the broad collaboration and development activities contemplated by such agreement, and therefore Cellectis has already received (or, in the future and in accordance with the terms of this Agreement, will have the right to receive) compensation that Cellectis and Allogene have determined is fair and equitable and that Cellectis shall therefore not have the right to any additional payments or compensation from Allogene or any other person or entity in connection with the foregoing. The parties further agree to make any amendments to this Agreement that are necessary to conform the combined terms of such direct license or similar agreements and this Agreement to the terms of this Agreement. In countries where the validity of such direct license or similar agreements requires prior governmental approval or registration, such direct license or similar agreements will not become binding between the parties thereto until such approval or registration is granted, which approval or registration will be obtained by Allogene or the Third Party, as applicable.

4.1.6. **Right of Reference**. Cellectis hereby grants to Allogene a "Right of Reference," as that term is defined in 21 C.F.R. § 314.3(b), to any data Controlled by Cellectis or its Affiliates (a) that relates to the Licensed Cellectis Intellectual Property, the Agreement CAR-Ts, the Allogene Licensed Products or preclinical studies with respect to the Allogene Licensed Products and (b) that Allogene reasonably believes may be necessary or useful to the Development, Manufacturing or Commercialization of any Agreement CAR-T or any Allogene Licensed Product pursuant to this Agreement, and Cellectis will provide a signed statement to the foregoing effect, if so requested by Allogene in accordance with 21 C.F.R. § 314.50(g)(3).

4.1.7. **Technology Transfer Assistance to Allogene**. Cellectis will provide reasonable assistance, at no additional cost to Allogene, to affect the timely and

orderly transfer to Allogene of the Know-How included in the Licensed Cellectis Intellectual Property necessary for the Development, Manufacturing and Commercialization of Allogene Licensed Products pursuant to the License.

4.2. **Grants to Cellectis**.

4.2.1. **Non-Exclusive License**. Subject to the terms and conditions of this Agreement, Allogene hereby grants to Cellectis and its Affiliates a non-exclusive, worldwide, royalty-free, perpetual and irrevocable license under the Licensed Allogene Intellectual Property Controlled by Allogene solely to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported and otherwise exploit and Commercialize Cellectis Products Targeting Cellectis Program Targets. Cellectis will have the right to grant sublicenses of the foregoing license to Third Party collaborators only if Cellectis has entered into a written agreement with such Third Party collaborator (a) obtaining a covenant not to sue or (b) granting Allogene a non-exclusive, worldwide, royalty-free, perpetual and irrevocable license under improvements to the Cellectis Technology developed in the framework of the collaboration between Cellectis and such Third Party that are Controlled by such Third Party.

4.2.2. **License to Allogene Improvements**. Subject to the terms and conditions of this Agreement, Allogene hereby grants to Cellectis and its Affiliates a non-exclusive, worldwide, sublicensable, royalty-free, perpetual and irrevocable license under any Allogene Improvements that were solely or jointly invented by the employees, agents or independent contractors of Cellectis or its Affiliates to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported and otherwise exploit and Commercialize any products and processes.

4.2.3. **Technology Transfer Assistance to Cellectis**. Allogene will provide reasonable assistance, at no additional cost to Cellectis, to affect the timely and orderly transfer to Cellectis of the Know-How included in the Allogene Technology, Allogene Improvements, Developed IP solely owned by Allogene, and CAR-T Developed IP (if applicable) necessary for the Development, Manufacturing and Commercialization of Cellectis Products Targeting Cellectis Programs Targets pursuant to the License under Sections 4.2.1 and 4.2.2 above.

4.3. **Reciprocal Non-Exclusive Research License for Disclosed Know-How and Confidential Information**. Without limiting any other license granted to either Party under this Agreement and subject to the terms of Article7:

4.3.1. Cellectis hereby grants to Allogene and its Affiliates a non-exclusive, irrevocable, perpetual, non-transferable, royalty-free, fully paid-up, worldwide license to use any and all Cellectis Know-How included in the Licensed Cellectis Intellectual Property and Cellectis Confidential Information disclosed to Allogene (or Pfizer prior to the Assignment) during the term of the Research Collaboration and License Agreement or during the Term of this Agreement solely for internal research purposes.

4.3.2. Allogene hereby grants to Cellectis and its Affiliates a non-exclusive, irrevocable, perpetual, non-transferable, royalty-free, fully paid-up, worldwide license to use any and all Allogene Know-How and Allogene Confidential Information (other than any information regarding the identity of or Allogene's reasons for selecting any Allogene Target or Additional Allogene Target, which will only be disclosed by Cellectis to its Representatives as necessary to comply with the terms of this Agreement) disclosed to Cellectis during the term of the Research Collaboration and License Agreement or during the Term of this Agreement solely for internal research purposes.

4.3.3. Notwithstanding the foregoing, neither Allogene nor Cellectis will have any right under this Section 4.3 to make or use any physical material supplied by the other Party for use in the Research Program other than for use in the Research Program.

4.4. **Retained Rights**. For the avoidance of doubt, except as expressly provided in regard to the licenses contained in this Article 4 or in the provisions of Section 6.1.1, each Party will retain ownership of all of its Allogene Technology or Cellectis Technology, as applicable.

4.5. **Other Allogene Programs**. Cellectis understands and acknowledges that Allogene may have present or future initiatives or opportunities, including initiatives or opportunities with its Affiliates or Third Parties, involving similar products, programs, technologies or processes that are similar to or that may compete with a product, program, technology or process covered by this Agreement. Cellectis acknowledges and agrees that nothing in this Agreement will be construed as a representation, warranty, covenant or inference that Allogene will not itself Develop, Manufacture or Commercialize or enter into business relationships with one or more of its Affiliates or Third Parties to Develop, Manufacture or Commercialize products, programs, technologies or processes that are similar to or that may compete with any product, program, technology or process covered by this Agreement. Notwithstanding the foregoing, if Allogene or its Affiliates, other than pursuant to this Agreement, themselves Develop, Manufacture or Commercialize or enter into business relationships with one or more of its Affiliates or Third Parties to Develop, Manufacture or Commercialize T-cells expressing a chimeric antigen receptor construct other than a CAR-T, with respect to a particular Allogene Target in the Field, then any exclusive licenses granted to Allogene under this Agreement with respect to an Allogene Licensed Product Targeting such Allogene Target will be automatically converted into non-exclusive licenses, and Cellectis' exclusivity obligation under Section 2.1 will not apply with respect to such Allogene Target.

4.6. **No Implied Rights**. Except as expressly provided in this Agreement, neither Party will be deemed, by estoppel, implication or otherwise, to have granted the other Party any license or other right with respect to any intellectual property of such Party.

5. PAYMENTS TO CELLECTIS.

5.1. **Milestones**

5.1.1. **Development Milestones**. Within [***] of receipt of Cellectis' invoice following the first occurrence of each event described below (each, a "**Development Milestone**") for each Allogene Licensed Product for each Allogene Target, Allogene will pay to Cellectis the amount set forth below (each, a "**Development Milestone Payment**") to be payable only once with respect to each Allogene Licensed Product Targeting an Allogene Target. For the avoidance of doubt, if any Development Milestone Payment is paid for an Agreement CAR-T or Allogene Licensed Product Targeting an Allogene Target and the Development or Commercialization of such Agreement CAR-T or Allogene Licensed Product is terminated and such Agreement CAR-T or Allogene Licensed Product is replaced with another Agreement CAR-T or Allogene Licensed Product Targeting the same Allogene Target, such Development Milestone Payment will not be owed by Allogene if such Agreement CAR-T or Allogene Licensed Product later achieves the same Development Milestone.

Development Milestone	Development Milestone Payments
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]

If any Development Milestone occurs before a previous Development Milestone occurs, then any Development Milestone that has not yet been paid for achievement of any previous Development Milestone shall become due upon the achievement of the subsequent Development Milestone and payable together with the payment due upon achievement of such subsequent Development Milestone. For clarity, the achievement of a Development Milestone related to [***] will not result in the payment of any other Development Milestone related to [***].

5.1.2. **Sales Milestones**. Allogene will pay to Cellectis the following one-time payments (each, a "**Sales Milestone Payment**") within [***] of the last day of the Calendar Year when aggregate Annual Net Sales of an Allogene Licensed Product in a Calendar Year first reach the respective threshold (a "**Sales Threshold**") indicated below (each, a "**Sales Milestone**"); provided that such Sales Threshold with respect to an Allogene Licensed Product must be reached within [***] following the First Commercial Sale of such Allogene Licensed Product in the Territory.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

Total Annual Net Sales	Sales Milestone Payments
[***]	[***]
[***]	[***]

5.2. **Royalties**. With respect to each Allogene Licensed Product and subject to the provisions of Section 5.2.2, Allogene will pay Cellectis royalties in the amount of the applicable rates ("**Marginal Royalty Rates**") set forth below of Annual Net Sales of any Allogene Licensed Product Targeting such Allogene Target during the Royalty Term:

Annual Net Sales	Marginal Royalty Rates (% of the Annual Net Sales)
[***]	[***]
[***]	[***]

5.2.1. **Marginal Royalty Rate Application**. Each Marginal Royalty Rate set forth in the table above will apply only to that portion of the Annual Net Sales of a given Allogene Licensed Product in the Territory during a given Calendar Year that falls within the indicated range.

5.2.2. **Royalty Adjustments**. The following adjustments will be made, on an Allogene Licensed Product-by-Allogene Licensed Product and country-by-country basis, to the royalties payable pursuant to this Section 5.2:

(a) **Generic Competition**. Royalties payable following establishment of Generic Competition with respect to the sale by a Third Party of a product that is a Biosimilar Biologic Product to such Allogene Licensed Product in such country will be payable at [***] of the otherwise applicable rate prior to application of this Section 5.2.2(a). "**Generic Competition**" means, with respect to a given Calendar Year with respect to an Allogene Licensed Product in any country, that during such Calendar Year, one (1) or more Third Parties have received Regulatory Approval to sell in such country a Biosimilar Biologic Product, such Biosimilar Biologic Product(s) will be commercially available in such country and such Biosimilar Biologic Product(s) will have, in the aggregate. A product will be a "**Biosimilar Biologic Product**" with respect to an Allogene Licensed Product if such product (1) has been licensed as a biosimilar or interchangeable product by FDA pursuant to Section 351(k) of the Public Health Service Act (42 U.S.C. 262(k)), as may be amended, or any subsequent or superseding law, statute or regulation, (2) has been licensed as a similar biological medicinal product by EMA pursuant to Directive 2001/83/EC, as may be amended, or any subsequent or superseding law, statute or regulation, or (3) has otherwise achieved analogous Regulatory Approval from another applicable Regulatory Authority.

(b) **Third Party Patents**. If, after June 17, 2014, it was or is Necessary or Useful for Allogene (or Pfizer, to the extent identified by Pfizer prior to the Assignment) to license one or more Patent Rights from one or more Third Parties in order to Develop, Manufacture, Commercialize or use any Allogene Licensed Product, whether directly or through any Allogene Affiliate or Sublicensee, then Allogene may, in its sole discretion, negotiate and obtain a license under such Patent Right(s) (each such Third Party license, or any such Third Party license entered into as of the Effective Date by Allogene or by Pfizer and assigned to Allogene, referred to herein as an "**Additional Third Party License**"). Any royalty otherwise payable to Cellectis under this Agreement with respect to Net Sales of any Allogene Licensed Product by Allogene, its Affiliates or Sublicensees will be reduced by [***] of the amounts payable to Third Parties pursuant to any Additional Third Party Licenses, such reduction to continue until all such amounts have been expended, provided that in no event will the total royalty payable to Cellectis for any Allogene Licensed Product be less than [***] of the royalty amounts otherwise payable for such Allogene Licensed Product and in no event will the royalty payable to Cellectis for any Allogene Licensed Product be reduced below [***] (in each case, other than in the case of Cellectis' breach of any representation, warranty or covenant hereunder). For purposes of this Section 5.2.2(b), (i) "**Necessary**" means that, without a license to use the Third Party's Patent Right, the Development, Manufacture, Commercialization or use of any Allogene Licensed Product in the form such Allogene Licensed Product exists at the time that the Additional Third Party License is executed would, in Allogene's opinion, infringe such Third Party's Patent Right and (ii) "**Useful**" means that Allogene has determined in its discretion that use of such Third Party's Patent Right would enhance the commercial potential of such Allogene Licensed Product. For the avoidance of doubt, the Parties agree and acknowledge that this Section 5.2.2(b) will not apply with respect to royalties payable by Allogene to any Third Party under any agreement in existence as of June 17, 2014. Neither Party will intentionally negotiate with a Third Party an exclusive license that excludes sublicense rights to the other Party, in the event such Third Party rights are necessary, as determined by the negotiating Party, to Develop and Commercialize Allogene Licensed Products and Cellectis Products in connection with this Agreement in the Field.

(c) **Cellectis Third Party Agreements**. Cellectis will be solely responsible for all obligations, including royalty obligations, that are due and owing or may become due and owing with respect to any Cellectis Third Party Agreements that are in effect as of the Effective Date or that Cellectis or any of its Affiliates enters into during the Term of this Agreement.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

5.2.3. **Fully Paid-Up, Royalty Free License**. After expiration of the Royalty Term for any Allogene Licensed Product in a country in the Territory, no further royalties will be payable in respect of sales of such Allogene Licensed Product in such country and thereafter the License with respect to such Allogene Licensed Product in such country will be a fully paid-up, perpetual, exclusive, irrevocable, royalty-free license.

5.3. **Diagnostic and Prognostic Products**. In no event will any milestone, net sales or royalty payments become due or owing pursuant to Section 5.1 or 5.2 above with respect to any Allogene Licensed Product Developed or Commercialized for diagnostic or prognostic purposes.

5.4. **Reports and Payments**.

5.4.1. **Cumulative Royalties**. The obligation to pay royalties under Section 5.2 will be imposed only once with respect to a single unit of an Allogene Licensed Product regardless of how many Valid Claims in Patent Rights included within the Licensed Cellectis Intellectual Property would, but for this Agreement, be infringed by the use or sale of such Allogene Licensed Product in the country in which such Allogene Licensed Product is used or sold.

5.4.2. **Royalty Statements and Payments**. Within [***] after the end of each Calendar Quarter, Allogene will deliver to Cellectis a report setting forth for such Calendar Quarter the following information, on an Allogene Licensed Product-by-Allogene Licensed Product basis: (a) the Net Sales of each Allogene Licensed Product, (b) the basis for any adjustments to the royalty payable for the sale of each Allogene Licensed Product and (c) the royalty due hereunder for the sale of each Allogene Licensed Product. No such reports will be due for any Allogene Licensed Product before the First Commercial Sale of such Allogene Licensed Product in the Territory. The total royalty due for the sale of Allogene Licensed Products during such Calendar Quarter will be remitted at the time such report is delivered to Cellectis.

5.4.3. **Taxes and Withholding**. It is understood and agreed between the Parties that any payments made under this Agreement are exclusive of any value added or similar tax ("**VAT**"), which will be added thereon as applicable. Where VAT is properly added to a payment made under this Agreement, the party making the payment will pay the amount of VAT only on receipt of a valid tax invoice issued in accordance with the laws and regulations of the country in which the VAT is chargeable. In addition, in the event any of the payments made by Allogene pursuant to this Agreement become subject to withholding taxes under the Laws of any jurisdiction, Allogene will deduct and withhold the amount of such taxes for

the account of Cellectis, to the extent required by Law, such amounts payable to Cellectis will be reduced by the amount of taxes deducted and withheld, and Allogene will pay the amounts of such taxes to the proper Governmental Authority in a timely manner and promptly transmit to Cellectis an official tax certificate or other evidence of such tax obligations together with proof of payment from the relevant Governmental Authority of all amounts deducted and withheld sufficient to enable Cellectis to claim such payment of taxes. Any such withholding taxes required under applicable Law to be paid or withheld will be an expense of, and borne solely by, Cellectis. Allogene will provide Cellectis with reasonable assistance to enable Cellectis to recover such taxes as permitted by Law.

5.4.4. **Currency**. All amounts payable and calculations hereunder will be in United States dollars. As applicable, Net Sales and any royalty deductions will be converted into United States dollars in accordance with Allogene's customary and usual conversion procedures, consistently applied.

5.4.5. **Method of Payment**. Except as permitted pursuant to Section 5.4.4, each payment hereunder will be made by electronic transfer in immediately available funds via either a bank wire transfer, an ACH (automated clearing house) mechanism, or any other means of electronic funds transfer, at Allogene's election, to such bank account as the Cellectis will designate in writing to Allogene at least forty-five (45) days before the payment is due.

5.4.6. **Additional Provisions Relating to Payments**. Cellectis acknowledges and agrees that nothing in this Agreement (including any schedules and exhibits hereto) will be construed as representing an estimate or projection of either (a) the number of Allogene Licensed Products that will or may be successfully Developed or Commercialized or (b) anticipated sales or the actual value of any Allogene Licensed Product. ALLOGENE MAKES NO REPRESENTATION OR WARRANTY, EITHER EXPRESS OR IMPLIED, THAT IT WILL BE ABLE TO SUCCESSFULLY DEVELOP OR COMMERCIALIZE ANY PRODUCT OR, IF COMMERCIALIZED, THAT IT WILL ACHIEVE ANY PARTICULAR SALES LEVEL OF SUCH PRODUCT(S), PROVIDED THAT THE FOREGOING WILL NOT LIMIT ALLOGENE'S OBLIGATIONS UNDER THIS AGREEMENT.

5.5. **Maintenance of Records; Audits**.

5.5.1. **Record Keeping**. Allogene will keep, and cause its Affiliates and Sublicensees to keep, accurate books of account and records in connection with the sale of Allogene Licensed Products, in sufficient detail to permit accurate determination of all figures necessary for verification of royalties to be paid hereunder. Allogene will maintain, and cause its Affiliates and Sublicensees to maintain, such records for a period of at least [***] after the end of the Calendar Year in which they were generated.

5.5.2. **Audits**. Upon thirty (30) days prior written notice from Cellectis, Allogene will permit an independent certified public accounting firm of internationally recognized standing selected by Cellectis and reasonably acceptable to Allogene to examine, at Cellectis' sole expense, the relevant books and records of Allogene during the period covered by such examination, as may be reasonably necessary to verify the accuracy of the reports submitted by Allogene in accordance with Section 5.4 and the payment of royalties hereunder. An examination by Cellectis under this Section 5.5.2 will occur not more than [***] and will be limited to the pertinent books and records for any Calendar Year ending not more than [***] before the date of the request. The accounting firm will be provided access to such books and records at Allogene's or its Affiliates' facilities where such books and records are kept and such examination will be conducted during Allogene's normal business hours. Allogene may require the accounting firm to sign a reasonable and customary non-disclosure agreement before providing the accounting firm access to Allogene's facilities or records. Upon completion of the audit, the accounting firm will provide both Allogene and Cellectis a written report disclosing whether the reports submitted by Allogene are correct or incorrect, whether the royalties paid are correct or incorrect and, in each case, the specific details concerning any discrepancies. No other information will be provided to Cellectis.

5.5.3. **Underpayments/Overpayments**. If such accounting firm concludes that additional royalties were due to Cellectis, Allogene will pay to Cellectis the additional royalties within thirty (30) days of the date Allogene receives such accountant's written report so concluding. If such underpayment exceeds [***] of the royalties that were to be paid to Cellectis, Allogene also will reimburse Cellectis for all reasonable charges of such accountants for conducting the audit. If such accounting firm concludes that Allogene overpaid royalties to Cellectis, Cellectis will repay such amount to Allogene in full within thirty (30) days of the receipt of such accountant's report, or, at Allogene's option, Allogene will be entitled to offset all such overpayments against any outstanding or future amounts payable to Cellectis hereunder until Allogene has received full credit for such overpayments.

5.5.4. **Confidentiality**. All financial information of Allogene which is subject to review under this Section 5.5 will be deemed to be Allogene's Confidential Information subject to the provisions of Article 7 hereof, and Cellectis will not disclose such Confidential Information to any Third Party or use such Confidential Information for any purpose other than verifying payments to be made by Allogene to Cellectis hereunder.

5.5.5. **Costs**. Cellectis shall pay the full cost of the audit unless the discrepancy is to the Cellectis' detriment and is greater than [***] of all amounts due in such calendar year, in which cases Allogene shall pay the reasonable cost charged by such accountant for such inspection.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

5.6. **No Guarantee of Success**. Allogene and Cellectis acknowledge and agree that payments to Cellectis pursuant to Sections 5.1 and 5.2: (a) have been included in this Agreement on the basis that they are only payable or otherwise relevant if an Allogene Licensed Product is successfully Developed or Commercialized, as applicable; (b) are solely intended to allocate amounts that may be achieved upon successful Development or Commercialization of an Allogene Licensed Product between Allogene (who will receive all Allogene Licensed Product sales revenues) and Cellectis; (c) are not intended to be used and will not be used as a measure of damages if this Agreement is terminated for any reason, including pursuant to Allogene's right to terminate at for convenience, before any such success is achieved and such amounts become due; and (d) will only be triggered, and will only be relevant as provided, in accordance with the terms and conditions of such provisions. Allogene and Cellectis further acknowledge and agree that nothing in this Agreement will be construed as representing any estimate or projection of (i) the successful Development or Commercialization of any Allogene Licensed Product under this Agreement, (ii) the number of Allogene Licensed Products that will or may be successfully Developed or Commercialized under this Agreement, (iii) anticipated sales or the actual value of any Allogene Licensed Products that may be successfully Developed or Commercialized under this Agreement or (iv) the damages, if any, that may be payable if this Agreement is terminated for any reason. Allogene makes no representation, warranty or covenant, either express or implied, that (A) it will successfully Develop, Manufacture, Commercialize or continue to Develop, Manufacture or Commercialize any Allogene Licensed Product in any country, (B) if Commercialized, that any Allogene Licensed Product will achieve any particular sales level, whether in any individual country or cumulatively throughout the Territory or (C) Allogene will devote, or cause to be devoted, any level of diligence or resources to Developing or Commercializing any Allogene Licensed Product in any country, or in the Territory in general, other than is expressly required under Section 2.2.

6. INTELLECTUAL PROPERTY.

6.1. **Inventions**.

6.1.1. **Ownership**. All determinations of inventorship under this Agreement will be made in accordance with the laws of the United States.

(a) **Allogene Improvements**. Allogene will own all [***].

(b) **Cellectis Improvements**. Cellectis will own all [***].

(c) **Developed IP**. [***].

(d) **Allogene CAR-T Developed IP.** [***].

(e) **Cellectis CAR-T Developed IP.** [***].

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

(f) **Implementation**. Each Party will assign, and does hereby assign, to the other Party such Patent Rights, Know-How or other intellectual property rights as necessary to achieve ownership as provided in this Section 6.1.1. Each assigning Party will execute and deliver all documents and instruments reasonably requested by the other Party to evidence or record such assignment or to file for, perfect or enforce the assigned rights. Each assigning Party will make its relevant employees, agents and independent contractors (and their assignments and signatures on such documents and instruments) reasonably available to the other Party for assistance in accordance with this Section 6.1.1 at no charge.

6.1.2. **Disclosure**. Each Party will promptly (and in no event less than [***] before filing any initial Patent Right disclosing such intellectual property) disclose to the other Party any Developed IP, Cellectis Improvement or Allogene Improvement, including all invention disclosures or other similar documents submitted to such Party by its, or its Affiliates', employees, agents or independent contractors describing such Developed IP, Cellectis Improvement or Allogene Improvement, and the proposed inventorship of any new Patent Rights intended to be filed. The other Party will promptly raise any issue regarding inventorship. Any inventorship issue raised more than [***] after notice of the filing of an initial Patent Rights and the content thereof, or the subsequent filing of new patent claims in a Patent Right directed to substantially different inventions, will not affect ownership of the Patent Right as determined in accordance with the initial inventorship determination.

6.2. **Patent Rights**.

6.2.1. **Filing, Prosecution and Maintenance of Patent Rights**.

(a) **Cooperation**. Without limiting any other rights and obligations of the Parties under this Agreement, the Parties will cooperate with respect to the timing, scope and filing of patent applications and patent claims relating to any Cellectis Improvements, Allogene Improvements and Developed IP to preserve and enhance the patent protection for Agreement CAR-Ts, including the manufacture and use thereof. If the ownership rights in any Patent Rights included in Cellectis Improvements or Developed IP are substantially impeding or would substantially impede Allogene's prosecution of Allogene CAR-T Developed IP, or Cellectis's prosecution of Cellectis CAR-T Developed IP, the Parties will negotiate in good faith an amendment of the ownership of such Patent Rights included in Cellectis Improvements or Developed IP while preserving for each Party substantially the same rights, including all Milestone Payments and royalty payments, as are afforded in this Agreement.

(b) **Allogene Patent Rights**. Allogene, at its own expense, will have the sole right, but not the obligation, to prepare, file, prosecute and maintain,

throughout the world, any Patent Rights that it solely owns, including Allogene Patent Rights and Patent Rights comprised in the Allogene Improvements and Allogene CAR-T Developed IP. Allogene will keep Cellectis informed regarding the status of any Patent Right comprised in any such CAR-T Developed IP at Cellectis' reasonable request. To the extent Allogene wishes not to file, prosecute or maintain any such Patent Right, Allogene will provide Cellectis with thirty (30) days prior written notice to such effect, in which event Cellectis may elect to continue filing, prosecution or maintenance of such Patent Right, and Allogene, upon Cellectis' written request received within such thirty (30) day period, will execute such documents and perform such acts, at Cellectis' expense, as may be reasonably necessary to permit Cellectis to file, prosecute and maintain such Patent Right. Any such Patent Right that is prosecuted or maintained by Cellectis pursuant to this Section 6.2.1(b): (i) will continue to be owned by Allogene, and (ii) subject to the Parties' other rights and obligations under this Agreement, may be licensed by Allogene to one or more Third Parties.

(c) **Cellectis Patent Rights**. Cellectis, at its own expense, will have the sole right, but not the obligation, to prepare, file, prosecute and maintain, throughout the world, any Patent Rights included in Licensed Intellectual Property that it solely owns or has in-licensed from Third Parties, including Cellectis Patent Rights and Patent Rights comprised in the Cellectis Improvements. Cellectis will not disclose any Allogene Confidential Information in any Patent Rights that it files, or in connection with the prosecution of any such Patent Rights, without Allogene's prior written consent. Cellectis will notify Allogene promptly upon filing or otherwise obtaining rights in any Patent Right after the Effective Date that covers or may cover the Development, Manufacture, Commercialization or use of any Allogene Licensed Product. In the absence of such prompt notification, any such Patent Rights will be excluded from the Valid Claim definition. Cellectis will keep Allogene informed regarding each Patent Right included in the Licensed Intellectual Property that Cellectis or any Third Party licensor is prosecuting and will consider in good faith any recommendations made by Allogene in regard to the filing, prosecution or maintenance of any such Patent Right. To the extent Cellectis wishes not to file, prosecute or maintain any such Patent Right (other than any such Patent Right owned or co-owned by a Third Party licensor), Cellectis will provide Allogene with thirty (30) days prior written notice to such effect, in which event Allogene may elect to continue filing, prosecution or maintenance of such Patent Right, and Cellectis, upon Allogene's written request received within such thirty (30) day period, will execute such documents and perform such acts, at Allogene's expense, as may be reasonably necessary to permit Allogene to file, prosecute and maintain, at its own discretion, such Patent Right. Any such Patent Rights that are prosecuted or maintained by Allogene pursuant to this Section 6.2.1(c) will continue to be owned by Cellectis, and will be

excluded from the Valid Claim definition; and, in addition to the exclusive licenses granted to Allogene under Section 4.1, Cellectis will and does hereby grant to Allogene (subject to any existing Third Party rights) a non-exclusive, sublicensable, perpetual, irrevocable, royalty-free, fully paid-up, worldwide license to practice and exploit such Patent Rights for any and all purposes. Cellectis will not decline to pay for or participate in the filing, prosecution or maintenance of any Patent Right under any Cellectis Third Party Agreement that is included in the Licensed Intellectual Property without Allogene's prior written consent.

(d) **Joint Patent Rights**. In the event the Parties conceive or generate any Joint Developed IP, other than any Joint Developed IP that constitutes Allogene CAR-T Developed IP, or Cellectis CAR-T Developed IP, the Parties will promptly meet to discuss and determine, based on mutual consent, whether to seek patent protection thereon. Neither Party will file any Patent Right covering or claiming any such Joint Developed IP (a "**Joint Patent Right**") Allogene will have the first right to file on and control prosecution of any Patent Right covering or claiming any Joint Developed IP used in the development, manufacture, composition or use of any CAR-T Targeting such Allogene Target in accordance with Section 6.2.1(b). For avoidance of doubt, "prosecution" as used in this Section 6.2.1 includes oppositions, nullity or revocation actions, post-grant reviews and other patent office proceedings involving the referenced Patent Rights.

(e) **Liability**. To the extent that a Party is obtaining, prosecuting or maintaining a Patent Right included in the Licensed Intellectual Property or Developed IP (including CAR-T Developed IP) or otherwise exercising its rights under this Section 6.2.1, such Party, and its Affiliates, employees, agents or representatives, will not be liable to the other Party in respect of any act, omission, default or neglect on the part of any such Party, or its Affiliates, employees, agents or representatives, in connection with such activities undertaken in good faith.

(f) **Extensions**. The decision to file for a patent term extension and particulars thereof (including which patent(s) to extend) will be made with the goal of obtaining the optimal patent term and scope of protection for Allogene Licensed Products. Allogene will have the sole right but not the obligation to apply for and obtain any patent term extension or related extension of rights, including supplementary protection certificates and similar rights, for any patent relating to an Allogene Licensed Product (including the choice of which patent(s) to extend), provided that it will consult with Cellectis before applying for or obtaining any such extensions or rights for any patents included in the Licensed Cellectis Intellectual Property. The Parties will provide reasonable assistance to each other in connection with obtaining any such extensions for any patent included in the Licensed Cellectis Intellectual Property. To the extent reasonably and

legally required in order to obtain any such extension in a particular country, each Party will make available to the other a copy of the necessary documentation to enable such other Party to use the same for the purpose of obtaining the extension in such country.

(g) **Joint Research Agreement**. This Agreement will be understood to be a joint research agreement under 35 U.S.C. § 103(c)(3) entered into for the purpose of researching, identifying and Developing Agreement CAR-Ts and Allogene Licensed Products.

(h) **Recording**. If a Party deems it necessary or desirable to register or record this Agreement or evidence of this Agreement with any patent office or other appropriate government authorities in one or more jurisdictions in the Territory, then the Parties will agree on a proposed evidence of such recording and the Parties will comply with the terms of Section 7.2.3 in respect of such filing. Each Party will execute and deliver to the other Party any documents necessary or desirable to complete such registration or recordation in accordance with the terms of Section 7.2.3.

6.2.2. **Enforcement of Patent Rights**.

(a) **Notice**. If either Allogene or Cellectis becomes aware of any infringement that may affect competition of either Party within the Field, anywhere in the world, of any issued Patent Right within the Licensed Intellectual Property or Developed IP, such Party will promptly notify the other Party in writing to that effect.

(b) **Infringement of Certain Patent Rights.**

(i) Subject to the terms and conditions of any applicable Cellectis Third Party Agreements, if any infringement of a Patent Right included in the Licensed Intellectual Property by a Third Party arises from the Development, Manufacture or Commercialization of a product that does, or may, compete with an Allogene Licensed Product Targeting such Allogene Target, Allogene will have the first right, but not the obligation, to take action to obtain a discontinuance of infringement or bring suit against a Third Party infringer of such Patent Right within six (6) months from the date of notice and to join Cellectis as a party plaintiff in each of the following circumstances: (x) where the Allogene Licensed Product with which the Third Party's infringement will compete has been [***] or is the subject of [***] and no Cellectis Product or CAR-T product of another Cellectis licensee has begun or completed [***], or (y) where such Patent Right is directed exclusively to an Allogene

Target or an Allogene Licensed Product Targeting such Allogene Target or an Allogene Licensed Product Targeting such Allogene Target; in all other circumstances, Allogene may, with prior written consent of Cellectis (not to be unreasonably withheld), have the right to take action against such Third Party infringer.

(ii) Allogene will bear all the expenses of any suit brought by it claiming infringement of any such Patent Right. Cellectis will cooperate with Allogene in any such suit and will have the right to consult with Allogene and to participate in and be represented by independent counsel in such litigation at its own expense. Allogene will incur no liability to Cellectis as a consequence of such litigation or any unfavorable decision resulting therefrom, including any decision holding any such Patent Right invalid or unenforceable, and Allogene will not, without Cellectis' prior written consent, enter into any settlement or consent decree that requires any payment by or admits or imparts any other liability to Cellectis or admits the invalidity or unenforceability of any such Patent Right.

(iii) If Allogene has not obtained a discontinuance of infringement by, or filed suit against, any such Third Party infringer within the six (6) month period set forth in subsection (i) above, then Cellectis will have the right, but not the obligation, to bring suit against such Third Party infringer, at Cellectis' sole expense; provided, however, that Cellectis will only have the foregoing right if Allogene would not be required (by Applicable Law or otherwise) to join such suit as a party and such suit would not involve a Patent Right covering a then-existing Agreement CAR-T or Allogene Licensed Product. Allogene will have no obligation to cooperate with Cellectis in any such litigation, provided that Allogene may, at its sole discretion, elect to consult with Cellectis and to participate in and be represented by independent counsel in such litigation at its own expense. Cellectis will incur no liability to Allogene as a consequence of such litigation or any unfavorable decision resulting therefrom, including any decision holding any such Cellectis Patent Right or Joint Patent Right invalid or unenforceable; and Cellectis will not, without Allogene's prior written consent, enter into any settlement or consent decree that requires any payment by or admits or imparts any other liability to Allogene or admits the invalidity or unenforceability of any such Patent Right.

(iv) The enforcing Party will keep the other Party reasonably informed of all material developments in connection with any such suit. Subject to the terms and conditions of any applicable Cellectis Third Party Agreements, any recoveries obtained by either Party as a result of any proceeding against such a Third Party infringer will be allocated as follows:

(A) Such recovery will first be used to reimburse each Party for all out-of-pocket litigation costs in connection with such litigation paid by that Party; and

(B) With respect to any remaining portion of such recovery, if Allogene was the enforcing Party, Cellectis will receive an amount equal to the royalty that would be payable, pursuant to Section 5.2, on an amount of Net Sales of the relevant Allogene Licensed Product(s) in the country(ies) where such infringement occurred equal to such remaining portion of such recovery, and Allogene will receive any remaining portion of such recovery; or

(C) With respect to any remaining portion of such recovery, if Cellectis was the enforcing Party, Cellectis will receive any remaining portion of such recovery, except to the extent such recovery was calculated based on lost sales of Allogene, in which case the allocation of such remaining portion will be made as provided in Section 6.2.2(b)(iv)(B).

(c) **Other Infringement of Joint Patent Rights**. With respect to any notice of a Third Party infringer of any Joint Patent Right other than in the case of a Joint Patent Right subject to Section 6.2.2(b), the Parties will meet as soon as reasonably practicable to discuss such infringement and determine an appropriate course of action and the Parties' respective rights and responsibilities with respect to any enforcement thereof.

6.2.3. **Biosimilar Notices.**

(a) **General Strategy.** Upon Allogene's request any time after completion of the first Phase II Clinical Trial for any Allogene Licensed Product, Cellectis will use reasonable efforts to assist and cooperate with Allogene in establishing a strategy for responding to requests for information from Regulatory Authorities and Third Party requestors and preparing submissions responsive to any Biosimilar Notices received by Allogene; provided that Allogene will make the final decisions with respect to such strategy and any such responses.

(b) **Biosimilar Notices**. Allogene will comply with the applicable provisions of 42 U.S.C. § 262(l) (or any amendment or successor statute thereto), any similar statutory or regulatory requirement enacted in the future regarding biologic products in the United States, or any similar statutory or regulatory requirement in any non-U.S. country or other regulatory jurisdiction, in each case, with respect to any Biosimilar Notice received by Allogene from any Third Party regarding any Allogene Licensed Product that is being Commercialized in the applicable jurisdiction, and the exchange of information between any Third Party and

Allogene pursuant to such requirements; provided that, prior to any submission of information by Allogene to a Third Party, Cellectis will have the right to review the patent information included in such proposed submission, solely with respect to Patent Rights Controlled by Cellectis, and to make suggestions as to any changes to such patent information that Cellectis reasonably believes to be necessary; provided further that Allogene will determine the final content of any such submission. In the case of an Allogene Licensed Product approved in the United States under the PHS Act (or, in the case of a country in the Territory other than the United States, any similar law), to the extent permitted by Applicable Law, Allogene, as the sponsor of the application for the Allogene Licensed Product, will be the "reference product sponsor" under the PHS Act. Allogene will give written notice to Cellectis of receipt of a Biosimilar Notice received by Allogene with respect to an Allogene Licensed Product, and Allogene will consult with Cellectis with respect to the selection of the Patent Rights to be submitted pursuant to 42 U.S.C. § 262(l) (or any similar law in any country of the Territory outside the United States); provided that Allogene will have final say on such selection of Patent Rights. Cellectis agrees to be bound by the confidentiality provisions of 42 U.S.C. § 262(l)(1)(B)(iii). In order to establish standing in connection with any action brought by Allogene under this Section 6.2.3, Cellectis, upon Allogene's request, will reasonably cooperate with Allogene in any such action, including timely commencing or joining in any action brought by Allogene under this Section 6.2.3 solely to the extent any Patent Rights Controlled by Cellectis are involved in any such action, and the Parties rights and responsibilities regarding any action will be determined in accordance with Section 6.2.2(b).

6.3. **Interference, Opposition, Revocation and Declaratory Judgment Actions**. If the Parties mutually determine that, based upon the review of a Third Party's patent or patent application or other intellectual property rights, it may be desirable in connection with any Agreement CAR-T or Allogene Licensed Product to provoke or institute an interference, opposition, revocation, post-grant review or other patent office proceedings or declaratory judgment action with respect thereto, then the Parties will consult with one another and will [***] in connection with such an action. Unless otherwise mutually determined by the Parties, Allogene will control such action and will select counsel for such action. The rights and obligations of the Parties under Section 6.4 are expressly subject to this Section 6.3.

6.4. **Infringement of Third Party Patent Rights**. If the Development, Manufacture or Commercialization of any Allogene Licensed Product is alleged by a Third Party to infringe a Third Party's patent or other intellectual property rights, the Party becoming aware of such allegation will promptly notify the other Party. The Party that is alleged to infringe the Third Party's patent or intellectual property rights will have the right to take such action as it deems appropriate in response to such allegation, and will be solely responsible for all damages, costs and expenses in connection therewith, subject to Section 10.1.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

7. CONFIDENTIALITY

7.1. **Confidentiality**. Except to the extent expressly authorized by this Agreement, the Parties agree that, during the Term and [***], each Party (the "**Receiving Party**") receiving any Confidential Information of the other Party (the "**Disclosing Party**") hereunder will: (a) keep the Disclosing Party's Confidential Information confidential; (b) not disclose, or permit the disclosure of, the Disclosing Party's Confidential Information; and (c) not use, or permit to be used, the Disclosing Party's Confidential Information for any purpose, provided, however, that a Receiving Party may disclose Confidential Information of the Disclosing Party to the extent that such Confidential Information (i) was already known by the Receiving Party (other than under an obligation of confidentiality to the Disclosing Party) at the time of disclosure by the Disclosing Party; (ii) was generally available to the public or otherwise part of the public domain at the time of its disclosure to the Receiving Party; (iii) became generally available to the public or otherwise part of the public domain after its disclosure to the Receiving Party, other than through any act or omission of the Receiving Party in breach of its obligations under this Agreement; (iv) was disclosed to the Receiving Party, other than under an obligation of confidentiality, by a Third Party who had no obligation to the Disclosing Party not to disclose such information to the Receiving Party; or (v) was independently discovered or developed by or on behalf of the Receiving Party without the use of any Confidential Information of the Disclosing Party.

7.2. **Authorized Disclosure**.

7.2.1. **Disclosure to Party Representatives**. Notwithstanding the foregoing provisions of Section 7.1, the Receiving Party may disclose Confidential Information belonging to the Disclosing Party to the Receiving Party's, its Affiliates' and its Sublicensees' officers, directors, employees, consultants, contractors, licensors and agents (collectively, "**Representatives**") who (a) have a need to know such Confidential Information in connection with the performance of the Receiving Party's obligations or the exercise of the Receiving Party's rights under this Agreement and (b) have agreed in writing to non-disclosure and non-use provisions with respect to such Confidential Information that are at least as restrictive as those set forth in this Article 7.

7.2.2. **Disclosure to Third Parties**.

(a) Notwithstanding the foregoing provisions of Section 7.1, the Parties may disclose Confidential Information belonging to the other Party:

(i) to Governmental Authorities (A) to the extent reasonably necessary to obtain or maintain INDs or Regulatory Approvals for any Agreement CAR-T or Allogene Licensed Product Targeting

such Allogene Target, or any Cellectis Target or Cellectis Product Targeting such Cellectis Target, within the Territory, and (B) in order to respond to inquiries, requests, investigations, orders or subpoenas relating to this Agreement;

(ii) to outside consultants, contractors, advisory boards, managed care organizations, and non-clinical and clinical investigators, in each case to the extent reasonably necessary for the performance of this Agreement and under reasonable obligations of confidentiality;

(iii) to the extent reasonably necessary, in connection with filing or prosecuting Patent Rights or Trademark rights as permitted by this Agreement;

(iv) to the extent reasonably necessary, in connection with prosecuting or defending litigation as permitted by this Agreement;

(v) subject to Section 7.3.2, in connection with or included in scientific presentations and publications relating to Agreement CAR-Ts or Allogene Licensed Products, including abstracts, posters, journal articles and the like, and posting results of and other information about clinical trials to clincialtrials.gov or PhRMA websites; and

(vi) to the extent necessary in order to enforce its rights under this Agreement and as permitted in the Agreement.

(b) In the event a Party deems it reasonably necessary to disclose Confidential Information belonging to the other Party pursuant to Section 7.2.2(a)(i)(B), the Disclosing Party will to the extent possible give reasonable advance written notice of such disclosure to the other Party and take all reasonable measures to ensure confidential treatment of such information.

7.2.3. **SEC Filings and Other Disclosures**. Notwithstanding any provision of this Agreement to the contrary, either Party may disclose the terms of this Agreement to the extent required, in the reasonable opinion of such Party's legal counsel, to comply with applicable Law, including the rules and regulations promulgated by the United States Securities and Exchange Commission or any equivalent governmental agency in any country in the Territory. Notwithstanding the foregoing, before disclosing this Agreement or any of the terms hereof pursuant to this Section 7.2.3, the Parties will consult with one another on the terms of this Agreement to be redacted in making any such disclosure. Further, if a Party discloses this Agreement or any of the terms hereof in accordance with this Section 7.2.3, such Party will, at its own expense, seek such confidential treatment of confidential portions of this Agreement and such other terms, as may be reasonably requested by the other Party.

7.3. **Public Announcements; Publications**.

7.3.1. **Announcements**. Except as may be expressly permitted under Section 7.2.3, neither Party will make any public announcement regarding this Agreement without the prior written approval of the other Party. For the sake of clarity, nothing in this Agreement will prevent (a) either Party from making any public disclosure relating to this Agreement if the contents of such public disclosure have previously been made public other than through a breach of this Agreement by the issuing Party or its Affiliates; (b) Allogene from making any scientific publication or public announcement with respect to any Allogene Licensed Product Targeting such Allogene Target under this Agreement; provided, however, that, except as permitted under Section 7.2, Allogene will not disclose any of Cellectis' Confidential Information in any such publication or announcement without obtaining Cellectis' prior written consent to do so and (c) Cellectis from making any scientific publication or public announcement with respect to any Cellectis Licensed Product Targeting such Cellectis Program Target under this Agreement; provided, however, that, except as permitted under Section 7.2, Cellectis will not disclose any of Allogene's Confidential Information in any such publication or announcement without obtaining Allogene's prior written consent to do so.

7.3.2. **Publications**. During the Term, each Party will submit to the other Party (the "**Non-Disclosing Party**") for review and approval any proposed academic, scientific and medical publication or public presentation which contains the Non-Disclosing Party's Confidential Information. In addition, each Party will submit to the other Party for its review and approval any proposed publication or public presentation relating to the Research Program. In both instances, such review and approval will be conducted for the purposes of preserving the value of the Licensed Intellectual Property, Cellectis CAR-T Developed IP and Allogene CAR-T Developed IP and the rights granted to each Party hereunder and determining whether any portion of the proposed publication or presentation containing the Non-Disclosing Party's Confidential Information should be modified or deleted. Written copies of such proposed publication or presentation required to be submitted hereunder will be submitted to the Non-Disclosing Party no later than thirty (30) days before submission for publication or presentation (the "**Review Period**"). The Non-Disclosing Party will provide its comments with respect to such publications and presentations within twenty (20) days after its receipt of such written copy, and the other Party will delete any Confidential Information of the Non-Disclosing Party upon request. The Review Period may be extended for an additional sixty (60) days in the event the Non-Disclosing Party can, within fifteen (15) days of receipt of the written copy, demonstrate reasonable need for such extension, including for the preparation and filing of patent applications. Cellectis and Allogene will each comply with standard academic practice regarding authorship of scientific publications and recognition of contribution of other parties in any publication governed by this Section 7.3.2.

7.4. **Obligations in Connection with Change of Control**. If Cellectis is subject to a Change of Control, Cellectis will, and it will cause its Affiliates and Representatives to, ensure that no Confidential Information of Allogene is released to (a) any Affiliate of Cellectis that becomes an Affiliate as a result of the Change of Control or (b) any Representatives of Cellectis (or of the relevant surviving entity of such Change of Control) who become Representatives as a result of the Change of Control, unless such Representatives have signed individual confidentiality agreements which include equivalent obligations to those set out in this Article 7. If any Change of Control of Cellectis occurs, Cellectis will promptly notify Allogene, share with Allogene the policies and procedures it plans to implement in order to protect the confidentiality of Allogene's Confidential Information prior to such implementation and make any adjustments to such policies and procedures that are reasonably requested by Allogene.

8. REPRESENTATIONS AND WARRANTIES.

8.1. **Mutual Representations and Warranties**. Each of Cellectis and Allogene hereby represents and warrants to the other Party that:

8.1.1. it is duly organized, validly existing and in good standing under the laws of the jurisdiction of its organization;

8.1.2. the execution, delivery and performance of this Agreement by such Party has been duly authorized by all requisite action under the provisions of its charter, bylaws and other organizational documents, and does not require any action or approval by any of its shareholders or other holders of its voting securities or voting interests;

8.1.3. it has the power and authority to execute and deliver this Agreement and to perform its obligations hereunder;

8.1.4. this Agreement has been duly executed and is a legal, valid and Binding Obligation on each Party, enforceable against such Party in accordance with its terms; and

8.1.5. the execution, delivery and performance by such Party of this Agreement and its compliance with the terms and provisions hereof does not and will not conflict with or result in a breach of or default under any Binding Obligation existing as of the Effective Date.

8.2. **Representations and Warranties of Cellectis**. Cellectis hereby represents and warrants to Allogene that:

8.2.1. it has and will have the full right, power and authority to grant all of the right, title and interest in the licenses and other rights granted or to be granted to Allogene or Allogene's Affiliates under this Agreement;

8.3. **Representations and Warranties of Allogene**. Allogene hereby represents and warrants to Cellectis that:

8.3.1. it has and will have the full right, power and authority to grant all of the right, title and interest in the licenses and other rights granted or to be granted to Cellectis or Cellectis's Affiliates under this Agreement.

8.4. **Mutual Covenants**. In addition to the covenants made by the Parties elsewhere in this Agreement, each Party hereby covenants to the other that, from the Effective Date until expiration or termination of this Agreement:

8.4.1. it will not (a) take any action that diminishes the rights under the Licensed Cellectis Intellectual Property or Licensed Allogene Intellectual Property or Developed IP granted or assigned under this Agreement or (b) fail to take any action that is reasonably necessary to avoid diminishing the rights under the Licensed Cellectis Intellectual Property, Licensed Allogene Intellectual Property or Developed IP granted or assigned to Allogene or Allogene's Affiliates under this Agreement;

8.4.2. it will (a) not enter into any Third Party Agreement that adversely affects (i) the rights granted to the other Party hereunder or (ii) its ability to fully perform its obligations hereunder; (b) not amend, terminate or otherwise modify any Third Party Agreement (including for Cellectis, the Servier Agreement) or consent or waive rights with respect thereto in any manner that (i) adversely affects the rights granted to the other Party hereunder or (ii) its ability to fully perform its obligations hereunder; (c) fulfill, and cause its Affiliates to fulfill, all of their respective obligations under all Third Party Agreements (including for Cellectis Servier Agreements) so as not to be in breach of such agreements; (d) inform Allogene of existence of all notices received by Cellectis or its Affiliates relating to any alleged breach or default by Cellectis or its Affiliates under any Third Party Agreement (including Servier Agreement), and all other notices received by Cellectis or its Affiliates in connection with any Cellectis Third Party Agreement that pertain to the rights granted to Allogene or Allogene's Affiliates hereunder, within [***] after receipt thereof; and (e) in the event that Cellectis does not resolve any such alleged breach or default, notify Allogene within a sufficient period of time before the expiration of the cure period for such breach of default under such Cellectis Third Party Agreement such that Allogene is able to cure or otherwise resolve such alleged breach or default, and if Allogene makes any payments to any Third Party in connection with the cure or other resolution of such alleged breach or default, then Allogene may credit the amount of such payments against any royalties or other amounts payable to Cellectis pursuant to this Agreement.

8.4.3. It will perform and discharge its obligations under this Agreement in conformance with Applicable Laws.

8.4.4. it will not enter into or otherwise allow itself or its Affiliates to be subject to any agreement or arrangement which limits the ownership rights of the other Party or its Affiliates with respect to, or limits the ability of the other Party or its Affiliates to grant a license, sublicense or access, or provide or provide access or

other rights in, to or under, any intellectual property right or material (including any Patent Right, Know-How or other data or information), in each case, that would, but for such agreement or arrangement, be included in the rights licensed or assigned to the other Party or its Affiliates pursuant to this Agreement; and

8.4.5. it shall not, and shall not permit any of its subsidiaries and Affiliates or any of its or their respective directors, officers, managers, employees, independent contractors, representatives or agents (collectively, "**Reps**") to, promise, authorize or make any payment to, or otherwise contribute any item of value to, directly or indirectly, any non-U.S. government official, in each case, in violation of the U.S. Foreign Corrupt Practices Act, as amended ("**FCPA**") or any other applicable anti-bribery or anti-corruption law.

8.4.6. it shall, and shall cause each of its subsidiaries and Affiliates to, cease all of its or their respective activities, as well as remediate any actions taken by it, its subsidiaries or Affiliates or any of its or their respective Reps in violation of the FCPA or any other applicable anti-bribery or anti-corruption law.

8.4.7. it shall, and shall cause each of its Affiliates and subsidiaries to, maintain systems or internal controls (including, but not limited to, accounting systems, purchasing systems and billing systems) to ensure compliance with the FCPA or any other applicable anti-bribery or anti-corruption law.

8.5. **Representation by Legal Counsel**. Each Party hereto represents that it has been represented by legal counsel in connection with this Agreement and acknowledges that it has participated in the drafting hereof. In interpreting and applying the terms and provisions of this Agreement, the Parties agree that no presumption will exist or be implied against the Party which drafted such terms and provisions.

8.6. **Disclaimer**. THE FOREGOING REPRESENTATIONS AND WARRANTIES OF EACH PARTY ARE IN LIEU OF ANY OTHER REPRESENTATIONS AND WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH ARE HEREBY SPECIFICALLY EXCLUDED AND DISCLAIMED.

9. GOVERNMENT APPROVALS; TERM AND TERMINATION.

9.1. **Government Approvals**. Each of Cellectis and Allogene will cooperate with the other Party and use Commercially Reasonable Efforts to make all registrations, filings and applications, to give all notices and to obtain as soon as practicable all governmental or other consents, transfers, approvals, orders, qualifications authorizations, permits and waivers, if any, and to do all other things necessary or desirable for the consummation of the transactions as contemplated hereby.

9.2. **Term**. The term of this Agreement (the "**Term**") will commence on the Effective Date and will extend, unless this Agreement is terminated earlier in accordance with this

Article 9, on an Allogene Licensed Product-by-Allogene Licensed Product and country-by-country basis, until such time as the Royalty Term with respect to the sale of such Allogene Licensed Product in such country expires.

9.3. **Termination by Either Party for Cause**. Either Party may terminate this Agreement, in its entirety or, at the terminating Party's option, on an Allogene Target-by-Allogene Target basis or Cellectis Program Target-by Cellectis Program Target basis, as applicable, at any time during the Term of this Agreement by giving written notice to the other Party if the other Party commits a material breach of its obligations under this Agreement and such breach remains uncured for ninety (90) days, measured from the date written notice of such breach is given to the breaching Party. Notwithstanding the foregoing, a Party will have the right to terminate this Agreement pursuant to this Section 9.3: (a) in part with respect to an individual Allogene Target or Cellectis Program Target, as applicable, only if the other Party's material breach giving rise to such termination right relates to such Allogene Target or Cellectis Program Target, as applicable, or (b) in its entirety only if such material breach fundamentally frustrates the objectives or transactions contemplated by this Agreement taken as a whole.

9.4. **Termination by Allogene for Convenience**. Allogene will have the right to terminate this Agreement for any or no reason, either in its entirety or on an Allogene Target-by-Allogene Target basis, by providing sixty (60) days advance written notice of such termination to Cellectis.

9.5. **Termination on Insolvency of Cellectis**. This Agreement may be terminated upon written notice by Allogene at any time in the event of a Cellectis Insolvency Event.

9.6. **Effects of Termination**.

9.6.1. **Effect of Termination by Allogene for Cause**. If Allogene terminates this Agreement with respect to any or all Allogene Targets pursuant to Section 9.3 (each, a "**Terminated Target**"):

(a) all licenses granted to Allogene with respect to such Terminated Target and any Allogene Licensed Product Targeting such Terminated Target (each, a "**Terminated Allogene Licensed Product**"), including under Section 4.1, will continue and become irrevocable and perpetual, and Allogene will have no further obligations to Cellectis under this Agreement with respect to any such Terminated Target or Terminated Allogene Licensed Product (including no further obligation to pay Milestone Payments) other than (i) those obligations that expressly survive termination in accordance with Section 9.8 and (ii) an obligation to pay royalties with respect to Net Sales of Terminated Allogene Licensed Products in accordance with the terms and conditions of this Agreement, in an amount equal to [***] of the amount that would otherwise have been payable under this Agreement;

(b) If Allogene terminates this Agreement in its entirety pursuant to Section 9.3, or if Allogene terminates this Agreement in its entirety pursuant to Section 9.4: (i) all licenses granted by Allogene to Cellectis under Sections 4.2.1 and 4.2.2 will terminate, (ii) Allogene will have no further obligations to Cellectis under this Agreement other than those obligations that expressly survive termination in accordance with Section 9.8, and (iii) any material or Confidential Information provided Allogene to Cellectis in the course of the performance of this Agreement will be returned or destroyed as directed in writing by Allogene;

(c) Allogene will have the right to offset, against any payment owing to Cellectis under subparagraph (b) above, any damages found or agreed by the Parties to be owed by Cellectis to Allogene;

(d) Cellectis will remain entitled to receive payments that accrued before the effective date of such termination;

(e) nothing in this Section 9.6.1 will limit any other remedy Allogene may have for Cellectis' breach of this Agreement; and

(f) the rights and obligations of the Parties with respect to all Allogene Targets other than any such Terminated Target will remain in full force and effect.

9.6.2. **Effect of Termination by Allogene on Insolvency of Cellectis**. If Allogene terminates this Agreement pursuant to Section 9.5:

(a) Cellectis will have no further obligation to perform any of its obligations under this Agreement other than those obligations that expressly survive termination of this Agreement in accordance with Sections 9.6.2(b) and 9.8;

(b) all licenses granted to Allogene, including under Section 4.1, will continue and become, subject only to the royalty obligation set forth below in this Section 9.6.2(b), irrevocable and perpetual, and Allogene will have no further obligations to Cellectis under this Agreement (including no further obligation to pay Milestone Payments) other than (i) those obligations that expressly survive termination in accordance with Section 9.8 and (ii) an obligation to pay royalties with respect to Net Sales of Allogene Licensed Products in accordance with the terms and conditions of this Agreement;

(c) Cellectis will remain entitled to receive payments that accrued before the effective date of such termination;

(d) Allogene will have the right to offset, against any payment owing to Cellectis under subparagraph (b) above, any damages found or agreed by the Parties to be owed by Cellectis to Allogene; and

(e) nothing in this Section 9.6.2 will limit any other remedy Allogene may have for Cellectis' breach of this Agreement.

9.6.3. **Effect of Termination by Cellectis for Cause or by Allogene for Convenience**.

(a) If Cellectis terminates this Agreement with respect to any Allogene Target pursuant to Section 9.3, or if Allogene terminates this Agreement with respect to any Allogene Target pursuant to Section 9.4, then (i) all licenses granted by Cellectis to Allogene under Sections 4.1.1, 4.1.2 and 4.1.3 with respect to any such Allogene Target will terminate, (ii) any Allogene Licensed Product Targeting such Allogene Target will terminate, and (iii) any material or Confidential Information provided by Cellectis to Allogene in the course of the performance of this Agreement will be returned or destroyed as directed in writing by Cellectis.

(b) If Cellectis terminates this Agreement in its entirety pursuant to Section 9.3, or if Allogene terminates this Agreement in its entirety pursuant to Section 9.4: (i) all licenses granted by Cellectis to Allogene under Sections 4.1.1, 4.1.2 and 4.1.3 will terminate, (ii) all rights and licenses granted by Cellectis to Allogene pursuant to Section 4.1.2(b) and 4.1.2(d), and all obligations to which the parties are bound hereunder with relation thereto, will continue in full force and effect, to the extent such rights and licenses were not previously or concurrently terminated (including as set forth in Section 9.6.3(a) herein) and will subsequently terminate in accordance with the terms of the Servier Agreement, wherein such rights and licenses were initially granted to Servier, (iii) Cellectis will have no further obligations to Allogene under this Agreement other than those obligations that expressly survive termination in accordance with Section 9.8, (iv) all rights and licenses granted by Allogene to Cellectis pursuant to Section 4.2 will continue, (v) Allogene's right of first refusal set forth in Section 3.6 will continue to the extent that such Cellectis Product is Covered by Licensed Allogene Intellectual Property and (vi) any material or Confidential Information provided by Cellectis to Allogene in the course of the performance of this Agreement will be returned or destroyed as directed in writing by Cellectis. For the avoidance of doubt, all rights and licenses granted by Cellectis to Allogene pursuant to Section 4.1.2(b) and 4.1.2(d), and all obligations to which the parties are bound hereunder with relation thereto, will terminate immediately upon the earlier to occur of (i) termination or expiration of the license granted by Cellectis to Servier in respect of the [***] Patent Rights for the Other Products pursuant to the Servier Agreement, or (ii) on an Other Product-by-Other Product basis, termination or expiration of the license

granted by Servier to Allogene in respect of an Other Product pursuant to the Exclusive License and Collaboration Agreement dated as of October 30, 2015 by and between Allogene and Servier (as amended from time to time).

(c) In the event that Cellectis terminates this Agreement for cause pursuant to Section 9.3 or Allogene terminates this Agreement without cause pursuant to Section 9.4 with respect to an Allogene Licensed Product Targeting an Allogene Target, on Cellectis' written notice to Allogene, which notice may only be delivered within [***] following the effective date of such termination, unless such termination is related to material concerns regarding the safety of the Compound(s) or Product(s), the Parties will negotiate in good faith for a period not to exceed [***] following the effective date of termination regarding:

(i) the grant by Allogene to Cellectis of a royalty-bearing, non-exclusive license under the Applicable Allogene Technology permitting Cellectis to continue to Develop, Commercialize and Manufacture any Product under Development or Commercialization by Allogene under this Agreement at the time of termination, in the form in which such Product then exists (a "**Continuation Product**"); and

(ii) the related transfer to Cellectis of development data and regulatory filings specifically relating to such Continuation Product or the granting to Cellectis of rights of reference with respect to such data and filings.

(d) Neither Party will be obligated to enter into any transaction described in Section 9.6.3(c) and neither Party will have any liability to the other for failure to do so.

(e) For the avoidance of doubt, if Cellectis terminates this Agreement with respect to any Allogene Target pursuant to Section 9.3, or if Allogene terminates this Agreement with respect to any Allogene Target pursuant to Section 9.4, in each case including all Allogene Targets in the event that this Agreement is terminated in its entirety, any such Allogene Target will no longer be considered to be an Allogene Target for the purpose of this Agreement.

9.6.4. **Satisfaction of Obligations During Notice Period**. During the period from providing a notice of termination through the termination of the Agreement, the Parties will continue to perform their obligations under this Agreement.

9.6.5. **Pending Dispute Resolution**. If a Party gives notice of termination under Section 9.3 and the other Party disputes whether such notice was proper, then the

issue of whether this Agreement has been terminated will be resolved in accordance with Section 11.10 and this Agreement will remain in effect pending the resolution of such dispute. If as a result of such dispute resolution process it is determined that the notice of termination was proper, then such termination will be effective immediately. If as a result of such dispute resolution process it is determined that the notice of termination was improper, then no termination will have occurred and this Agreement will remain in effect.

9.7. **Disposition of Inventories of Products**. Following termination of this Agreement with respect to one or more Allogene Targets, Allogene, its Affiliates and its Sublicensees will have the right to continue to sell their existing inventories of Allogene Licensed Product(s) Targeting such Allogene Targets that have received Regulatory Approval prior to such termination for a period not to exceed [***] after the effective date of such termination or expiration and Allogene will pay any royalties payable in connection with such sales in accordance with Section 5.2.

9.8. **Survival of Certain Obligations.** Expiration or termination of this Agreement will not relieve the Parties of any obligation that accrued before such expiration or termination. The following provisions will survive expiration or termination of this Agreement:
Sections 1(Definitions); 5.4.2 to 5.4.6 (Reports and Payments); 5.5 (Maintenance and Audit Rights); 7 (Confidentiality); 8 (Representations and Warranties); 9.3 to 9.8 (Effect of Termination); 10 (Limitation on liabilities) and 11 (Miscellaneous). In addition, any Section that is referred to in the above listed Sections shall survive solely for the interpretation or enforcement of the listed Sections.

9.9. **Right to Terminate this Agreement by Allogene upon Change of Control of Cellectis**. If a Change of Control of Cellectis is consummated during the Term of this Agreement, Allogene will have the right to terminate this Agreement in its entirety, upon written notice to Cellectis within sixty (60) days after consummation of such Change of Control of Cellectis.

9.10. **Bankruptcy**. All rights and licenses granted under or pursuant to this Agreement by Cellectis are, and will otherwise be deemed to be, for purposes of Section 365(n) of the U.S. Bankruptcy Code, licenses of rights to "intellectual property" as defined under Section 101 of the U.S. Bankruptcy Code. The Parties agree that Allogene, as licensee of intellectual property under this Agreement, will retain and may fully exercise all of its rights and elections under the U.S. Bankruptcy Code. The Parties further agree that in the event of a rejection of this Agreement by Cellectis in any bankruptcy proceeding by or against Cellectis under the U.S. Bankruptcy Code, (i) Allogene will be entitled to a complete duplicate of (or complete access to, as appropriate) any such intellectual property and all embodiments of such intellectual property, which, if not already in Allogene's possession, will be promptly delivered to it upon Allogene's written request therefor, and (ii) Cellectis will not interfere with Allogene's rights to intellectual property and all embodiments of intellectual property, and will assist and not interfere with Allogene in obtaining intellectual property and all embodiments of intellectual property from another

entity. The term "embodiments" of intellectual property includes all tangible, intangible, electronic or other embodiments of rights and licenses hereunder, including all compounds and products embodying intellectual property, Allogene Licensed Products, filings with Regulatory Authorities and related rights, and Cellectis Technology.

10. LIMITATION ON LIABILITY, INDEMNIFICATION AND INSURANCE.

10.1. **No Consequential Damages**. Except with respect to liability arising from a breach of Article 7, from any willful misconduct or intentionally wrongful act, or to the extent such Party may be required to provide indemnification under this Article 10, in no event will either Party, its Affiliates, its Sublicensees or any of its, its Affiliates' or its Sublicensees' respective Representatives be liable under this Agreement for any special, indirect, incidental, consequential or punitive damages, whether in contract, warranty, tort, negligence, strict liability or otherwise, including loss of profits or revenue suffered by either Party or any of its respective Affiliates or Representatives. Without limiting the generality of the foregoing, "consequential damages" will be deemed to include, and neither Party will be liable to the other Party or any of such other Party's Affiliates, Representatives or stockholders for, any damages based on or measured by loss of projected or speculative future sales of the Allogene Licensed Products, any Milestone Payment due upon any unachieved event under Section 5.1, any unearned royalties under Section 5.2 or any other unearned, speculative or otherwise contingent payments provided for in this Agreement.

10.2. **Indemnification by Allogene**. Allogene will indemnify, defend and hold harmless Cellectis, its Affiliates, their sublicensees, contractors, subcontractors and distributors and each of its and their respective employees, officers, directors and agents (each, a "**Cellectis Indemnified Party**") from and against any and all liability, loss, damage, expense (including reasonable attorneys' fees and expenses) and cost (collectively, a "**Liability**") that the Cellectis Indemnified Party may be required to pay to one or more Third Parties resulting from or arising out of:

10.2.1. [***]

10.2.2. [***]

[***]

10.3. **Indemnification by Cellectis**. Cellectis will indemnify, defend and hold harmless Allogene, its Affiliates, Sublicensees, contractors, distributors and each of its and their respective employees, officers, directors and agents (each, a "**Allogene Indemnified Party**") from and against any and all Liabilities that the Allogene Indemnified Party may be required to pay to one or more Third Parties resulting from or arising out of:

10.3.1. [***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

10.3.2. [***]

[***]

10.4. **Procedure**.

10.4.1. **Notice**. Each Party will notify the other Party in writing in the event it becomes aware of a claim for which indemnification may be sought hereunder. In the event that any Third Party asserts a claim or other proceeding (including any governmental investigation) with respect to any matter for which a Party (the "**Indemnified Party**") is entitled to indemnification hereunder (a "**Third Party Claim**"), then the Indemnified Party will promptly notify the Party obligated to indemnify the Indemnified Party (the "**Indemnifying Party**") thereof; provided, however, that no delay on the part of the Indemnified Party in notifying the Indemnifying Party will relieve the Indemnifying Party from any obligation hereunder unless (and then only to the extent that) the Indemnifying Party is prejudiced thereby.

10.4.2. **Control**. Subject to Allogene's right to control any actions described in Section 6.2 (even where Cellectis is the Indemnifying Party), the Indemnifying Party will have the right, exercisable by notice to the Indemnified Party within ten (10) Business Days after receipt of notice from the Indemnified Party of the commencement of or assertion of any Third Party Claim, to assume direction and control of the defense, litigation, settlement, appeal or other disposition of the Third Party Claim (including the right to settle the claim solely for monetary consideration) with counsel selected by the Indemnifying Party and reasonably acceptable to the Indemnified Party; provided that (a) the Indemnifying Party has sufficient financial resources, in the reasonable judgment of the Indemnified Party, to satisfy the amount of any adverse monetary judgment that is sought, (b) the Third Party Claim seeks solely monetary damages and (c) the Indemnifying Party expressly agrees in writing that as between the Indemnifying Party and the Indemnified Party, the Indemnifying Party will be solely obligated to satisfy and discharge the Third Party Claim in full (the conditions set forth in clauses (a), (b) and (c) above are collectively referred to as the "**Litigation Conditions**"). Within ten (10) Business Days after the Indemnifying Party has given notice to the Indemnified Party of its exercise of its right to defend a Third Party Claim, the Indemnified Party will give notice to the Indemnifying Party of any objection thereto based upon the Litigation Conditions. If the Indemnified Party reasonably so objects, the Indemnified Party will continue to defend the Third Party Claim, at the expense of the Indemnifying Party, until such time as such objection is withdrawn. If no such notice is given, or if any such objection is withdrawn, the Indemnifying Party will be entitled, at its sole cost and expense, to assume direction and control of such defense, with counsel selected by the Indemnifying Party and reasonably acceptable to the Indemnified Party. During such time as the

Indemnifying Party is controlling the defense of such Third Party Claim, the Indemnified Party will cooperate, and will cause its Affiliates and agents to cooperate upon request of the Indemnifying Party, in the defense or prosecution of the Third Party Claim, including by furnishing such records, information and testimony and attending such conferences, discovery proceedings, hearings, trials or appeals as may reasonably be requested by the Indemnifying Party. In the event that the Indemnifying Party does not satisfy the Litigation Conditions or does not notify the Indemnified Party of the Indemnifying Party's intent to defend any Third Party Claim within ten (10) Business Days after notice thereof, the Indemnified Party may (without further notice to the Indemnifying Party) undertake the defense thereof with counsel of its choice and at the Indemnifying Party's expense (including reasonable, out-of-pocket attorneys' fees and costs and expenses of enforcement or defense). The Indemnifying Party or the Indemnified Party, as the case may be, will have the right to join in (including the right to conduct discovery, interview and examine witnesses and participate in all settlement conferences), but not control, at its own expense, the defense of any Third Party Claim that the other Party is defending as provided in this Agreement.

10.4.3. **Settlement**. The Indemnifying Party will not, without the prior written consent of the Indemnified Party, enter into any compromise or settlement that commits the Indemnified Party to take, or to forbear to take, any action. The Indemnified Party will have the sole and exclusive right to settle any Third Party Claim, on such terms and conditions as it deems reasonably appropriate, to the extent such Third Party Claim involves equitable or other non-monetary relief, but will not have the right to settle such Third Party Claim to the extent such Third Party Claim involves monetary damages without the prior written consent of the Indemnifying Party. Each of the Indemnifying Party and the Indemnified Party will not make any admission of liability in respect of any Third Party Claim without the prior written consent of the other Party, and the Indemnified Party will use reasonable efforts to mitigate Liabilities arising from such Third Party Claim.

10.5. **Insurance**. Each Party will obtain and maintain, during the Term, commercial general liability insurance, including products liability insurance, with reputable and financially secure insurance carriers (or pursuant to a program of self-insurance reasonably satisfactory to the other Party) to cover its indemnification obligations under Section 10.2 or Section 10.3, as applicable, in each case with limits of not less than [***] per occurrence and in the aggregate.

11. MISCELLANEOUS.

11.1. **Other Cellectis Targets**. For sake of clarity, except as set forth in Schedule 1.86 and Section 3.7 (Right of Negotiation), Other Cellectis Targets are outside the scope of this Agreement.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

11.2. **Assignment**. Either Party may not assign this Agreement or any interest hereunder without the prior written consent of the other, which consent will not be unreasonably withheld or delayed., except that this Agreement may be assigned as follows: (a) a Party may assign its rights and obligations under this Agreement by way of sale of itself or the sale of the portion of its business to which this Agreement relates, through merger, sale of assets or sale of stock or ownership interest and (b) a Party may assign its rights and obligations under this Agreement to any of its Affiliates. This Agreement will be binding upon the successors and permitted assigns of the Parties and the name of a Party appearing herein will be deemed to include the names of such Party's successors and permitted assigns to the extent necessary to carry out the intent of this Agreement. Any assignment not in accordance with this Section 11.2 will be void.

11.3. **Further Actions**. Each Party agrees to execute, acknowledge and deliver such further instruments, and to do all such other acts, as may be necessary or appropriate in order to carry out the purposes and intent of the Agreement.

11.4. **Force Majeure**. Each Party will be excused from the performance of its obligations under this Agreement to the extent that such performance is prevented by force majeure (defined below) and the nonperforming Party promptly provides notice of the prevention to the other Party. Such excuse will be continued so long as the condition constituting force majeure continues and the nonperforming Party takes Commercially Reasonable Efforts to resume performance. For purposes of this Agreement, "force majeure" will include conditions beyond the control of the Parties, including an act of God, voluntary or involuntary compliance with any Applicable Law or order of any government, war, act of terror, civil commotion, labor strike or lock-out, epidemic, failure or default of public utilities or common carriers, or destruction of production facilities or materials by fire, earthquake, storm or like catastrophe.

11.5. **Notices**. Any notice or notification required or permitted to be provided pursuant to the terms and conditions of this Agreement (including any notice of force majeure, breach, termination, change of address, etc.) will be in writing and will be deemed given upon receipt if delivered personally or by facsimile or email transmission (receipt verified), five days after deposited in the mail if mailed by registered or certified mail (return receipt requested) postage prepaid, or on the next Business Day if sent by overnight delivery using a nationally recognized express courier service and specifying next Business Day delivery (receipt verified), to the Parties at the following addresses or facsimile numbers (or at such other address or facsimile number for a Party as will be specified by like notice, provided, however, that notices of a change of address will be effective only upon receipt thereof):

All correspondence to Allogene will be addressed as follows:

Allogene Therapeutics, Inc.
210 East Grand Avenue
South San Francisco, CA 94080
USA
Attention: General Counsel
Email: [***]

All correspondence to Cellectis will be addressed as follows:

Cellectis
8, rue de la Croix Jarry
75013 Paris
Attn.: Chief Executive Officer
Fax.: +33 1 81 69 16 03
Email: [***]

with a copy to:

Cellectis
8, rue de la Croix Jarry
75013 Paris
Attn.: General Counsel
Fax.: +33 1 81 69 16 03
Email: [***]

11.6. **Amendment**. No amendment, modification or supplement of any provision of this Agreement will be valid or effective unless made in writing and signed by a duly authorized officer of each Party.

11.7. **Waiver**. No provision of this Agreement will be waived by any act, omission or knowledge of a Party or its agents or employees except by an instrument in writing expressly waiving such provision and signed by a duly authorized officer of the waiving Party. The waiver by either of the Parties of any breach of any provision hereof by the other Party will not be construed to be a waiver of any succeeding breach of such provision or a waiver of the provision itself.

11.8. **Severability**. If any clause or portion thereof in this Agreement is for any reason held to be invalid, illegal or unenforceable, the same will not affect any other portion of this Agreement, as it is the intent of the Parties that this Agreement will be construed in such fashion as to maintain its existence, validity and enforceability to the greatest extent possible. In any such event, this Agreement will be construed as if such clause or portion thereof had never been contained in this Agreement, and there will be deemed substituted therefor such provision as will most nearly carry out the intent of the Parties as expressed in this Agreement to the fullest extent permitted by Applicable Law.

11.9. **Descriptive Headings**. The descriptive headings of this Agreement are for convenience only and will be of no force or effect in construing or interpreting any of the provisions of this Agreement.

11.10. **Dispute Resolution**. If any dispute or disagreement arises between Allogene and Cellectis in respect of this Agreement, they will follow the following procedures in an attempt to resolve the dispute or disagreement:

11.10.1. The Party claiming that such a dispute exists will give notice in writing (a "**Notice of Dispute**") to the other Party of the nature of the dispute.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

11.10.2. Within [***] of receipt of a Notice of Dispute, the Allogene Alliance Manager and the Cellectis Alliance Manager will meet in person or by teleconference and exchange written summaries reflecting, in reasonable detail, the nature and extent of the dispute, and at this meeting they will use their reasonable endeavors to resolve the dispute.

11.10.3. If the Alliance Managers are unable to resolve the dispute during the meeting described in Section 11.10.2 or if for any reason such meeting does not take place within the period specified in Section 11.10.2, then the Chief Executive Officer of Allogene and the Chief Executive Officer of Cellectis will meet at a mutually agreed-upon time and location for the purpose of resolving such dispute.

11.10.4. If, within a further period of [***], or if in any event within [***] of initial receipt of the Notice of Dispute, the dispute has not been resolved, or if, for any reason, the meeting described in Section 11.10.3 has not been held within [***] of initial receipt of the Notice of Dispute, then the Parties agree that, subject to Section 11.11 below, either Party may initiate litigation to resolve the dispute.

11.11. **Election of Resolution Process**. Notwithstanding any provision of Section 11.10 to the contrary, if (i) either Party raises any allegation or claim of Misuse (each, a "**Misuse Allegation**") and (ii) the Parties are unable to resolve such Misuse Allegation pursuant to the dispute escalation process described in Sections 11.10.1 through 11.10.4 (the "**Escalation Process**"), then, following completion of the Escalation Process, the Parties may mutually agree to have such Misuse Allegation resolved pursuant to the terms of Section 11.12 (Arbitration Process). If the Parties fail to agree on use of arbitration pursuant to Section 11.12 in a timely manner (not to exceed [***]), then the Parties will be deemed to have elected to have such Misuse Allegation resolved through litigation.

11.12. **Arbitration Process**. If the Parties mutually elect to resolve any Misuse Allegation pursuant to this Section 11.12, then such Misuse Allegation will be referred to and finally resolved by binding arbitration in accordance with the Commercial Rules and Procedures (the "**Rules**") of the International Chamber of Commerce (the "**ICC**"), by an arbitral tribunal composed of three arbitrators, all of whom will have relevant experience in pharmaceutical industry, appointed by agreement of the Parties in accordance with the Rules. If, at the time of the arbitration, the Parties agree in writing to submit the dispute to a single arbitrator, said single arbitrator will (1) have relevant experience in pharmaceutical industry and (2) be appointed by agreement of the Parties, or, failing such agreement, by ICC in accordance with the Rules. The foregoing arbitration proceedings may be commenced by either Party by written notice to the other Party. Unless otherwise agreed by the Parties hereto, all such arbitration proceedings will be held in London, England, provided that proceedings may be conducted by telephone conference call with the consent of both Parties and the arbitrator(s). All arbitration proceedings will be conducted in the English language.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

11.12.1. **Limited Discovery**. Documentary discovery may be conducted at the discretion of the arbitrator(s), provided that any such discovery will (a) be limited to documents directly relating to the Misuse Allegation, (b) be conducted pursuant to document discovery procedures as set forth under the laws of the State of New York, U.S.A., (c) be conducted subject to the schedule stipulated by the Parties, or in the absence of stipulation, the schedule ordered by the arbitrator(s), and (d) not require either Party, its Affiliates or their respective employees, officers, directors or agents to be subject to deposition. Notwithstanding any provision of this Section 11.12.1 to the contrary, all discovery must be completed within sixty (60) days of the notice of commencement of arbitration proceedings.

11.12.2. **Awards and Fees**. The arbitrator(s) may only consider awards of direct monetary damages and will not under any circumstances have the authority to grant (a) injunctive relief, (b) equitable relief, (c) orders for specific performance, (d) punitive damages or (e) consequential damages as described in Section 10.1. The allocation of expenses of the arbitration, including reasonable attorney's fees, will be determined by the arbitrator(s), or, in the absence of such determination, each Party will pay its own expenses.

11.12.3. **Rulings**. All arbitration proceedings must be completed within 180 days of the notice of commencement of arbitration proceedings. The Parties hereby agree that, subject to the provisions of this Section 11.12.3, the arbitrator(s) has authority to issue rulings and orders regarding all procedural and evidentiary matters that the arbitrator(s) deem reasonable and necessary with or without petition therefore by the Parties as well as the final ruling and judgment. Rulings will be issued by written order summarizing the arbitration proceedings no more than 30 days after the final submissions of the Parties. All rulings by the arbitrator(s) will be final and non-appealable to any court except in circumstances where such rulings do not comply with the terms of Section 11.12.

11.12.4. **Enforcement of Rulings by Courts of Competent Jurisdiction**. Any ruling issued by the arbitrator(s) pursuant to Section 11.12 may be enforced, to the extent that such ruling complies with the provisions of Section 11.12, in any court having jurisdiction over any of the Parties or any of their respective assets.

11.12.5. **Confidentiality**. All activities undertaken by the arbitrator(s) or the Parties pursuant to this Section 11.12 will be conducted subject to obligations of confidentiality no less restrictive than those set forth in Article 7. Further, the Parties acknowledge and agree that their respective conduct during the course of the arbitration and their respective statements and all information exchanged in connection with the arbitration is Confidential Information under this Agreement and subject to the provisions of Article 7.

11.12.6. **Unauthorized Disclosure of Confidential Information to Third Parties**. Notwithstanding any provision of this Agreement to the contrary (i) the provisions of this Section 11.12 will not apply to Allogene's disclosure of Cellectis Confidential Information to any Third Party in violation of Article 7 and (ii) Cellectis reserves its rights under Section 11.10 to immediately initiate litigation seeking any remedy at law or in equity, including the issuance of a preliminary, temporary or permanent injunction, to preserve or enforce its rights under Article 7 with respect to any such unauthorized disclosure.

11.13. **Governing Law**. This Agreement, and all claims arising under or in connection therewith, will be governed by and interpreted in accordance with the substantive laws of the State of New York, without regard to conflict of law principles thereof.

11.14. **Consent to Jurisdiction**. Each Party to this Agreement, by its execution hereof, (a) hereby irrevocably submits to the exclusive jurisdiction of the courts of England and Wales for the purpose of any and all actions, suits or proceedings arising in whole or in part out of, related to, based upon or in connection with this Agreement or the subject matter hereof, (b) hereby waives to the extent not prohibited by Applicable Law, and agrees not to assert, by way of motion, as a defense or otherwise, in any such action, any claim that it is not subject personally to the jurisdiction of the above-named courts, that its property is exempt or immune from attachment or execution, that any such action brought in one of the above-named courts should be dismissed on grounds of forum non conveniens, should be transferred to any court other than one of the above-named courts, or should be stayed by reason of the pendency of some other proceeding in any other court other than one of the above-named courts, or that this Agreement or the subject matter hereof may not be enforced in or by such court, and (c) hereby agrees not to commence any such action other than before one of the above-named courts nor to make any motion or take any other action seeking or intending to cause the transfer or removal of any such action to any court other than one of the above-named courts whether on the grounds of inconvenient forum or otherwise.

11.15. **Entire Agreement**. This Agreement, including its Exhibits and Schedules, and the letter regarding termination of the Research Collaboration and License Agreement, dated 7, 2019, constitutes and contains the complete, final and exclusive understanding and agreement of the Parties and cancels and supersedes any and all prior negotiations, correspondence, understandings and agreements, whether oral or written, between the Parties respecting the subject matter hereof and thereof.

11.16. **Independent Contractors**. Both Parties are independent contractors under this Agreement. Nothing herein contained will be deemed to create an employment, agency, joint venture or partnership relationship between the Parties hereto or any of their agents or employees, or any other legal arrangement that would impose liability upon one Party for the act or failure to act of the other Party. Neither Party will have any express or implied power to enter into any contracts or commitments or to incur any liabilities in the name of, or on behalf of, the other Party, or to bind the other Party in any respect whatsoever.

11.17. **Counterparts**. This Agreement may be executed in two counterparts, each of which will be an original and both of which will constitute together the same document. Counterparts may be signed and delivered by facsimile or PDF file, each of which will be binding when received by the applicable Party.

11.18. **No Third Party Rights or Obligations**. No provision of this Agreement will be deemed or construed in any way to result in the creation of any rights or obligation in any Person not a Party to this Agreement. However, Allogene may decide, in its sole discretion, to use one or more of its Affiliates to perform its obligations and duties hereunder, provided that Allogene will remain liable hereunder for the performance by any such Affiliates of any such obligations.

[The remainder of this page has been intentionally left blank. The signature page follows.]

IN WITNESS WHEREOF, duly authorized representatives of the Parties have duly executed this Agreement to be effective as of the Effective Date.

ALLOGENE THERAPEUTICS, INC.

By: /s/ David Chang, M.D., Ph.D.
Name: David Chang, M.D., Ph.D.
Title: Chief Executive Officer

CELLECTIS SA

By: /s/ André Choulika
Name: André Choulika
Title: Chief Executive Officer

Schedule 1.13

Allogene Targets

[***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

Schedule 1.32
Cellectis Patent Rights

[***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

Schedule 1.34
Cellectis Performance Targets

[***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

Schedule 1.86

Other Cellectis Targets

[***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

Schedule 9.23

[***] Patent Rights

[***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

Exhibit 4.26

CONFIDENTIAL TREATMENT REQUESTED BY CELLECTIS S.A.

Execution copy
CONFIDENTIAL

CT0079158

LICENSE, DEVELOPMENT AND COMMERCIALIZATION AGREEMENT

This License, Development and Commercialization Agreement shall become effective as of the 6th day of March, 2019 (the "Effective Date") by and between **Les Laboratoires Servier**, a corporation incorporated under the laws of France having a principal place of business at 50 rue Carnot, 92150 Suresnes, France ("LLS") and **Institut de Recherches Internationales Servier**, a corporation incorporated under the laws of France having its principal place of business at 50 rue Carnot, 92 150 Suresnes, France ("IRIS") (LLS and IRIS being together referred to as **"**Servier"), and **Cellectis SA**, a company incorporated under the laws of France having a principal place of business at 8, rue de la Croix Jarry, 75013 Paris, France ("Cellectis"). Cellectis and Servier are individually referred to herein as a "Party" and collectively, as the "Parties."

RECITALS

WHEREAS, Servier and Cellectis share a common objective consisting in the strategic optimization of the global development of the Cellectis CAR technology on the Servier Targets (as defined hereinafter).

WHEREAS, Cellectis and Servier were previously party to that certain Product Development, Option, License and Commercialization Agreement (the "2014 Agreement"), dated as of February 7, 2014 (the "2014 Agreement Date"), as amended by that certain Amendment to the Product Development, Option, License and Commercialization Agreement ("Amendment No. 1") dated November 18, 2015 (the "Amendment No. 1 Date"), Amendment No. 2 to the Product Development, Option, License and Commercialization Agreement dated November 28, 2016 ("Amendment No. 2"), and Amendment No. 3 to the Product Development, Option, License and Commercialization Agreement ("Amendment No. 3") dated August 1, 2017 (the "Amendment No. 3 Date") (collectively, the 2014 Agreement, Amendment No. 1, Amendment No. 2, and Amendment No. 3 shall be referred to as the "Original Agreement"). Under the Original Agreement, Servier exercised its exclusive option to license the UCART19 [***] (as defined hereinafter), as developed by Cellectis under the Original Agreement.

WHEREAS, the Parties desire to enter into this Agreement, which shall supersede and replace the Original Agreement, in order to adjust the terms of the Parties' collaboration, to modify the Targets (as defined herein) covered by this Agreement and to adjust the status of the products in development.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

NOW, THEREFORE, in consideration of the premises and mutual covenants herein contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

ARTICLE 1. HEADINGS; DEFINITIONS; CONSTRUCTION.

1.1. Headings.

Headings used herein are for convenience only and will not in any way affect the construction of or be taken into consideration in interpreting this Agreement.

1.2. Definitions.

Capitalized terms or derivatives thereof (verbs, nouns, singular, plural), when used in this Agreement, will have the meanings set forth in Annex I to this Agreement.

1.3. Construction of Agreement.

The terms and provisions of this Agreement represent the results of negotiations between the Parties and their representatives, each of which has been represented by counsel of its own choosing, and neither of which has acted under duress or compulsion, whether legal, economic or otherwise. Accordingly, the terms and provisions of this Agreement will be interpreted and construed in accordance with their usual and customary meanings, and each of the Parties hereto hereby waives the application in connection with the interpretation and construction of this Agreement of any rule of law to the effect that ambiguous or conflicting terms or provisions contained in this Agreement will be interpreted or construed against the Party whose attorney prepared the executed draft or any earlier draft of this Agreement.

ARTICLE 2. MANAGEMENT

2.1. Overview. Promptly after the Effective Date, to the extent the Parties have not already done so in accordance with the Original Agreement, the Parties shall establish three (3) committees which shall manage the collaboration between the Parties until the exercise (or non-exercise) of the Option to License of the last Product by Servier as indicated in section 4.1 hereafter.

2.2. Alliance Managers. Each of Servier and Cellectis shall appoint one or two senior representatives who possess a general understanding of development, regulatory, manufacturing and commercialization matters to act as its respective alliance manager(s) for this relationship (each, an "Alliance Manager"). Each Party may replace its respective Alliance Manager(s) at any time upon written notice to the other in accordance with this Agreement. Any Alliance Manager may designate a substitute to temporarily perform the functions of that Alliance Manager. Each Alliance Manager shall be charged with creating and maintaining a collaborative work environment within and among the Committees. Consistent with the Development Plan and Section 2.10, each Alliance Manager, on behalf of the applicable Party's Co-Chairperson of the applicable Committee, will also be responsible for:

(a) providing a primary single point of communication responsible for the flow of communication and for seeking consensus both within the respective Party's organization and together regarding key strategy and plan issues;

(b) ensuring that the governance procedures and rules set forth herein are complied with

(c) identifying and raising disputes to the JSC or JEC for discussion in a timely manner; and

(d) planning and coordinating internal and external communications in accordance with the terms of this Agreement.

The Alliance Managers shall be entitled to attend all JRDC, JSC and JEC meetings, and shall have the right to attend all Subcommittees meetings. Consistent with Section 2.10, each Alliance Manager may bring any matter to the attention of the JSC or JEC where such Alliance Manager reasonably believes that such matter requires attention of the JSC or JEC.

At the latest ten (10) days after the Effective Date, to the extent the Parties have not already done so in accordance with the Original Agreement, each Party shall appoint and notify the other Party of the identity of their representatives to act as alliance managers under this Agreement.

2.3. Project Directors. Within ten (10) days following the Effective Date, to the extent the Parties have not already done so in accordance with the Original Agreement, each Party shall appoint and notify the other Party of the identity of a representative to act as its project director ("Project Director"). The Project Director shall be responsible for the follow-up of the Program activities under this Agreement on a regular basis. The Project Director may attend the meetings of the JSC, as requested by the Co-Chairperson. Each Party may replace its Project Director upon written notice to the other Party.

2.4. Joint Executive Committee (the "JEC").

2.4.1. **Composition**. The JEC shall be comprised of up to two (2) senior executives from each Party. Promptly following the Effective Date, to the extent the Parties have not already done so, each Party shall designate by written notice to the other Party its initial representatives on the JEC. Each Party may replace one or more of its representatives, in its sole discretion, effective upon written notice to the other Party of such change. Either Party may, from time to time, invite additional representatives or consultants to attend JEC meetings, subject to such representative's and consultant's written agreement to comply with confidentiality obligations substantially the same as those set forth in article 8.

2.4.2. **Function and Powers of the JEC.** The JEC shall: (a) manage the overall collaboration between the Parties and manage resource allocation and major changes to the collaboration requiring amendments to this Agreement, (b) resolve disputed matters that may arise at the JSC, in accordance with Section 2.10, (c) draw up an annual review of implementation of the Collaboration and performance of this Agreement.

2.4.3. **Frequency of Meetings.** The Joint Executing Committee shall meet annually, and in no event less than once annually and such meetings may be conducted by telephone, videoconference or in person as determined by the Co-Chairpersons. As appropriate, provided that not less than two (2) Business Days' prior written notice has been given to the other Party, and subject to such other Party's approval (not to be unreasonably withheld, delayed or retained), other employees of the Parties may attend Joint Executive Committee meetings as observers. Either Party may also call a special meeting of a Joint Executive Committee (in person, by videoconference or teleconference) by at least ten (10) Business Days' prior written notice to the other Party in the event such Party reasonably believes that a significant matter must be addressed prior to the next regularly scheduled meeting, and such Party shall provide the Joint Executive Committee no later than ten (10) Business Days prior to the special meeting with materials reasonably adequate to enable an informed decision.

2.5. Joint Steering Committee (the "JSC").

2.5.1. **Composition.** The JSC shall be comprised of three (3) named representatives of each Party (or such other number as the Parties may agree) in addition to each Party's Alliance Manager who are members ex-officio. Promptly following the Effective Date, to the extent the Parties have not already done so, each Party shall designate by written notice to the other Party its initial representatives on the JSC. Each Party may replace one or more of its representatives, in its sole discretion, effective upon written notice to the other Party of such change. Either Party may, from time to time, invite additional representatives or consultants to attend JSC meetings, subject to such representative's and consultant's written agreement to comply with confidentiality obligations substantially the same as those set forth in article 8.

2.5.2. **Function and Powers of the JSC.** The JSC shall: (a) review and approve the Development Plan and the associated budget and any annual or interim updates and proposed amendments thereto; (b) direct and oversee the JRDC on all significant issues (c) review and approve the recommendations of the JRDC; (d) with respect to each Program, to validate the criteria of success of each Milestone proposed by the JRDC (the "Criteria of Success") and the achievement of each Milestone, provided that such validation shall be deemed reached if the corresponding Milestone Data meet the corresponding Criteria of Success(e) shall have overall responsibility for the oversight of the performance of the Clinical activities for each Program (f) direct and oversee any operating subcommittee on all significant issues; (g) validate and back-up the intellectual property strategy; (h) resolve disputed matters that may arise at the JRDC and the subcommittees, in accordance with Section 2.10, and (i) assume a general role of leadership in the partnership.

2.5.3. **Frequency of Meetings.** The Joint Steering Committee shall meet at least two (2) times per year or more or less often as otherwise agreed by the Parties, but in no event less than once annually and such meetings may be conducted by telephone, videoconference or in person as determined by the Co-Chairpersons. As appropriate, and provided that not less than two (2) Business Days' prior written notice has been given to the other Party, other employees of the Parties may attend Joint Steering Committee meetings as observers, but a Party shall not bring a Third Party to a meeting without the other Party's prior consent. Each Party may also call for special meetings of the Joint Steering Committee with reasonable prior written notice (it being agreed that at least ten (10) Business Days shall constitute reasonable notice) to resolve particular matters requested by such Party and within the decision-making responsibility of the Joint Steering Committee. Each Co-Chairperson shall ensure that its Joint Steering Committee members receive adequate notice of such meetings.

2.5.4. **Subcommittees.** The JSC may establish and disband such subcommittees as deemed necessary by the JSC. Each such subcommittee shall consist of the same number of representatives designated by each Party, which number shall be mutually agreed by the Parties. Each Party shall be free to change its representatives on written notice to the other Party or to send a substitute representative to any subcommittee meeting. Each Party's representatives and any substitute for a representative shall be bound by the obligations of confidentiality set forth in article 8. Except as expressly provided in this Agreement, no subcommittee shall have the authority to bind the Parties hereunder and each subcommittee shall report to the JSC.

2.6. Joint Research and Development Committee (the "JRDC").

2.6.1. **Composition.** The JRDC shall be comprised of four (4) named representatives of each Party (or such other number as the Parties may agree) in addition to each Party's Alliance Manager who are members ex-officio. Promptly following the Effective Date, to the extent the Parties have not already done so, each Party shall designate by written notice to the other Party its initial representatives on the JRDC. Each Party may replace one or more of its representatives, in its sole discretion, effective upon written notice to the other Party of such change. Either Party may, from time to time, invite additional representatives or consultants to attend JSC meetings, subject to such representative's and consultant's written agreement to comply with confidentiality obligations substantially the same as those set forth in article 8.

2.6.2. **Function and Powers of the JRDC.** The JRDC responsibilities shall include the following activities: (a) propose for approval by the JSC, the Development Plan(s), as well as any update, with respect to each Program, and the criteria of success for the Milestones, b) implement the Preclinical Development activities of the Collaboration (c) shall take responsibility for the performance of the Clinical activities for each Program (d) oversee the implementation of the Development Plan(s) and the Development operational aspects of the Program(s) (e) develop forecasts for Clinical Supply Requirements to enable the timely preparation of the Manufacturing Plan (h) oversee clinical and regulatory matters pertaining to Pre-Candidate Product(s), Candidate Product(s) or Products in the Field arising from the Development Plans, and review and approve protocols, statistical analysis plans, clinical study endpoints, clinical methodology and monitoring requirements for clinical trials of Candidate Product(s) and Product(s) in the Field as contemplated under the Development Plan(s) (i) evaluate the need and conduct biomarker strategy, (j) establish sub-committees of the JRDC, as appropriate.

2.6.3. **Frequency of Meetings.** The Joint Research and Development Committee shall meet at least once (1) time per quarter or more or less often as otherwise agreed by the Parties, but in no event less than twice annually and such meetings may be conducted by telephone, videoconference or in person as determined by the Co-Chairpersons. As appropriate, and provided that not less than two (2) Business Days' prior written notice has been given to the other Party, other employees of the Parties may attend Joint Steering Committee meetings as observers, but a Party shall not bring a Third Party to a meeting without the other Party's prior consent. Each Party may also call for special meetings of the Joint Research and Development Committee with reasonable prior written notice (it being agreed that at least ten (10) Business Days shall constitute reasonable notice) to resolve particular matters requested by such Party and within the decision-making responsibility of the Joint Research and Development Committee. Each Co-Chairperson shall ensure that its Joint Research and Development Committee members receive adequate notice of such meetings.

2.6.4. **Subcommittees.** The JRDC may establish and disband such subcommittees as deemed necessary by the JRDC. Each such subcommittee shall consist of the same number of representatives designated by each Party, which number shall be mutually agreed by the Parties. Each Party shall be free to change its representatives on written notice to the other Party or to send a substitute representative to any subcommittee meeting. Each Party's representatives and any substitute for a representative shall be bound by the obligations of confidentiality set forth in article 8. Except as expressly provided in this Agreement, no subcommittee shall have the authority to bind the Parties hereunder and each subcommittee shall report to the JRDC.

2.7. Co-Chairpersons.

Each Party shall appoint one of its members in each Committee to co-chair such Committee's meetings (each, a "Co-Chairperson"). The Co-Chairpersons shall (i) ensure the orderly conduct of the Committee's meetings, (ii) attend each Committee meeting (either in-person, by videoconference or telephonically), and (iii) ensure the preparation and issuance of written minutes of each meeting within thirty (30) days thereafter accurately reflecting the discussions and decisions of such meeting. Unless otherwise agreed, the Committee shall have at least one (1) representative with relevant decision-making authority from each Party such that the Committee is able to effectuate all of its decisions within the scope of its responsibilities. In the event the Co-Chair from either Party is unable to attend or participate in a Committee meeting, the Party who designated such Co-Chairperson may designate a substitute Co-Chairperson for the meeting in its sole discretion.

2.8. Quorum; Location.

Except where a Party fails to appoint a member or members to the JEC, JSC, JRDC or any subcommittee or fails to participate in meetings of the JEC, JSC, JRDC or any subcommittee, meetings of the JEC, JSC, JRDC and subcommittee, respectively, shall be effective only if at least one (1) representative of each Party is present or participating. The JEC, JSC, JRDC and subcommittee may meet either (a) in person at either Party's facilities or at such locations as the Parties may otherwise agree or (b) by audio or video teleconference; provided that no less than one (1) meeting during each Calendar Year shall be conducted in person. Additional meetings of the JEC, JSC, JRDC and subcommittee may also be held with the consent of each Party, or as required under this Agreement, and neither Party shall unreasonably withhold its consent to hold such additional meetings. Each Party shall be responsible for all of its own expenses incurred in connection with participating in all such meetings.

2.9. Cooperation.

Each Party shall provide the JSC such information as required under the Development Plan, or reasonably requested by the other Party and reasonably available, relating to the progress of the goals or performance of activities under the Development Plan.

2.10. Decisions.

Other than as set forth herein, in order to make any decision required of it hereunder, the Joint Steering Committee and the Joint Executive Committee must have present (in person, by videoconference or telephonically) at least the Co-Chairperson of each Party (or his/her designee for such meeting). The Parties will endeavor to make decisions where required of the JSC and JEC by consensus of the Co-Chairpersons and only following a unanimous vote, with each Party having one (1) vote. If a dispute arises which cannot be resolved within the Joint Research and Development Committee or within a Subcommittee, the Co-Chairpersons of either Party may cause such dispute to be referred to the Joint Steering Committee for resolution. If a dispute arises which cannot be resolved within the Joint Steering Committee, the Co-Chairpersons of either Party may cause such dispute to be referred to the Joint Executive Committee for resolution. Within the Joint Executive Committee, the Co-Chairperson of each Party shall try to reach a decision by mutual consent with respect to all matters during the Program Term, however in the event of disagreement between the Co-Chairperson, Servier Co-Chairperson shall have the final say.

2.11. Exceptions.

Notwithstanding the foregoing, neither Party in exercising its right to finally resolve a dispute pursuant to Section 2.10 shall have any power to amend, modify, or waive compliance with the terms of this Agreement.

2.12. Authority.

The JEC, JSC, JRDC and any subcommittee shall have only the powers assigned expressly to it in this article 2 and elsewhere in this Agreement, and shall not have any power to amend, modify or waive compliance with this Agreement. In furtherance thereof, each Party shall retain the rights, powers and discretion granted to it under this Agreement and no such rights, powers or discretion shall be delegated or vested in the JEC, JSC, JRDC or subcommittee unless such delegation or vesting of rights is expressly provided for in this Agreement or the Parties expressly so agree in writing.

2.13. Discontinuation of Participation on a Committee.

Each Committee shall continue to exist until the first to occur of (a) the Parties mutually agreeing to disband the Committee or (b) early termination of this Agreement pursuant to article 11.

2.14. Interactions Between the Joint Executive Committee, the Joint Steering Committee, the Joint Research and Development Committee and the Subcommittees.

The Parties recognize that while they will establish the JEC, JSC, JRDC and other Subcommittees for the purposes hereof, each Party maintains internal structures (including its own committees, teams and review boards) that will be involved in administering such Party's activities under this Agreement. The Parties shall establish procedures to facilitate communications between the JEC, JSC, JRDC and Subcommittees hereunder and the relevant internal committees, teams or boards within each Party in order to maximize the efficiency of the Parties' activities pursuant to this Agreement.

ARTICLE 3. DEVELOPMENT ACTIVITIES

3.1. Development of UCART19 Product.

Subject to Article 5.2 relating to Manufacturing aspects, Servier shall be responsible for conducting the Development of each UCART19 Product after the exercise of the Option to License. Upon Servier's request, Cellectis shall make reasonable efforts to assist Servier in the conduct of the part of the Development of the UCART19 Product towards the completion of the first Phase 1.

3.2. Development of Pre-Candidate and Candidate Products

3.2.1. Development of additional UCART19 Candidate Products.

If requested by Servier, Cellectis shall use its Commercially Reasonable Efforts to develop one or more additional UCART19 Candidate Products. Cellectis acknowledges and agrees that Servier has requested the development by Cellectis of the second UCART19 Product (UCART19 [***]). Cellectis agrees to generate data up to an IND or IMPD Enabling Data Package for such UCART19 [***] in accordance with and on the timelines set forth in the Development Plan set forth in the Program Activities. The Parties further acknowledge and agree that Servier and its US Partner may conduct research and development work on UCART19 [***] before the exercise of the Option to License. UCART19 [***] shall be treated as a Subsequent Product, unless the development of the lead UCART19 Product is ceased prior to the Commercialization stage, in which case such UCART19 [***] will become a lead product and the subsequent milestones for such product shall be payable at [***] instead of [***]. Additional UCART19 Product(s) will either be treated as new Pre-Candidate Product(s), new Candidate Product(s), Subsequent Product(s) or Substitute Product(s), as per Sections 3.2.3 and 3.4 of this Agreement. [***].

3.2.2. Development of the Pre-Candidate Products and Candidate Products up to IND or IMPD Enabling Data Package for UCART19 and UCART [***].

When applicable, Cellectis will use its Commercially Reasonable Efforts to initially generate data up to an IND or IMPD Enabling Data Package for [***] UCART [***] Candidate Product(s) pursuant to the Development Plan set forth in the Program Activities. For the sake of clarity, Cellectis would not be responsible for the filing of the IND and/or IMPD (or any other foreign equivalent), which shall be filed by Servier or its Designee. [***].

The Parties acknowledge and agree that Servier's intent is to request an IND or IMPD Enabling Data Package for [***] UCART [***] Products, one in liquid tumor indications and the other in solid tumor indications. In the event Servier decides to exercise its Option to License on such [***] UCART [***] Products, the second UCART [***] Product shall be treated as a new Product and the subsequent milestones for such Product shall be payable at [***].

3.2.3. Following identification and selection of an additional UCART19 Product, Pre-Candidate Product and Candidate Product and any additional UCART19 Product, Pre-Candidate Product and Candidate Product, Cellectis shall be responsible for conducting the Development activities of the corresponding additional UCART19 Product, Pre-Candidate Product and Candidate Product and any additional UCART19 Product, Pre-Candidate Product and Candidate Product until completion and delivery by Cellectis to Servier of an IND or IMPD Enabling Data Package, in accordance with the corresponding Development Plan set forth in the Program Activities and as defined by the JRDC and validated by the JSC. Servier and Cellectis shall cooperate closely in such Development. For any Development of a UCART19 or UCART [***] Pre-Candidate Product and Candidate Product

not initially planned in the Development Plan described in the Program Activities, the Parties shall meet in order to define the technical and financial conditions for such additional Development.

3.2.4. Notwithstanding the foregoing, Servier and its US Partner may conduct research work on UCART [***] Pre-Candidate Products and UCART [***] Candidate Products before the exercise of the Option to License, provided that all intellectual property generated in connection therewith that is owned by Servier and/or its US Partner specifically and solely related to the UCART [***] Pre-Candidate Products and/or the UCART [***] Candidate Products will form part of the Servier IP to be licensed to Cellectis in the absence of exercise of the Option to License pursuant to Section 4.1 (c) of this Agreement. Servier and/or its US Partner which is responsible for the filing of such intellectual property shall cooperate as regards the preparation, filing, prosecution and maintenance of all such patent rights worldwide and shall in particular inform and discuss with Cellectis in due time the patent strategy and of any material correspondence received and draft correspondence to be exchanged with the patent offices. Servier or its US Partner which is responsible for the filing of such intellectual property shall take into good faith consideration any Cellectis' proposal or comment. Cellectis will, and Servier or its US Partner will no longer, be responsible for preparation, filing, prosecution and maintenance of all such patent rights if such patent rights are licensed to Cellectis in the absence of exercise of the Option to License pursuant to Section 4.1 (c) of this Agreement. Should Servier or its US Partner develop any improvement to the Platform Patents (as defined in Section 7.2 of this Agreement) that is generated in the performance of the activities conducted pursuant to this Section 3.2.2., Servier will grant to Cellectis a worldwide, fully paid-up, royalty free, sublicensable, co-exclusive (together with Servier and its sublicensees (including the US Partner) for the performance of their rights and obligations under this Agreement and the US Sublicense) license under such improvement to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported and otherwise exploit and commercialize products and process. Servier shall cause its US Partner to comply with the provisions of this Section 3.2.4.

3.2.5. Development of [***] Candidate Products

Cellectis will conduct Development activities with respect to [***] Pre-Candidate Product, in accordance with the Development Plan as attached hereto in Section B of Exhibit 4 and associated costs set forth in the Program Activities up to the In Vivo Data Package (the "[***] Development Plan"). Any change to the [***] Development Plan must be expressly approved in writing by both Parties.

3.2.6. Development of Other Pre- Candidate Products and Other Candidate Products

(a) Selection of the Candidate Products. Servier hereby acknowledges that Cellectis has provided In Vitro Data Package for [***], [***] and [***], and such In Vitro Data Package have been validated by Servier, and that Cellectis provided an In Vitro Data Package for [***]. Cellectis shall be diligent in the development of an In Vitro Data Package for Pre-

Candidate Product, to the extent such In Vitro Data Package is approved by the JSC. Upon reception by Servier of the In Vitro Data Package, Servier shall have the opportunity during [***] to raise questions regarding the In Vitro Data Package and the Pre-Candidate Product. Following that period, Cellectis has [***] to answer to Servier's questions to Servier's satisfaction. Then, Servier shall decide within [***] to turn this Pre-Candidate Product into a Candidate Product (hereinafter the "Candidate Product Selection"). For sake of clarity, Servier has no obligation to turn any Pre-Candidate Product into a Candidate Product and as a consequence has no obligation to pay the Milestone event "[***]" for a Pre-Candidate Product not turned into a Candidate Product.

(b) Development of the Other Candidate Products up to Phase 1. Cellectis shall be responsible for conducting the Development activities of the Other Candidate Product up to and including the end of Phase I, in accordance with the corresponding Program description as defined by JRDC and validated by the JSC and with the corresponding Development Plan. Cellectis shall prepare the Development Plan for each Other Candidate Product as described in the Development Plan. Cellectis shall prepare, file and prosecute all regulatory applications useful or necessary to obtain approvals at Cellectis name to develop the Candidate Product up to Phase 1 (e.g. Clinical Trial Application or equivalent), based on the Development Plan as previously agreed by the JSC. For sake of clarity, for any Development of a Pre-Candidate Product and Candidate Product not initially planned in the Development Plan, the Parties shall meet in order to define the technical and financial conditions for such additional Development.

3.2.7. If Servier does not turn a Pre-Candidate Product into a Candidate Product, Servier definitely waives its right under the Candidate Product and its associated Primary Target and associated Cellectis IP, Servier will have no further right under the Pre-Candidate Product and its associated Primary Target and its associated Cellectis IP.

3.2.8. Validation of Milestones achievement. For each of the following Milestone events indicated in Section A.3. of the Exhibit 1, [***] per Candidate Product" ""[***]" per Candidate Product", "[***] per Candidate Product" and "[***] per Candidate Product", Cellectis will develop a corresponding Milestone Data. Upon reception by Servier of each data package, Servier shall have the opportunity during [***] to raise questions regarding each data package and the Candidate Product(s). Following that period, Cellectis has [***] to answer to Servier's questions to Servier's satisfaction. Then the JSC may decide within thirty (30) days to validate or not the achievement of the corresponding Milestone on the basis of the corresponding Milestone Data.

3.3. Right of First Refusal on a Candidate Product. Should Cellectis wish to transfer (whether by way of a license or an assignment or the like) to a Third Party Candidate Product(s) for which Servier has exercised its Opt-Out Option as per section 3.6(a), Cellectis shall first propose such transfer to Servier who shall have the right to substitute itself to said Third Party and to execute corresponding agreement with Cellectis, within a period of [***] after having had the opportunity to review the latest data available, at the same terms and conditions than those proposed by Cellectis to said Third Party.

3.4. Development of Substitute Products and Subsequent Products.

The JSC may decide, at any time during the Program Term to add a Substitute Product or, at any time during the Term of this Agreement to add a Subsequent Product in the corresponding Program. Upon such decision of the JSC, the Substitute Product or the Subsequent Product will be considered as a Pre-Candidate Product or Candidate Product and any and all terms and conditions (except the financial ones as stated in Exhibit 1) related to a Pre-Candidate Product or Candidate Product provided in the present Agreement will apply to the Substitute Product or the Subsequent Product.

3.5. Failure to Develop a Product by Servier

Servier should use Commercially Reasonable Efforts for the Development of any Product after having exercised its Option to License in relation to such Product. However, should Servier decide to discontinue the Development of any Product after having exercised the Option to License in relation to such Product, then Servier shall promptly inform Cellectis of such situation and Servier shall terminate this Agreement in accordance with section 11.2.4.

3.6. Opt-Out Option.

(a) Servier has a right to opt-out from any Program in case Servier decides not to pursue such Program (the "Opt-Out Option") as follows. Servier may exercise its Opt-Out Option within a period of [***] following the presentation by Cellectis to the JRDC of the corresponding Milestone Data ("Opt-Out Period"), by sending a written notification. In case the Opt-Out Option is exercised despite achievement of the Milestone by Cellectis as reviewed by the JRDC and validated by the JSC, all sums due for the achievement of such Milestone shall be paid by Servier to Cellectis.

(b) Subject to Section 3.3 "Right of First Refusal on a Candidate Product", if Servier has exercised its right under the Opt-Out Option, the corresponding Candidate Product is considered as terminated under this Agreement. Consequently, such Program is considered as terminated and the rights granted by Cellectis to Servier under the corresponding Program shall automatically terminate and Cellectis shall have no further obligations towards Servier with respect to such Candidate Product. For sake of clarity, dispositions of Section 11.3 shall apply.

(c) At the end of the Opt-Out Period, if Servier has not exercised its Opt-Out Option, the payment corresponding to the Milestone validated by the JSC is due to Cellectis for the corresponding Candidate Product, and Cellectis shall continue further Development of the Candidate Product in accordance with this Section 3.

3.7. Subcontracting.

Cellectis may engage its Affiliates, and/or Third Party subcontractors (including contract manufacturing organizations or contract research organizations) to perform certain of its obligations under this Agreement. Any Third Party subcontractor to be engaged by Cellectis to perform Cellectis' obligations set forth in this Agreement will meet the qualifications typically required by Cellectis for the performance of work similar in scope and complexity to the subcontracted activity. The activities of any such Third Party subcontractors will be considered activities of Cellectis under this Agreement. Cellectis will be responsible for ensuring compliance by any such Third Party subcontractors with the terms of this

Agreement. In any case in which Cellectis engaged a Third Party subcontractor, Cellectis will contractually agree to obtain sole ownership or secure a license (with the right to grant sublicenses) of all inventions, data, information developed by such Third Party subcontractor necessary for the Development of Pre-Candidate Product, Candidate Product or Product(s). Cellectis will remain responsible for any breach by a subcontractor of the terms of this Agreement or the applicable subcontractor agreement.

Cellectis will, and will contractually require that its sub-licensees, subcontractors and Affiliates, if any, use Commercially Reasonable Efforts to conduct the relevant Development activities in an effort to meet Cellectis' commitments with respect to such Programs and any development activities.

3.8. Clinical Trial Activities after Exercise of the Option.

After exercising its Option to License according to Section 4.1, Servier will be sole responsible for further Developing and Commercializing the Product(s). However, subject to Section 3.1, and except for UCART19 [***], and any other UCART19 Products, UCART19 Subsequent Products and UCART19 Substitute Products, Servier may request Cellectis to perform certain Development activities after Phase 1, on behalf of Servier and subject to a separate written agreement that will be negotiated by the Parties in good faith.

3.9. Data

During the Program Term, Cellectis shall promptly make available to Servier all Data generated by Cellectis and its Affiliates or on their behalf.

3.10. Non-Compete

During the Term, Cellectis undertakes not to perform (or have a Third Party performing on Cellectis's behalf) research on, development on, and/or commercialization of a product directed against a Target that is used for the same purpose than for its use with a Pre-Candidate Product, Candidate Product or Product ("**Primary Target**"). However, for sake of clarity and based on current knowledge, Cellectis may use the Target if it is not intended to directly trigger the destruction of tumors or tumor cells by the product but intended to provide specificity or additional functionalities to the product directed against another primary target. In this case, the Target is used necessarily in combination with another primary target to develop the product.

3.11. Right of First Negotiation

During the Term, Cellectis has the right to perform internal research activities on the selected Targets for other uses than as Primary Target(s). In the event Cellectis wishes to grant a license or transfer the outcome of such research activities to a Third Party, Servier will have a right of first negotiation. After Cellectis written notification of the existence of such outcome, Servier shall have the opportunity, during [***] from the receipt of said notification, to raise questions regarding the outcome. Following that period, Cellectis has [***] to answer to Servier's questions to Servier's satisfaction. Then, Servier shall decide, within [***] from the Cellectis's answer, if it wishes to exercise its right of first negotiation to obtain a license on such outcome. The Parties will then have [***], from the notification by Servier to exercise its right of first negotiation, to reach an agreement as to the licensing terms and conditions pertaining to such outcome.

ARTICLE 4. GRANT OF RIGHTS TO SERVIER

4.1. Exclusive Option to License.

(a) Cellectis hereby grants to Servier, and Servier accepts, an exclusive option, exercisable according to the conditions set forth in Section 4.1 (b), to obtain, on a Product-by-Product basis, an exclusive license under each Product (the "Option to License").

(b) Exercise of the exclusive Option to License.

With respect to Other Candidate Products and [***] Candidate Products, Servier shall have the opportunity during [***] to raise questions regarding the Phase 1 Data Package, and the corresponding Candidate Product. Following that period, Cellectis has [***] to answer to Servier's questions to Servier's satisfaction. Then, Servier may, during the following [***], exercise the Option to License for the corresponding Candidate Product, by sending a written notification to Cellectis.

With respect to each UCART [***] and UCART19 Candidate Products, the Option to License shall be exercisable by Servier as of:

(i) the validation by Servier of the IND or IMPD Enabling Data Package submitted by Cellectis (provided that upon reception by Servier of an IND or IMPD Enabling Data Package for a Candidate Product, Servier shall have [***], to validate or not the IND or IMPD Enabling Data Package), and

(ii) the provision of the first validated GMP batch for such Candidate Product.

For the avoidance of doubt, should Servier not validate an IND or IMPD Enabling Data Package, as appropriate, or does not exercise the corresponding Option to License within the timelines described in Section 4.1 (b), then the terms of the article 4.1 (c) of this Agreement shall apply to the corresponding Candidate Product.

For the avoidance of doubt, the Parties understand and agree that Option to License will be exclusive, and unless and until Servier exercises its right to the Option to License with respect to any relevant Candidate Product, neither Cellectis nor any of its Affiliates will have the right to offer or negotiate with any Third Party regarding the grant to such Third Party of any right or license in or to Candidate Product. However, Cellectis shall remain free to use said Candidate Product for its internal research.

(c) Non-exercise of Option to License. In the event Servier fails to notify Cellectis of its election, or elects not to exercise its Option to License, Servier's rights to such Candidate Product shall terminate and Cellectis shall have no further obligations towards Servier with respect to such Candidate Product, and Cellectis may independently pursue all activities related to such Candidate Product and/or license-out the Candidate Product and the associated Cellectis IP , Joint IP and Servier IP to a Third Party. To that end, Servier grants to Cellectis a non-exclusive, sublicensable, royalty-bearing license on Servier's IP (the "License to Cellectis").

Notwithstanding the foregoing, in consideration for the License to Cellectis and for Servier's financial contribution to the Development of the Candidate Product, Cellectis will pay to Servier the following payments, to the extent that the said Candidate Product is Covered by a Valid Claim of Servier Patents:

(i) If Servier terminates the license with respect to a Candidate Product [***], Cellectis shall pay to Servier [***] of the Net Revenues it receives from a Third Party ;

(ii) If Servier terminates the license [***], Cellectis shall pay to Servier [***] of the Net Revenues it received from a Third Party ;

(iii) If Servier terminates the license with respect to a Product [***], Cellectis shall pay [***] of Net Revenues for such Product.

(d) Prior Exercise of Option to License.

1. As of the Effective Date, and retroactive to the Amendment No. 1 Date, Servier has exercised its Option to License UCART19 [***], according to the terms of the Agreement, and Cellectis has acknowledged the exercise of such Option to License UCART19 [***]. The parties acknowledge that the related payments under Exhibit 1 have been made in accordance with the terms provided therein.

2. Without prejudice of Sections 3.5 and 4.2 (c), at the Effective Date, the Parties acknowledge that Servier is conducting [***] for UCART19 [***], in which (i) Servier used Commercially Reasonable Efforts to start [***] the [***], and (ii) [***].

As of the Effective Date, the Parties acknowledge that Cellectis has performed, in its own name and in consultation with Servier, the filing of the Clinical Trial Applications in the [***] for the first Phase I of UCART19 [***], and used its Commercially Reasonable Efforts to perform such filings no later [***]. Effective upon the filing of the Clinical Trial Application referred to above, the responsibility to conduct the Phase I studies related to the UCART19 [***] was transferred to Servier, which became the sponsor of such Phase 1 studies. To the extent required after the Effective Date, Cellectis will cooperate with Servier in connection with such transfer as provided in Section 5.1 of the Agreement.

Servier shall regularly inform Cellectis of the progress of the studies and respond to any reasonable request from Cellectis in connection with the performance of [***] Phase 1 study. With respect to [***] Phase 1 study, Servier will copy Cellectis on any CIOMS and/or MedWatch form(s) and [***] and will provide Cellectis on an ongoing basis with [***] and will provide Cellectis through the JRDC members [***]. The information obligation contained in the preceding sentence shall also apply with respect to other UCART19 Products, Subsequent Products or Substitute Products and the UCART [***] Products, Subsequent Products or Substitute Products (including the first and second UCART [***] Products) if and when the corresponding Option to License is exercised by Servier pursuant to the Agreement. Servier will provide to Cellectis the [***]. Cellectis may communicate material results related to UCART19 [***] (including without limitation such intermediate results) as well as on any compassionate uses of UCART19 Product, subject to Servier's prior prompt written approval as to the form and content of such communication, which approval will not be unreasonably withheld or delayed.

Cellectis shall have the right to use or have used all the data generated by Cellectis or its subcontractors in the course of the development of the Product Candidates and Products for the development of its own products.

3. The exercise of the Option to License for the UCART19 [***] shall not relieve either Party's obligation regarding the development of such UCART19 [***], and the payments related thereto, and in particular:

(i) Section 5.1 of the Agreement, to the extent necessary for Servier to conduct its activities as contemplated in this Section 4.1(d). In particular, Cellectis shall provide Servier with the relevant documentation in Cellectis' possession reasonably necessary for Servier to conduct the Phase 1 studies of UCART19 [***]; and

(ii) subject to the specific conditions set forth below, the payment by Servier of the royalties and milestones under Exhibit 1 of the Agreement.

4.2. Servier Rights and Obligations Upon Exercise of Option.

(a) Exclusive License. Upon Servier's exercise of its Option to License for a given Product, Cellectis shall grant to Servier, during the Term, (i) an exclusive (even as to Cellectis) worldwide license, with the right to grant sublicenses, under Cellectis IP other than the [***] Cellectis Patents, to Develop, have developed, manufacture, have manufactured and Commercialize said Product in the Field, and (ii) a worldwide license under the [***] Cellectis Patents as set forth in and pursuant to Section 4.3 for said Product in the Field.

(b) The Parties hereby acknowledge that Servier exercised its Option to License UCART19 [***] as of the Effective Date, and retroactive to the Amendment No. 1 Date, and pursuant to such exercise Cellectis hereby grants to Servier as of the Amendment No. 1 Date a license in respect of the rights set forth in Section 4.2(a) for UCART19 [***] as per the terms of this Section 4.2 and this Agreement. With respect to each Product elected by Servier, through its Option to License, Servier will assume full responsibility, at its expenses, for the further Development, manufacture and Commercialization of such Product in the Field.

(c) Upon Servier's exercise of the Option to License for a given Product, Servier will use, and will ensure that its Affiliates, Servier Sublicensees, and subcontractors use Commercially Reasonable Efforts in Developing and Commercializing the corresponding Product in the Targeted Indications and the Targeted Territory, and are in compliance with this Agreement.

(d) Upon Servier's exercise of its Option to License for a given Product and subject to the terms and conditions of the Agreement, Cellectis hereby grants to Servier and its Affiliates, on a country by country basis throughout the world (i) the right to use [***] engineered by Cellectis pursuant to this Agreement for Development of the Product, [***], and (ii) [***], an exclusive (even as to Cellectis) license to the [***] Cellectis Patents to use

the [***] engineered by Cellectis to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported, and otherwise exploit and Commercialize such Product, without the right to grant sublicenses, provided that Servier may sublicense solely in relation to a transaction involving, with respect to all [***] Cellectis Patents, only the [***] Cellectis Patents owned by Cellectis and/or owned by [***]. Notwithstanding the foregoing, Servier hereby acknowledges and agrees that, at Servier's direction, Cellectis shall have the right and obligation to promptly and diligently grant licenses and rights under the [***]Cellectis Patents to US Partner or subcontractor designated by US Partner, or any other third party designated by US Partner and agreed to by Servier, in respect of the Servier Products in the Field in the US Partner Territory, and Servier's license and other rights under the [***] Cellectis Patents shall be limited accordingly so long as the relevant licenses in this Agreement (or any other relevant licenses entered into pursuant to the terms thereof) remain in effect. For the sake of clarity and notwithstanding anything to the contrary in this Agreement, the license granted to Servier by Cellectis herein does not give Servier the right (i) to [***] or (ii) to sublicense the [***] Cellectis Patents other than in relation to a transaction involving, with respect to all [***] Cellectis Patents, only the [***] Cellectis Patents owned by Cellectis and/or owned by [***].

(e) Upon exercise of the Option to License on a Product-by-Product basis, and upon Servier's written direction, Cellectis shall have the right and obligation to promptly and diligently grant a direct license, on a country by country and Product by Product basis, under the [***] Cellectis Patents to any Servier Sublicensee, provided that the grant of such license to the extent involving [***] Cellectis Patents licensed to Cellectis [***], must include a license in respect of all of the [***] Cellectis Patents and will (i) correspondingly limit the license grants to Servier in Section 4.2(d), and (ii) provide the Servier Sublicensee with a similar right to obtain a direct license from Cellectis consistent with, and to the extent of, the sublicense rights the Servier Sublicensee otherwise receives from Servier with respect to the Cellectis Patents other than the [***] Cellectis Patents, provided that the grant of such direct license will correspondingly limit such license grants to such Servier Sublicensee. Cellectis shall promptly and diligently execute a license agreement with Servier and such Servier Sublicensee for the purpose of granting such license to the Servier Sublicensee and limiting the corresponding license grant to Servier in Section 4.2(d). The parties hereby acknowledge that any such negotiations would be solely to limit Servier's rights herein for the benefit of such Servier Sublicensee and, as such, the parties agree and acknowledge that no additional consideration would be due to Cellectis as no additional rights would be granted. The parties further agree and acknowledge that all consideration due to Cellectis under the Agreement has been valued fairly and equitably in good faith, and would not be reduced or otherwise amended because of any limitation of Servier's rights for the benefit of a Servier Sublicensee. The parties acknowledge and agree that any rights or licenses that may hereafter be granted by Cellectis at the written direction of Servier as contemplated by this Section 4.2(e) are rights or licenses that were provided to Servier pursuant to this Agreement in accordance with the broad collaboration and development activities contemplated by the Agreement, and therefore Cellectis has already received (or, in the future and in accordance with the terms of this Agreement, will have the right to receive) compensation that Cellectis and Servier have determined is fair and equitable and that Cellectis shall therefore not have the right to any additional compensation from Servier or any other person or entity in connection with the foregoing.

4.3. Rights Among Cellectis, Servier and US Partner.

(a) Subject to the terms of this Agreement, at the written direction of US Partner and in furtherance of and pursuant to the US Partner Collaboration Agreement and the transactions contemplated thereby on a US Partner Product-by-US Partner Product basis, Cellectis hereby grants to Servier and its Affiliates (i) the right to use the [***] engineered by Cellectis pursuant to the US Partner Collaboration Agreement to develop US Partner Products, until, in each case, the filing of an IND for each US Partner Product as directed by US Partner, in the US Partner Product Field, in the Servier Territory, and (ii) a fully paid-up and royalty free (with respect to Cellectis), exclusive (even as to Cellectis) license under the [***] Cellectis Patents, to make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported and otherwise exploit and Commercialize such US Partner Product, in each case solely in the US Partner Product Field in the Servier Territory, without the right to grant sublicenses, provided that Servier may sublicense solely in relation to a transaction involving, with respect to all [***] Cellectis Patents, only the [***] Cellectis Patents owned by Cellectis and/or owned by [***], and Cellectis shall further have the obligation to grant licenses and rights under the [***] Cellectis Patents to subcontractors as directed by Servier, and to other third parties as directed by Servier and agreed to by US Partner, pursuant to and as contemplated by the US Partner-Servier Agreement in respect of the US Partner Products (as directed in writing by US Partner) in the US Partner Product Field in the Servier Territory, and Servier's license and other rights under the [***] Cellectis Patents shall be limited accordingly so long as the relevant licenses in the US Partner Collaboration Agreement (or any other relevant licenses entered into pursuant to the terms thereof) remain in effect. For sake of clarity, the license granted to Servier by Cellectis herein does not give Servier the right to [***]. For further sake of clarity, Servier does not have the right to grant any sublicenses in respect of the rights licensed to it pursuant to Section 4.3(a) herein other than in relation to a transaction involving, with respect to all [***] Cellectis Patents, only the [***] Cellectis Patents owned by Cellectis and/or owned by [***], and any purported sublicense so made by Servier shall be null and void ab initio, provided that the foregoing is without limitation of Servier's rights that are set forth in Section 4.2(e) hereof.

(b) Servier hereby consents to the license directed by Servier and granted by Cellectis to US Partner pursuant to the US Partner Collaboration Agreement, as amended, and the licenses that may hereafter be granted by Cellectis at the written direction of US Partner as agreed to by Servier pursuant to the terms thereof. The parties acknowledge and agree that any rights or licenses that have been granted to US Partner at Servier's written direction to Cellectis (including any expansions of such rights or licenses, pursuant to this Agreement, that Servier directs Cellectis in writing to grant to US Partner), or that may hereafter be granted by Cellectis at the written direction of US Partner and agreed to by Servier relating to those same rights granted to US Partner, are rights or licenses that were provided to Servier pursuant to this Agreement in accordance with the broad collaboration and development activities contemplated hereunder, and therefore Cellectis has already received (or, in the future and in accordance with the terms of this Agreement, will have the right to receive) compensation that Cellectis and Servier have determined is fair and equitable and that Cellectis shall therefore not have the right to any additional payments or compensation from US Partner, Servier or any other person or entity in connection with the foregoing. Without limiting the foregoing, the parties agree and acknowledge that all consideration paid or to be paid, whether one-time payments,

milestone payments, royalty payments or otherwise, to Cellectis under the US Partner Collaboration Agreement or this Agreement shall not be reduced or otherwise modified or amended because of the license granted to US Partner or other third parties as contemplated hereby.

(c) The parties further acknowledge and agree that any rights or licenses that have been granted by Cellectis to US Partner at Servier's written direction to Cellectis (including any expansions of such rights or licenses, pursuant to this Agreement, that Servier directs Cellectis in writing to grant to US Partner), or that may hereafter be granted by Cellectis at the written direction of US Partner and agreed to by Servier relating to those same rights granted to US Partner, shall terminate on a Servier Product-by-Servier Product basis upon the earlier to occur of (i) termination or expiration of the license granted by Cellectis to Servier in respect of the [***] Cellectis Patents in further respect of a Servier Product pursuant to this Agreement, or (ii) on a Servier Product-by-Servier Product basis, termination or expiration of the license granted by Servier to US Partner in respect of a Servier Product pursuant to the US Partner-Servier Agreement (as amended from time to time).

ARTICLE 5. TRANSFER AND SUPPLY

5.1 Cellectis Transfer Cooperation.

Upon Servier's exercise of the Option to License, Cellectis will provide Servier with any information, materials and data, Competent Authorities' approval available to it and reasonably necessary for Servier to continue the Development, Manufacturing and/or Commercialization of the Product, and Cellectis will cooperate with Servier to provide transfer of such information, materials and data as soon as reasonably practicable after the Option to License is exercised.

Prior to the Effective Date, Cellectis has provided to Servier (i) [***] and (ii) [***] (the "CMO Terms"). [***].

5.2 Supply of Product.

Except for UCART19 [***], and any other UCART19 Products, UCART19 Subsequent Products and UCART19 Substitute Products, upon exercise of the Option to License with respect to a given Program, and upon Servier's request, Cellectis shall Manufacture or have Manufactured in compliance with cGMP the corresponding Products for Servier's benefit until the end of the Phase II studies to be conducted by Servier, its Affiliates or its Servier Sublicensees, subject to a written supply and quality agreements whose terms and conditions shall be negotiated in good faith between the Parties within a period [***] upon exercise of each Option to License. The supply price of the Product (in finished form) shall be at manufacturing costs, incurred by Cellectis, plus [***].

Servier may elect at any time before entering into the first Phase II studies but after the exercise of the corresponding Option to License for any Product, to have the manufacture of such Products transferred to by Cellectis or its designee, at Servier's costs, to Servier,

its US Partner or its Designee reasonably acceptable to Cellectis. The Parties will execute a tri-partite technology transfer agreement between Servier, the Contract Manufacturing Organization and Cellectis, provided that Cellectis will transfer (or will have transferred) to the Contract Manufacturing Organization the know-how, material and data necessary for the proper manufacturing of the Products.

For sake of clarity, except for UCART19 [***], and any other UCART19 Products, UCART19 Subsequent Products and UCART19 Substitute Products Cellectis (or its designee, under Cellectis' responsibility) shall use diligent efforts to perform the technology transfer to Servier, its US Partner or its Designee necessary for Servier to conduct the manufacturing of each Product. Such technology transfer will be made on a Product-by-Product basis (provided that once such technology transfer has been made for a Product, it is deemed to be made for any subsequent Products, Subsequent Products and Substitute Products directed against the same Target to the extent that in such case and if the manufacturing of such subsequent Product, Subsequent Products and Substitute Products requires additional technology transfer due to subsequent changes, Cellectis shall use its Commercially Reasonable Efforts to provide reasonable support to Servier, its US Partner or its Designee with respect to such technology transfer), and will start at Cellectis' discretion within [***] following:

(i) election by Servier to have the manufacture of the Products transferred by Cellectis or its designee, at Servier's costs, to Servier or its Designee;

(ii) sending by Servier to Cellectis of a written waiver of Servier's rights under Section 5.2 paragraph 1 to request Cellectis to manufacture or have manufactured such Product, Subsequent Product and Substitute Product directed against the same Target (under conditions specified above) until the end of Phase II, such waiver will nonetheless be effective only once the technology transfer will be successfully and timely completed.

ARTICLE 6. PAYMENTS AND MILESTONES

6.1. Servier undertakes to pay license fees, milestone payments and royalties to Cellectis in accordance with the terms and conditions set forth in Exhibit 1.

6.2. Reimbursement of costs incurred by Cellectis

6.2.1. For the two first UCART [***] Candidate Products and the second UCART19 Candidate Product (UCART19 [***])

In consideration of the work performed by Cellectis relating to the development of the two first UCART [***] Candidate Products and the second UCART19 Candidate Product up to the final delivery of the IND/IMPD Enabling Data Package, Servier will pay Cellectis on a full time equivalent basis ([***]) with respect to [***], upon submission of a quarterly invoice together with all supporting documentation with respect to the costs incurred. The FTE rate shall be adjusted annually on each anniversary date of this [***] by an amount equal to the percentage increase for the last quarter preceding such anniversary date of the "Indice des salaires de base des ouvriers de l'industrie pharmaceutique" index n°1567381 published by

the INSEE. The costs incurred by Cellectis relating to the development of the first UCART [***] Candidate Product for the "[***]" from the achievement of the last milestone paid by Servier related to the first UCART [***] Candidate Product up to the Amendment No. 1 Date amount to [***] in the aggregate, which was paid by Servier to Cellectis.

As a consequence, the milestone payment due under Exhibit 1 of this Agreement for the second UCART19 Candidate Products and the first and second UCART [***] Candidate Products shall no longer apply and will not be due by Servier to Cellectis upon achievement of the corresponding Milestone events, except for the milestone "[***]" that continue to apply to such Candidate Products.

6.2.2. For [***] Candidate Product.

In addition to all payments due under Article 6 of this Agreement, Servier shall pay Cellectis:

(i) the FTE costs corresponding to the activities performed by Cellectis as per the [***] Development Plan, as estimated in the [***] Development Plan and adjusted by Cellectis according to the activities actually performed by Cellectis, provided that a minimum of [***] per quarter is due by Servier. At the [***] and may increase according to "Indice des salaires de base des ouvriers de l'industrie pharmaceutique" index n°1567381 published by the INSEE; and

(ii) the external costs incurred by Cellectis for the performance by Cellectis of Development activities pursuant to the [***] Development Plan, as quarterly reported by Cellectis. Such payment will be made on a pass-through basis (i.e. without a markup, but including handling and administration costs), upon submission of a quarterly invoice together with all supporting documentation with respect to the costs incurred.

All payment due under this Article shall be paid quarterly within [***] of receipt of the corresponding invoice. For sake of clarity, penalties set forth in Section 6.3.4 of this Agreement shall apply to any late payment of fees pursuant to the present section.

The Parties acknowledge that [***]. For sake of clarity, such costs shall be comprised within the total amount of costs estimated to be incurred by Cellectis under the [***] Development Plan.

For clarity, the FTE costs and external Cost indicated in the [***] Development Plan are estimated costs.

6.3. Payment Terms

6.3.1. All sums due hereunder to either Servier or Cellectis will be payable in Euros, by bank wire transfer in immediately available funds to such bank account(s) as the Parties will designate. Each Party will notify the other as to the date and amount of any such wire transfer at least seven (7) days prior to such transfer.

6.3.2. Except as otherwise set forth herein, all other payments due hereunder will be paid within [***] following receipt of an invoice requesting such payment.

6.3.3. Invoices. All invoices provided to a Party hereunder should include the receiving Party's bank details, the contact name for issue resolution and will be marked for the attention of the alliance manager assigned to this Agreement, whose name will be provided by the Parties to each other.

6.3.4. Late Payment Penalties. Interest shall accrue on any late payment of fees owed to the receiving Party not made on the date such payment is due, at an annual interest rate equal to the lesser of the Euribor 1 month fixed by the European Central Bank plus three percent (3%) or the highest rate permissible by law, with such interest accruing from the date the payment was originally due to the receiving Party, and any late payment pursuant to this Section shall be credited first to interest and then to any outstanding fees. This Section shall in no way limit any other rights and remedies available to the Party to whom payment is owed, whether arising under this Agreement or at law or in equity.

6.4. Reports and Audits.

(a) Milestone Payment Reports. After each Option Date, and on a Product-by-Product basis, Servier shall report each event that triggers a payment to Cellectis pursuant to Exhibit 1, within ten (10) business days of the occurrence of such event. Cellectis will then prepare an invoice to Servier for the same, such payment shall be due within [***] from the invoice date. If no event has been reached, this shall be reported once a year within [***] following the 1st of January of each contractual year.

(b) Sales Payment Reports. After the First Commercial Sale by Servier, its Affiliates or its Subcontractor of a Product requiring the payments due to Cellectis pursuant to Exhibit 1, Servier shall send to Cellectis an annual written reports within [***] following the 1st of January of each contractual year. Such report shall state, for the previous contractual year, the number and description of each Product sold, by country, the corresponding Net Sales and the calculation of Milestone and royalties due. Concurrently with the sending of such reports, Servier shall pay to Cellectis royalties and/or milestones due at the rates specified in Exhibit 1.

(c) Records; Inspection. Servier shall keep complete, true and accurate books of account and records for the purpose of determining the royalty amounts or Milestone payment amounts payable under this Agreement. Such books and records shall be kept at the principal place of business of such Party, as the case may be, for at least [***] following the end of the [***] to which they pertain. Servier shall make such account and records available, on reasonable notice sent by Cellectis, for inspection during business hours by an independent auditor nominated by Cellectis and reasonably acceptable for Servier, for the purpose of verifying the accuracy of any statement or report given by Servier pursuant to Section 6.4 (a) and (b). The auditor shall be required to keep confidential all information learnt during any such inspection, and to disclose to Cellectis only such details as may be

necessary to report the accuracy of Servier's statement and/or report. Cellectis shall be responsible for the auditor's costs, unless the auditor certifies that there a variation or error producing an increase exceeding five percent (5%) of the royalty amount stated for any period covered by the inspection, then all reasonable costs relating to the inspection for such period and any unpaid amounts that are discovered shall be paid promptly by Servier, together with interest thereon from the date such were due at the lesser of the legal rate fixed by the European Central Bank plus two percent (2%) or the highest rate permissible by law, and any pursuant to this Section shall be credited first to interest and then to any outstanding royalties.

ARTICLE 7. INTELLECTUAL PROPERTY AND PATENT RIGHTS

7.1. Inventions and Intellectual Property Ownership.

(a) Inventions. Ownership of inventions shall be determined according to the rules in effect at the time of invention in the country where the invention is made.

(b) Sole Inventions. Each Party shall own all inventions, Know-How and other intellectual property, whether or not patentable, conceived and made solely by its or its Affiliates' own employees, agents, or independent contractors in the course of conducting its or its Affiliates' activities under this Agreement, together with all intellectual property rights therein ("Sole Inventions").

(c) Joint IP shall be co-owned equally by the Parties. Each Party shall have a right of first refusal to any assignment of its interest into a Joint Patent by a Party (the "Assigning Party") to any Third Party. Should the Assigning Party wish to assign such Joint Patent to a Third Party, the Assigning Party shall first propose such assignment to the other Party who shall have the right to substitute itself to said Third Party within a period of [***].

Parties agree to share the exploitation of the Joint IP as follow:

(i) Servier shall have the sole right to exploit, directly or indirectly, the Joint IP that covers specifically and solely a Pre-Candidate Product, Candidate Product or Product (the "Product Joint IP") without any financial compensation to Cellectis, and Cellectis shall have the right to use such Product Joint IP solely to perform its rights and obligation as contemplated in this Agreement.

(ii) Cellectis shall have the sole right to exploit and sublicense Joint IP that does not cover specifically and solely a Pre-Candidate Product, Candidate Product or Product (the "Platform Joint IP") without any financial compensation to Servier, and Servier shall have the right to use such Platform Joint IP to perform its rights and obligation as contemplated in this Agreement.

(d) Background IP. Each Party will own all right, title and interest in its Background IP.

7.2. Patent Prosecution.

(a) Cellectis Patent(s). Cellectis will be responsible, at its own cost for preparing, filing, prosecuting and maintaining all Cellectis Patents and conducting any interferences,

re-examinations, reissues and oppositions relating to such Patents. Cellectis shall seek patent protection on all Cellectis Patents. Cellectis and its Affiliates have the right to cease all activities relating to the preparation, filing, prosecution and/or maintenance of any Patents as provided in this Section 7.2(a) if Cellectis or its Affiliates question the patentability of such Patents and/or such Patents do not cover Pre-Candidate Product, Candidate Product or Product, in which case Cellectis will promptly inform Servier of such planned cessation and Servier may, upon providing written notice to Cellectis, at its own choice, either assume responsibility, at Cellectis' costs for the preparation, filing, prosecution and/or maintenance of such Patents, or rescind this Agreement.

With respect to Patents within the Cellectis Patents that cover specifically and solely a Candidate Product or a Product ("**Product Patents**"), Cellectis remains solely responsible for preparing, filing, prosecuting, and maintaining Product Patents aiming to cover a Pre-Candidate Product, Candidate Product and/or Product in [***] ("**Initial Countries**") at its own costs up to the exercise of the Option to License for the corresponding Candidate Product. For clarity, Cellectis would seek for patent validation for Pre-Candidate Products and Candidate Products in [***].

Before the exercise of the Option to License, should Servier wish to have the patent protection of Product Patents extended in territories other than the Initial Countries (the "Additional Countries"), it shall inform Cellectis of its wish, by providing a written notice at least [***] in advance of the deadline for filing in such Additional Countries, a list of the Additional Countries. Cellectis will then seek patent protection for such requested Additional Countries, provided that Servier shall reimburse Cellectis any reasonable costs and expenses (including patent attorney costs) incurred by Cellectis in connection with such extension. Cellectis shall further regularly inform Servier in due time with respect to the prosecution actions (including office actions or official actions from patent offices of such Additional Countries) and any required action in connection with the maintenance of such Cellectis Patents in the Initial Countries and Additional Countries.

After exercise of the Option to License, with respect to Product Patents, Servier shall have the first right and responsibility at its own cost for preparing, filing, prosecuting and maintaining all such Patents, provided that Servier shall copy Cellectis on any material correspondence with its intellectual property counsel and consult Cellectis for any draft correspondence to be exchanged with patent offices. If Servier intends to cease prosecuting any such Patents, it shall inform Cellectis with sufficient advance notice to allow Cellectis to take over such prosecution if Cellectis so wishes. Servier shall not take any actions which can materially affect the scope, the validity and enforceability of the Product Patents, without Cellectis' prior written consent.

For sake of clarity, Cellectis remains fully responsible for the Cellectis Patents that does not cover specifically and solely a Pre-Candidate or a Candidate Product ("**Platform Patents**"), provided that Cellectis shall regularly inform Servier in due time with respect to the prosecution actions (including office actions or official actions from worldwide patent offices) and any required action in connection with the maintenance of such Platform Patents.

(b) Servier Patent(s). Servier will be responsible, at its own cost for preparing, filing, prosecuting and maintaining all Patents covering the Servier Patents and conducting any interferences, re-examinations, reissues and oppositions relating to such Patents.

(c) Joint Patent(s). So long as Servier has not exercised the Option to License as indicated in section 4.1 above (Exercise of the exclusive Option to License), the provision of section 7.2(a) above shall apply. As soon as Servier has exercised the Option to License as indicated in section 4.1 above (Exercise of the exclusive Option to License), the provision of section 7.2 (b) above shall apply. Should a Party (the "Abandoning Party"), in charge of the prosecution of the Joint IP, decide not to protect, prosecute or maintain the protection of Joint Patent, such Abandoning Party shall inform the other Party (the "Non-Abandoning Party") reasonably in advance so that such Non-Abandoning Party may elect to pursue said protection and/or maintenance of said protection in its own name. In such case, the Non-Abandoning Party shall have full ownership of and title to said Joint Patent.

(d) The Parties shall cooperate as regards the preparation, filing, prosecution and maintenance of the Product Patents worldwide. The filing Party shall in particular inform the other Party in due time about the patent and about material correspondence received and draft correspondence exchanged with the patent offices.

Each Party shall take into good faith consideration any other Party's proposal or comment related to Product Patents.

7.3. Patent Term Extensions.

The Parties will cooperate with each other in gaining Patent term extension where applicable to Candidate Product or Products.

7.4. Defense and Settlement of Third Party Claims.

From the Effective Date and until Servier's exercise of its Option to License for a given Pre-Candidate Product or Candidate Product, if a Third Party asserts (including any assertion that arises from activities occurring after the 2014 Agreement Date and before the Effective Date) that a patent right or other right owned by it is infringed by the manufacture, use, sale or importation of the given Pre-Candidate Product or Candidate Product in the Territory by Cellectis, Cellectis shall have the sole right to defend against any such assertions at its sole cost and shall immediately inform Servier of such assertion.

After Servier has exercised its Option to License for a given Product, if a Third Party asserts that a patent right or other right owned by it is infringed by the manufacture, use, sale or importation of the given Product in the Territory by Servier, Servier shall have the sole right to defend against any such assertions at its sole cost. Cellectis shall reasonably assist Servier and cooperate in any such litigation at Servier's request, and Servier shall reimburse Cellectis any reasonable, documented, out-of-pocket costs incurred in connection therewith. Subject to such control, Cellectis may join any defense and settlement pursuant to this Section 7.4 (Defense and Settlement of Third Party Claims), with its own counsel at its sole cost. Servier shall seek and reasonably consider Cellectis' comments before determining the strategy for such matter. Without limiting the foregoing, Servier shall keep Cellectis advised of all material communications, actual and prospective filings or submissions regarding such action, and shall provide Cellectis copies of and an opportunity to review and comment on any such communications, filings and submissions. Servier shall not settle or consent to the entry of any judgment in any such action without Cellectis's prior written consent, not to be unreasonably withheld or delayed. Servier shall keep Cellectis fully informed of all claims and actions governed by this Section 7.4 (Defense and Settlement of Third Party Claims). In the event Servier becomes engaged in: (i) settlement

discussions with a Third Party that has specifically asserted that a patent right of such Third Party would be infringed by the use, sale or importation of the Pre-Candidate Product or Candidate Product or Product; (ii) settlement discussions of an interference involving a patent corresponding to a Cellectis Patent; Servier shall keep Cellectis reasonably informed of the status of such discussions; and (b) Servier shall consider in good faith any comments or suggestions of Cellectis.

7.5. Enforcement.

Each Party shall promptly notify the other Party in writing if it reasonably believes that any Cellectis IP or Joint IP are infringed or misappropriated by a Third Party in the Territory.

Prior to Servier's exercise of its Option to License.

Cellectis shall have the sole right, but not the obligation, to enforce Cellectis IP and Joint IP against any actual, alleged or threatened infringement or misappropriation by Third Parties in the Territory, at Cellectis' sole cost.

From and after Servier's exercise of its Option to License.

If a Party has knowledge that a Third Party is making, using, selling a product in the Field in the Territory that infringes or may infringe a Cellectis IP or a Joint IP, such Party shall promptly notify the other Party in writing of the possible infringement and such notice shall describe in detail the information suggesting the infringement of the Cellectis IP or the Joint IP.

Prior to commencing any action to enforce a Cellectis IP or a Joint IP, the Parties shall diligently enter into good faith negotiations on the desirability to bring a suit, the Parties to the action and the selection of counsel, and any such matters as the Parties need to discuss.

If Servier is the Party designated by the Parties to initiate the action (such decision shall be subject, without limitation, to the rights of the Third Parties owners of Cellectis Patents at the 2014 Agreement Date), Servier shall have the right, but not the obligation, to enforce Cellectis IP and Joint IP against any actual, alleged or threatened infringement or misappropriation by Third Parties in the Territory, in the Field and related to a Product, at Servier's sole costs. In the event Servier elects to bring and prosecute such an action, Cellectis shall reasonably assist Servier and cooperate in any such action at Servier's request (and Servier shall reimburse all reasonable, documented, out-of-pocket expenses incurred by Cellectis in connection therewith), and Servier shall seek and reasonably consider Cellectis's comments before determining the strategy. Without limiting the foregoing, Servier shall keep Cellectis advised of all material communications, actual and prospective filings or submissions regarding such action, and shall provide Cellectis with copies of and an opportunity to review and comment on any such material communications, filings and submissions. Servier shall not settle, or consent to any judgment in, any action under this Section 7.5, without Cellectis's prior written consent, not to be unreasonably withheld or delayed.

If Cellectis is the Party designated by the Parties to initiate the action Cellectis shall be entitled to bring and prosecute such an action at Cellectis' sole cost and Servier will cooperate with Cellectis. If Cellectis elects to bring and prosecute such an action, then Cellectis shall seek and reasonably consider Servier's comments on strategy. Without limiting the foregoing, Cellectis shall keep Servier advised of all material communications, actual and prospective filings or submissions regarding such action, and shall provide Servier copies of and an opportunity to review and comment on any such material communications, filings and submissions. Cellectis shall not settle, or consent to any judgment in, any action under this 7.5, without Servier's prior written consent, not to be unreasonably withheld or delayed.

For sake of clarity, nothing in this Agreement shall be understood as affecting or reducing the Cellectis's right to enforce Cellectis Patents in the Field and in the Territory.

In any case, Servier shall not take any actions which can affect the scope, the validity, the enforceability or otherwise the Cellectis Patents without the Cellectis's prior written approval.

ARTICLE 8. CONFIDENTIAL INFORMATION

8.1. During the term of this Agreement and for a period of [***] after its termination or expiration, each Party and/or its Affiliates (the "Receiving Party") undertakes to keep strictly confidential and not to publish or disclose to a Third Party, all the information which is transmitted visually, orally, in writing, in electronically, or in any and all other manner by the other Party and/or its Affiliates (the "Disclosing Party") pursuant to and in accordance with this Agreement, and/or relating to this Agreement, each Program, each Pre-Candidate Product or Candidate Product or Product and intellectual property (the "Confidential Information") without the prior written consent of Disclosing Party. The Joint IP shall be deemed Confidential Information of both Parties.

8.2. The Receiving Party shall only be entitled to disclose, on a need to know basis for the purpose of the performance of this Agreement, Confidential Information to its directors, employees, Affiliates, consultants, sublicensees, licensors, subcontractors, or to a potential investor in the Receiving Party or to a potential acquirer of all or substantially all of the assets of the business to which this Agreement pertains (collectively the "Authorized Recipients"); provided that (i) the Receiving Party has previously informed the Disclosing Party of its intent to communicate Confidential Information and keep available upon the Disclosing Party's request the content of such communication, and (ii) the Receiving Party has taken into good faith consideration the comments made by the Disclosing Party, and (iii) the Receiving Party considers in good faith the Disclosing Party's request to be communicated the name of the potential investor(s) or potential acquirer(s), and (iv) the Receiving Party has bound such Authorized Recipients by confidentiality and restricted use obligations at least as stringent than those set forth in this Agreement. The Receiving Party shall be responsible towards the Disclosing Party for any breach by its Authorized Recipients of any such confidentiality and restricted use obligations.

8.3. Notwithstanding Article 8.1, the Receiving Party may use or disclose those information to the extend it can demonstrate, by clear and convincing evidence, that such information:

(a) at the time of disclosure or acquisition is generally available to the public, or after the time of disclosure or acquisition is generally available to the public through no wrongful act or omission of the Receiving Party and its Authorized Recipients, or

(b) was in the lawful possession and at the free disposal of the Receiving Party prior to disclosure by the Disclosing Party, as evidenced by written records then in the possession of the Receiving Party, or

(c) is rightfully made available to the Receiving Party by third parties not bound by confidentiality or restricted use obligations, or

(d) is independently developed by the Receiving Party without use of the Material and information imparted by the Disclosing Party, or

(e) is disclosed by the Receiving Party in order to comply with the requirements of applicable law, governmental regulation or definitive court order, provided that the Receiving Party shall first notify the Disclosing Party of such required disclosure and of each Confidential Information concerned and shall limit such disclosure as far as possible under applicable law. Such disclosure shall, however, not relieve the Receiving Party of its other obligations contained herein.

8.4. Upon termination of this Agreement, the Receiving Party will return or destroy all documents or other media containing Confidential Information of the Disclosing Party, provided however that the Receiving Party may retain one copy in its confidential files for the sole purpose of verifying its obligations hereunder.

8.5. Remedies. Money damages will not be an adequate remedy if this Article 8 is breached and, therefore, either Party may, in addition to any other legal or equitable remedies, seek an injunction or other equitable relief against such breach or threatened breach without the necessity of posting any bond or surety.

8.6. Publications**.** Prior to any publication in relation to the performance of the Programs, the publishing Party agrees to provide the other Party with a copy of the paper or proposal for publication or for any other public disclosure at least [***] prior to its submission for publication or public disclosure. The other Party may review the manuscript solely in order to:

- ascertain whether its Confidential Information would be disclosed by the publication; and
- identify results that are potentially patentable technology so that appropriate steps may be taken to protect such technology, pursuant to Section 7.

The non-publishing Party agrees to hold such advance copies of any papers or proposals for publication in confidence. The non-publishing Party will provide comments, if any, within [***] of receipt of paper or abstract. If the non-publishing Party decides, according to Section 7, that a patent application should be filed, the publication or presentation may, at the non-publishing Party's request, be delayed an additional [***] or until a patent application is filed, whichever is sooner.

Authorships of any publications will accurately reflect respective contributions made by the Parties.

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

ARTICLE 9. REPRESENTATIONS; WARRANTIES AND COVENANTS

9.1. Representations and Warranties of both Parties. Each Party represents and warrants to the other Party, at the 2014 Agreement Date and at the Effective Date, that:

(i) such Party is duly incorporated, validly existing and in good standing under the laws of the jurisdiction of its incorporation and has full corporate power and authority to enter into this Agreement and to carry out the provisions hereof;

(ii) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid and binding obligation, enforceable against it in accordance with the terms hereof, subject to (a) the effect of applicable bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the rights of creditors and (b) the effect or availability of rules of law governing specific performance, injunctive relief or other equitable remedies (regardless of whether any such remedy is considered in a proceeding at law or in equity);

(iii) the execution and delivery of this Agreement by such Party do not, and the performance of this Agreement by such Party, including the grant of rights to the other Party pursuant to this Agreement, will not: (a) conflict with, or result in any violation of or default under, any agreement, instrument or understanding, oral or written, to which it or any Affiliate is a party or by which it or any Affiliate is bound; (b) conflict with any rights granted by such Party to any other Third Party or breach any obligation that such Party has to any Third Party; or (c) violate any provision of any applicable law; and

9.2. Representations and Warranties of Cellectis

Cellectis hereby represents that, at the 2014 Agreement Date and at the Effective Date (with the exception of the representation and warranties made under 9.2.5 and 9.2.7 which are made at the 2014 Agreement Date only):

9.2.1 Cellectis has the right to grant the rights granted to Servier under this Agreement, and no rights granted to Servier pursuant to this Agreement are in violation of any agreement between Cellectis or any of its Affiliates and any Third Party;

9.2.2 It has sufficient legal and/or beneficial title and ownership under the Cellectis Patents and Licensed Cellectis Know-How to grant the licenses to the other Party as purported to be granted pursuant to this Agreement;

9.2.3 None of Cellectis or its Affiliates, or, to the knowledge of Cellectis, any Third Party acting by or on behalf of Cellectis or any of its Affiliates in connection with the research, development or manufacture of the Pre-Candidate Product, Candidate Product or Product has been debarred or is subject to debarment;

9.2.4 Cellectis Controls the Cellectis Patents listed on the patents set forth on Exhibit 2 (A), free of any liens. The Cellectis Patents in the Territory listed on Exhibit 2 (A) constitute a true and complete list of all Patents Controlled by Cellectis or its Affiliates in the Territory relating to the Pre-Candidate Product, Candidate Product or Product in the Territory;

9.2.5 [***]

9.2.6 [***]

9.2.7 [***]

9.2.8 [***]

9.2.9 [***]

9.2.10 [***]

9.2.11 [***]

[***]

9.3. Cellectis Covenants

Cellectis shall [***] to maintain any existing agreement with Third Party(ies), to the extent the rights and licenses granted to Cellectis thereunder are sublicensed to Servier hereunder, and shall not modify, amend, terminate or breach those Third Party(ies) agreement, if such modification, amendment, termination or breach would adversely affect Servier's rights under this Agreement (after taking into account any period(s) permitted to cure alleged breaches).

9.4. Mutual Disclaimer of Warranties.

Except as expressly provided in this Agreement, neither Party makes any warranty of any kind either express or implied relating to the Patents, Know-How, Products, Pre-Candidate Products, Candidate Products, processes used in the Development of the Pre-Candidate Product, Candidate Product or Products, including without limitation any warranty regarding their use, safety, efficacy, or performance, any warranty of merchantability or any warranty for fitness for any particular purpose or a warranty or representation that anything made, used, sold, or otherwise disposed of under the license granted in this Agreement is or will be free from infringement of patents, copyrights, and other rights of Third Parties or any other express or implied legal or contractual warranty.

ARTICLE 10. INDEMNIFICATION; INSURANCE

10.1. Indemnification by Servier.

Servier will indemnify, defend and hold harmless Cellectis, and its Affiliates, and their respective directors, officers, employees, licensees, and agents, from and against any and all liabilities, damages, losses, claims, costs and expenses including, but not limited to, the reasonable fees of attorneys and other professionals (collectively "Losses"), arising out of or resulting from any and all Third Party Claims based upon:

(i) [***]

(ii) [***]

[***]

10.2. Indemnification by Cellectis.

Cellectis will indemnify, defend and hold harmless Servier and its Affiliates, and their respective directors, officers, employees and agents, from and against any and all Losses, arising out of or resulting from any and all Third Party Claims based upon:

(i) [***]

(ii) [***]

[***]

10.3. Procedure.

In the event that any person or entity (an "Indemnitee") entitled to indemnification under this Agreement is seeking such indemnification, such Indemnitee will: (a) inform, in writing, the indemnifying Party of the Claim as soon as reasonably practicable after such Indemnitee receives notice of such Claim; (b) permit the indemnifying Party to assume direction and control of the defense of the Claim (including the sole right to settle it at the sole discretion of the indemnifying Party; provided that such settlement does not impose any obligation on, or otherwise adversely affect, the Indemnitee or other Party); (c) cooperate as requested (at the expense of the indemnifying Party) in the defense of the Claim; and (d) undertake all reasonable steps to mitigate any loss, damage or expense with respect to the Claim(s). Notwithstanding the foregoing, the Indemnitee may retain separate co-counsel reasonably acceptable to the indemnifying Party at its sole cost and expense and participate in the defense of the applicable Claim for which the indemnifying Party has assumed control.

10.4. In no event shall either Party be liable to the other Party for loss of profits, special, indirect, incidental, punitive or consequential damages arising out of this Agreement or the transactions contemplated by this Agreement.

10.5. Insurance.

Each Party has maintained, at its cost, as of the 2014 Agreement Date and until the Effective Date, and each Party will maintain, at its cost, as of the Effective Date and during the Term thereafter, adequate insurance against liability and other risks associated with its activities contemplated by this Agreement, including but not limited to its clinical trials and its indemnification obligations herein, in such amounts and on such terms as are customary for prudent practices in the pharmaceutical industry for the activities to be conducted by it under this Agreement.

ARTICLE 11. TERM AND TERMINATION

11.1. Term.

(a) This Agreement will become effective as of the Effective Date and, unless earlier terminated pursuant to the provisions of Sections 11.1(b), 11.2 or 12.2.3, will expire upon the later to occur of the last sales of the Product or the US Partner Product, provided that all rights and licenses granted by Cellectis to Servier pursuant to Section 4.3(a), and subject

to Section 11.1(b), all obligations to which the parties are bound hereunder with relation thereto, will continue in force and effect, to the extent such rights and licenses were not previously or concurrently terminated and will subsequently terminate in accordance with the terms of the US Partner Collaboration Agreement wherein such rights and licenses were initially granted to US Partner. Upon expiration of the Royalty Term with respect to a Product, the licenses granted by Cellectis to Servier under this Agreement with respect to such Product shall remain in effect as granted in accordance with this Agreement but become fully paid-up, royalty-free licenses until termination or expiration of this Agreement.

(b) The license granted pursuant to Section 4.3(a) herein shall terminate immediately upon the earlier to occur of (i) on a US Partner Product-by-US Partner Product basis, termination or expiration of the license granted by Cellectis to US Partner in respect of the [***] Cellectis Patents in further respect of a US Partner Product pursuant to the US Partner Collaboration Agreement, or (ii) on a US Partner Product-by-US Partner Product basis, termination or expiration of the license granted by US Partner to Servier in respect of a US Partner Product pursuant to the US Partner-Servier Agreement (as amended from time to time).

11.2. Termination.

Notwithstanding anything in this Agreement or elsewhere to the contrary, this Agreement may be terminated as follows:

11.2.1. Material Breach. Either Party (the "Non-Breaching Party") may, without prejudice to any other remedies available to it at law, terminate this Agreement in its entirety in the event the other Party (the "Breaching Party") will have committed a material breach and such material breach will have continued and/or remained uncured for ninety (90) days (except in the case of a failure to make any payment due under the terms of this Agreement, in which case such failure to pay must be cured within thirty (30) days), after written notice thereof was provided to the Breaching Party by the Non-Breaching Party. Any such termination will become effective at the end of such ninety (90) day period (or, in the case of a failure to make a payment, at the end of such thirty (30) day period), unless the Breaching Party has cured any such material breach prior to the expiration of such ninety (90) day period or thirty (30) day period, as the case may be or (ii) unless the Breaching Party notifies the other Party within such sixty (60) day period that it disagrees in good faith with such asserted basis for termination, this Agreement shall not terminate unless and until the matter has been finally resolved in accordance with Section 12.2 (Dispute Resolution) and the arbitration award rendered specifies that the non-breaching Party shall have the right to terminate this Agreement based on such asserted breach. The right of either Party to terminate this Agreement as provided in this Section 11.2.1 will not be affected in any way by such Party's waiver or failure to take action with respect to any previous default.

11.2.2. Mutual Consent. This Agreement may be terminated by the mutual written consent of the Parties.

11.2.3. [Intentionally left blank]

11.2.4 Termination for convenience by Servier

Servier shall have the right at its sole discretion and without any liability of any kind on the basis of such termination, to terminate this Agreement only with respect to a given Pre-Candidate Product, Candidate Product or Product or totally at any time upon three (3) month's prior written notice to Cellectis.

11.2.5 Termination for Safety Reasons by Servier

Servier may terminate this Agreement any time for safety reasons relating to the Pre-Candidate Product, Candidate Product or Products.

11.2.6 Termination for Insolvency.

Either Party may terminate this Agreement if, at any time, the other Party will file in any court or agency pursuant to any statute or regulation of any state or country, a petition in bankruptcy or insolvency or for the appointment of a receiver or trustee of the Party or of substantially all of its assets, or if the other Party proposes a written agreement of composition or extension of substantially all of its debts, or if the other Party will be served with an involuntary petition against it, filed in any insolvency proceeding, and such petition will not be dismissed within ninety (90) days after the filing thereof, or if the other Party will propose or be a party to any dissolution or liquidation, or if the other Party will make an assignment of substantially all of its assets for the benefit of creditors.

Upon the bankruptcy of any Party, the non-bankrupt Party will further be entitled to a complete duplicate of, or complete access to, any such intellectual property, and such, if not already in its possession, will be promptly delivered to the non-bankrupt Party, unless the bankrupt Party elects to continue, and continues, to perform all of its obligations under this Agreement.

11.3. Effects of Expiration or Termination.

11.3.1. In the event of any termination of this Agreement by Cellectis on the basis of either a Material Breach by Servier (section 11.2.1) or insolvency of Servier (section 11.2.6) or by Servier for convenience (section 11.2.4), or for safety reasons (section 11.2.5), or by the Parties upon mutual consent (section 11.2.2), or in case of exercise of the Opt-Out Option (Section 3.6):

(i) Servier will return to Cellectis or destroy (and certify such destruction to Cellectis) all Cellectis Confidential Information (provided that Servier shall be entitled to retain one (1) copy for archival and compliance purposes, and as required by applicable Law or regulatory requirement);

(ii) Servier will use reasonable efforts to, to the extent permitted by applicable law and requested by Cellectis, assign any contracts related to the Pre-Candidate Products, Candidate Products or Products in the Territory to Cellectis or its designee (including by requesting and using good-faith efforts to obtain any required consents);

(iii) the Parties shall transition responsibility for Commercialization, Development and, if applicable, Manufacture of the Pre-Candidate Product(s), Candidate Product(s) or Product(s) to Cellectis in accordance with Section 11.6 (Transition Period);

(iv) the Parties shall cooperate to promptly transition sole responsibility for the prosecution, maintenance and enforcement in the Territory of Servier IP to Cellectis;

(v) Cellectis shall have the right to reacquire some or all of the inventory of the Pre-Candidate Product(s), Candidate Product(s) or Product(s), as requested by Cellectis, in possession of Servier and its Affiliates and, if Cellectis so reacquires inventory, shall reimburse Servier the price paid by it for such inventory;

(vi) the Parties shall cooperate to promptly transfer ownership of all regulatory filings and regulatory approvals (including any such filings and approvals related to manufacturing), and responsibility for regulatory communication held by Servier in the Territory to Cellectis;

(vii) all sublicenses granted by Servier shall terminate;

(viii) Servier will assign to Cellectis the Servier's interest in the Product Joint IP under terms and conditions to be agreed upon by the Parties. Servier will assign to Cellectis, without any financial compensation, the Servier's interest in the Platform Joint IP.

(ix) Subject to section 11.3 (viii) above, Servier will grant Cellectis a royalty-bearing, non-exclusive, sublicensable license under Servier IP that is necessary to further Develop, Manufacture and Commercialize the Pre-Candidate Product, Candidate Product or Product(s) in the Territory in the Field.

(x) Cellectis shall have the right to control all recalls of the Product in the Territory, and in each case Servier shall provide any reasonable assistance requested by Cellectis in connection therewith; and

(xi) at Cellectis's request, the Parties will discuss in good faith the wind-down or transfer to Cellectis of any ongoing clinical trials for the Candidate Products or Products conducted by or on behalf of Servier or its Affiliates; *provided* that Cellectis shall bear any expenses incurred in connection with any such transfer except in the event of termination by Cellectis pursuant to Section 11.2.1 (Termination for Material Breach).

In the event that the Parties are not permitted to transfer regulatory filings or regulatory approvals under clause (vi) above pursuant to applicable laws, the Parties shall cooperate to establish a right of access and reference to such filings and approvals for Cellectis, and Servier shall maintain such filings and approvals, and take any actions reasonably requested by Cellectis with respect thereto, and thereafter Servier shall transfer ownership of all such regulatory filings and regulatory approvals to Cellectis or its designee as and when it becomes permissible to do so. Cellectis shall reimburse Servier its reasonable, documented, out-of-pocket costs incurred as necessary for such maintenance and to perform such requested actions.

11.3.2. In case of termination of this Agreement for Servier breach pursuant to Article 11.2.1 of this Agreement, and at the US Partner's request, Cellectis agrees to enter into good faith negotiations for a direct license to the US Partner with respect to UCART19 and UCART [***] Candidate Products or Products on terms substantially similar in scope and grant; provided that (i) the US Sublicense was properly granted in compliance with the terms of this Agreement, and (ii) the US Partner was in compliance with the terms of such US Sublicense and the applicable provisions of this Agreement.

11.4. Consequences of a breach of the Non-Compete obligation by Cellectis

In the event of a breach by Cellectis of the non-compete provision mentioned in section 3.9 above, then as of the date of the breach by Cellectis, Servier's obligations as per this Agreement shall be modified as follows:

(i) Servier shall be relieved from the payment of the Milestones mentioned in sections 6.3 and 6.4 not already paid by Servier; and

(ii) the level of royalties due to Cellectis mentioned in section 6.5 above shall be reduced by [***]; and

(iii) the level of the Net Revenues to be paid by Cellectis to Servier on the basis of section 4.1 (c) (i), (ii) and/or (iii) shall be [***] and shall also apply mutadis mutandis to the sales by Cellectis of the competing product; and

(iv) notwithstanding any section to the contrary in this Agreement, Servier shall no longer have any obligation to provide information to Cellectis in relation to the Products (except as provided by applicable laws and in relation to safety issues); and

(v) notwithstanding any section to the contrary in this Agreement, Servier shall no longer have any obligation to use Commercially Reasonable Efforts to Develop and/or commercialize the Product(s).

11.5. Accrued Rights and Obligations; Survival.

Termination or expiration of this Agreement for any reason will be without prejudice to any rights that will have accrued to the benefit of any Party prior to such termination, relinquishment or expiration. Such termination, relinquishment or expiration will not relieve any Party from obligations which are expressly indicated under this Section 11.6 to survive termination or expiration of this Agreement.

Survival. The provisions of Sections 8, 10, 11.3 and 11.6 will survive the expiration or any termination of this Agreement for any reason, in accordance with their respective terms and conditions, and for the respective duration stated therein, and where no duration is stated, will survive indefinitely. In addition, any Section that is referred to in the above listed Sections shall survive solely for the interpretation or enforcement of the latters.

11.6. Transition Period.

In the event of any termination of this Agreement by Cellectis on the basis of either a Material Breach by Servier (section 11.2.1) or insolvency of Servier (section 11.2.6) or by Servier for convenience (section 11.2.4), or for safety reasons (section 11.2.5), or by the Parties upon mutual consent (section 11.2.2), or in case of exercise of the Opt-Out Option (Section 3.6), upon Cellectis's reasonable request, during the three (3) month period following provision of notice of termination (or, in each case, for such shorter period as Cellectis shall reasonably request) (the "*Transition Period*"), the Parties shall cooperate to transition the Development (including any ongoing trials, to the extent permitted by law) and Commercialization of, regulatory responsibility for, and, if applicable, manufacture of, the

Product in the Field in the Territory from Servier to Cellectis. Servier shall take all actions reasonably requested by Cellectis to facilitate such transition, and the Parties shall conduct such transition expeditiously and as reasonably necessary to minimize disruption in the Development and Commercialization of the Product(s) in the Territory. The Parties shall each be responsible for their own costs incurred in accordance with this Section.

ARTICLE 12. CHANGE OF CONTROL

12.1. Change of Control. Cellectis shall give Servier written notice within five (5) days after the public announcement or disclosure of any proposed Change of Control of Cellectis. Upon such notice, Servier shall have the right to buy-out Cellectis's interest in the Pre-Candidate Products, Candidate Products or Product(s) hereunder pursuant to the section 12.2 below (Buy-Out).

12.2. Buy-Out. Cellectis will notify Servier with [***] after the occurrence of a Change of Control. If Servier exercises its right to buy-out Cellectis's interest, Servier will provide written notice to Cellectis (a "Buyout Notice") within [***] following the Change of Control. Within [***] following Servier's provision of the Buyout Notice, the Parties will meet and negotiate the amount of the payment from Servier to Cellectis for the buy-out of Cellectis's interest in the Pre-Candidate Products, Candidate Products or Product(s) (the "Buyout Payment").

12.2.1. If the Parties agree on the amount of the Buyout Payment within such [***] period, then Servier will have [***] to determine whether to proceed with the buy-out at such price. If Servier elects to proceed with the buy-out at the agreed Buyout Payment, then it will provide written notice thereof to Cellectis (or its successor) and, this Agreement will terminate [***] after delivery of such written notice, Servier will pay the applicable Buyout Payment to Cellectis (or its successor) within such [***].

12.2.2. If the Parties fail to agree on an amount of a Buyout Payment within [***] following the provision of the Buyout Notice, then within [***] thereafter each Party will select and pay at its costs one (1) Third Party valuator (such valuators shall be from top-tier, internationally-recognized investment banks or accounting firms) with relevant expertise to determine the appropriate amount for the Buyout Payment. Each of the Parties will provide to such valuators such information as it deems pertinent and any information requested by such valuators. Such selected valuators will promptly (and in any event within [***] after the selection of such valuators) determine their respective valuation of the Buyout Payment amount and provide notice of such amount (and underlying assumptions and methodology) to each of the Parties. If the amount of the Buyout Payment estimated by one valuator is equal to or less than one hundred twenty percent (120%) of the amount of the Buyout Payment estimated by the other valuator, then the Buyout Payment shall be equal to the average of the amount proposed by the valuators. If the amount of the Buyout Payment estimated by one valuator is greater than one hundred twenty percent (120%) of the amount of the Buyout Payment estimated by the other valuator, then the Parties will mutually agree upon a third valuator. In such event, the Buyout Payment determined by the third valuator shall be the Buyout Payment (provided, that the Buyout Payment shall be capped at the amount of the higher of the Buyout Payments determined by the prior two valuators).

12.2.3. After determination of the Buyout Payment pursuant to Section 12.2.1 or 12.2.2 above, as applicable, Servier will have [***] to determine whether to proceed with the buy-out at such price. If Servier elects to proceed with the buy-out at the agreed Buyout Payment, then it will provide written notice thereof to Cellectis (or its successor) and this Agreement will terminate [***] after delivery of such written notice, Servier will pay the applicable Buyout Payment to Cellectis (or its successor) within such [***].

ARTICLE 13. MISCELLANEOUS

13.1. Public Announcements

Except as required by applicable laws or the rules of any stock exchange, neither Party will make any public announcement of any information regarding this Agreement or any activities under this Agreement without the prior written approval of the other Party, which approval will not be unreasonably withheld or delayed. Each Party will submit to the other Party any proposed announcements at least thirty (30) days prior to the intended date of publication of such announcement to permit review and approval. Once any statement is approved for disclosure by the Parties or information is otherwise made public in accordance with the preceding sentence, either Party may make a subsequent public disclosure of the specific contents of such statement without further approval of the other Party.

13.2. Dispute Resolution.

Any dispute, controversy, difference or claim which may arise between the Parties out of or in relation to or in connection with this Agreement (including arising out of or relating to the validity, construction, interpretation, enforceability, breach, performance, application or termination of this Agreement) shall be settled by binding arbitration in accordance with the provisions of this Section 13.2 (Arbitration):

- The arbitration shall be conducted in Paris, France.
- The arbitration shall be conducted in accordance with the Rules of Arbitration promulgated by the 'Centre de Médiation et d'Arbitrage de Paris –CMAP' then in effect (the *"Arbitration Rules"*).
- There shall be three (3) arbitrators, of whom one (1) shall be appointed by each of the Parties and the third shall be appointed by the first two (2) arbitrators and shall serve as chair arbitrator. If either Party fails to appoint its arbitrator or the arbitrators appointed by the Parties fail to appoint the chair arbitrator within the time period set forth in the Arbitration Rules, such arbitrators will be appointed in accordance with the Arbitration Rules.
- The proceedings shall be conducted in French, and the arbitrators shall be conversant with and have a thorough command of the French language.

13.3. Governing Law.

This Agreement and any dispute arising from the performance or breach hereof will be governed by and construed and enforced in accordance with the laws of France.

13.4. Assignment.

This Agreement will not be assignable by either Party to any Third Party without the written consent of the other Party hereto. Notwithstanding the foregoing, Cellectis may assign this Agreement, without the consent of the other Party, to an Affiliate or to an entity that acquires all or substantially all of the business or assets of Cellectis to which this Agreement pertains (whether by merger, reorganization, acquisition, sale or otherwise). Any assignment in violation of this provision is void and without effect.

13.5. Binding Agreement.

This Agreement, and the terms and conditions hereof, will be binding upon and will inure to the benefit of the Parties and their respective successors, heirs, administrators and permitted assigns.

13.6. Force Majeure.

No Party will be held liable or responsible to the other Party nor be deemed to be in default under, or in breach of any provision of, this Agreement for failure or delay in fulfilling or performing any obligation of this Agreement when such failure or delay is due to force majeure, and without the fault or negligence of the Party so failing or delaying. For purposes of this Agreement, "force majeure" is defined as causes beyond the control of the Party, including, without limitation, acts of God; laws of any government; war; civil commotion; destruction of production facilities or materials by fire, flood, earthquake, explosion or storm; labor disturbances; epidemic; and failure of public utilities or common carriers. In the event of force majeure, Cellectis or Servier, as the case may be, will immediately notify the other Party of such inability and of the period for which such inability is expected to continue. The Party giving such notice will thereupon be excused from such of its obligations under this Agreement as it is thereby disabled from performing for so long as such Party is so disabled, up to a maximum of ninety (90) days, after which time the Party not affected by the force majeure may terminate this Agreement. To the extent possible, each Party will use reasonable efforts to minimize the duration of any force majeure.

13.7. Notices.

Any notice or request required or permitted to be given under or in connection with this Agreement will be deemed to have been sufficiently given if in writing and personally delivered or sent by certified mail (return receipt requested), facsimile transmission (receipt verified), or overnight express courier service (signature required), prepaid, to the Party for which such notice is intended, at the address set forth for such Party below:

If to Cellectis :
8, rue de la Croix Jarry
75013 Paris Cedex
France
Attention: Chief Executive Officer
With a copy to:
Attention: General Counsel

If to Servier:
Les Laboratoires Servier

50 rue Carnot
92284 Suresnes Cedex
France
Attention: Alliance Management Director & US Licenses
[***]
With a copy to:
Attention: Director Contract Department
Les Laboratoires Servier
50 rue Carnot
92284 Suresnes Cedex
France

or to such other address for such Party as it will have specified by like notice to the other Parties, provided that notices of a change of address will be effective only upon receipt thereof. If delivered personally or by facsimile transmission, the date of delivery will be deemed to be the date on which such notice or request was given. If sent by overnight express courier service, the date of delivery will be deemed to be the next business day after such notice or request was deposited with such service. If sent by certified mail, the date of delivery will be deemed to be the third (3rd) day after such notice or request was deposited with the postal se13.8 Waiver. Neither Party may waive or release any of its rights or interests in this Agreement except in writing. The failure of either Party to assert a right hereunder or to insist upon compliance with any term or condition of this Agreement will not constitute a waiver of that right or excuse a similar subsequent failure to perform any such term or condition. No waiver by either Party of any condition or term in any one or more instances will be construed as a continuing waiver of such condition or term or of another condition or term.

13.8. Severability.

If any provision hereof should be held invalid, illegal or unenforceable in any jurisdiction, the Parties will negotiate in good faith a valid, legal and enforceable substitute provision that most nearly reflects the original intent of the Parties and all other provisions hereof will remain in full force and effect in such jurisdiction and will be liberally construed in order to carry out the intentions of the Parties hereto as nearly as may be possible. Such invalidity, illegality or unenforceability will not affect the validity, legality or enforceability of such provision in any other jurisdiction.

13.9. Entire Agreement.

This Agreement, including the schedules and exhibits hereto, sets forth all the covenants, promises, agreements, appendices, warranties, representations, conditions and understandings between the Parties hereto and supersedes and terminates all prior agreements and understandings between the Parties relating to the subject matter hereof. There are no covenants, promises, agreements, warranties, representations, conditions or understandings, either oral or written, between the Parties relating to the subject matter hereof other than as set forth herein and therein. No subsequent alteration, amendment, change or addition to this Agreement will be binding upon the Parties hereto unless reduced to writing and signed by the respective authorized officers of the Parties.

13.10. Independent Contractors.

Nothing herein will be construed to create any relationship of employer and employee, agent and principal, partnership or joint venture between the Parties. Each Party is an independent contractor. Neither Party will assume, either directly or indirectly, any liability of or for the other Party. Neither Party will have the authority to bind or obligate the other Party and neither Party will represent that it has such authority.

13.11. Counterparts.

This Agreement may be signed in counterparts, each and every one of which will be deemed an original, notwithstanding variations in format or file designation which may result from the electronic transmission, storage and printing of copies of this Agreement from separate computers or printers. Facsimile signatures will be treated as original signatures.

IN WITNESS WHEREOF, the Parties have caused this License, Development and Commercialization Agreement to be executed by their duly authorized representatives.

Made in Suresnes, on March 6, 2019

For Cellectis SA,

By: /s/ André Choulika

Name: André CHOULIKA
Title: Chief Executive Officer

For Les Laboratoires Servier,

By: /s/ Eric Falcand

Name: Eric FALCAND
Title: Proxy

By: /s/ Christian Bazantay

Name: Christian BAZANTAY
Title: Proxy

For Institut de Recherche Internationales Servier

By: /s/ Dr Emmanuel Canet

Name: Dr Emmanuel CANET
Title: President of R&D

ANNEX I
DEFINITIONS

A.1. "Affiliates" means with respect to a Party, any person or entity, whether de jure or de facto, which directly or indirectly controls, is controlled by, or is under common control with such Party. Solely as used in this definition, the term "control" means (i) the ownership, directly or indirectly, beneficially or legally, of at least fifty percent (50%) of the outstanding voting securities or capital stock (or such lesser percentage which is the maximum allowed to be owned by a person or entity in a particular jurisdiction) of such Party or other person or entity, as applicable, or such other comparable ownership interest with respect to any person or entity that is not a corporation; or (ii) the possession, directly or indirectly of the power, whether pursuant to contract, ownership of securities or otherwise, to direct the management and policies of a Party or such other person or entity, as applicable.

A.2. "Agreement" means this License, Development and Commercialization Agreement together with the recitals and all exhibits, schedules and attachments hereto.

A.3. "Attribute" means a particular genome modification obtained by nucleases or any other methods, including without limitation knock out, knock in and point mutations.

A.4. "Background IP" means Patents and Know How Controlled by a Party prior to the 2014 Agreement Date and/or developed or acquired by such Party during, but outside of, this Agreement.

A.5. "Candidate Product" means a product developed by Cellectis as per the Original Agreement and/or this Agreement, consisting in an allogenic anti-tumor adoptive T-cell expressing a single chain chimeric antigen receptor (CAR) directed against a particular Target including specific Attributes selected by Servier according to Section 3.2.5(a).

A.6. "Cellectis IP" means any and all Cellectis Patent(s) and Know-How developed and/or Controlled by Cellectis and its Affiliates before the Effective Date or thereafter during the Term, that is necessary or useful for the Development, Manufacture and Commercialization of a Pre-Candidate Product, a Candidate Product, or a Product, as appropriate. For avoidance of doubt Cellectis IP shall include Cellectis' interest in the Joint Intellectual Property.

A.7. "Cellectis Know-How" means all Know-How that is developed or Controlled by Cellectis at the Effective Date and thereafter during the Term and (i) that results from Cellectis' activities with respect to the Development or (ii) is reasonably necessary or useful for the Development, Manufacture and/or Commercialization of a Pre-Candidate Product, a Candidate Product, or a Product, as appropriate.

A.8. "Cellectis Knowledge" means the knowledge, at the Effective Date that Cellectis has after due inquiry.

A.9. "Cellectis Patents" means all Patents that are Controlled by Cellectis and its Affiliates at the Effective Date and thereafter during the Term and that Cover, or would be reasonably necessary or useful for, the Development, Manufacture or Commercialization of

Pre-Candidate Product(s), Candidate Product(s), or Product(s), as appropriate,) (including its composition, formulation, combination, product by process, or method of use, manufacture, preparation or administration). Cellectis Patents shall include Cellectis' interest in Joint Patents that meet the above requirements, and in any event shall include those [***] Cellectis Patents and those other Patents set forth on Exhibit 2.

A.10. "Change of Control" means, with respect to Cellectis, the occurrence of any of the following events: (i) any Third Party begins to control (under the meaning of "control" set forth in Section 1.2 ("Affiliate")) Cellectis, directly or indirectly, by any means (including acquisition of shares, share exchange or share transfer); or (ii) Cellectis conveys, transfers, divests or leases (including general succession and all types of corporate split) in one or more transactions to any Third Party either: (x) all or substantially all of the assets of Cellectis or (y) all or substantially all of its assets that are material to the purpose of performance of its obligations under this Agreement.

A.11. "Claim" means any charge, complaint, action, suit, proceeding, hearing, investigation, claim or demand, including without limitation any investigation by a Governmental Authority.

A.12. "Clinical Development" means any and all Development activities performed by a Party following the achievement of animal in vivo proof of concept Milestone.

A.13. "Commercialization" means with respect to a Product any and all activities of marketing, promoting, distributing, importing, offering for sale, having sold and/or selling such Product in the Field in the Territory, including without limitation defining pricing and reimbursement strategy and approval and pre-launch marketing strategy.

A.14. "Commercially Reasonable Efforts" [***]

A.15. "Competent Authority" means any court, tribunal, regulatory agency of (a) any national, federal, state, provincial, county, city or other political subdivision government, including the FDA, (b) any supranational body (including the EMA).

A.16. "Competent Authority Approval" means any and all approvals, licenses, registrations or authorizations by a Competent Authority and necessary for the Development activities (including without limitation any applicable pricing, final labeling and reimbursement approvals of such Governmental Authority), and any MAA or equivalent.

A.17. "Control", "Controlled" or **"Controlling"** means, with respect to a subject item, the ability of a Party, whether arising by ownership, possession or pursuant to a license or sublicense, to grant licenses or sublicenses to another Party with respect to such subject item, as provided in this Agreement, without violating the terms of any agreement or other arrangement with any Third Party.

A.18. "Cover" "Cover", "Covered" or **"Covering"** means, with respect to a Pre-Candidate Product, a Candidate Product, or a Product, as appropriate, and a Patent, that, in the absence of a (sub)license under, or ownership of, such Patent, the making, using, offering for sale, selling or importing of such a Pre-Candidate Product, a Candidate Product, or a Product, as appropriate, with respect to a given country, would infringe a Valid Claim of such Patent.

A.19. "Data" means any and all research, pharmacology, medicinal chemistry, pre-clinical, clinical, commercial, marketing, process development, manufacturing and other data or information, including investigator brochures and reports (both preliminary and final), statistical analyses, expert opinions and reports, and safety data, in each case generated from clinical Studies or non-clinical studies, research or testing specifically related or directed to the Pre-Candidate Product(s), the Candidate Product(s) or Product(s).

A.20. "Designee" means a corporation or other entity that is employed by, under contract to, or in partnership with Servier, an Affiliate thereof, to Develop and/or Commercialize Products in the Territory.

A.21. "Development" means with respect to a Pre-Candidate Product, a Candidate Product, or a Product, as appropriate and on a Targeted Indication and Targeted Territory basis, the activities, including the Preclinical Development as well as the Clinical Development, performed by a Party as from the beginning of the work on a Pre-Candidate Product until and including the MAA filing for the relevant Product, including without limitation: activities related to research, process development and manufacturing, pre-clinical and clinical drug development of such Candidate Product and/or Product in its Targeted Indication in the Field and in its Targeted Territory, including without limitation, test method development and stability testing, assay development, toxicology, pharmacology, formulation, quality assurance, quality development, technology transfer, statistical analysis, process development, and scale-up, pharmakocinetic studies, data collection and management, clinical studies (including research to design clinical studies), regulatory affairs (including all necessary steps to Develop the Candidate Product and/or Product as an orphan drug, obtaining scientific advices), project management, drug safety surveillance activities related to clinical studies, validation of methods and tests.

A.22. "Development Plan" means, for each Candidate Product or Product, a working document describing the Targeted Indication(s), Targeted Territories, expected timelines, the preclinical, clinical, manufacturing, regulatory, as well as Candidate Product risk assessment planned activities up to the issuance of the Phase 1 Data Package by Cellectis to Servier. The JRDC may propose from time to time amendment to the Development Plan that shall be submitted to the JSC for validation as the circumstances may require and subject to Section 3.2.3 and 3.2.6(b). The Development Plans for UCART19 [***], UCART19 [***], UCART [***], UCART [***], and [***] are set forth in the Program Activities.

A.23. "Executive Officer" means the Chief Executive Officer of Cellectis and the Chief Executive Officer of Servier, or their duly authorized respective designees with equivalent decision-making authority with respect to matters under this Agreement.

A.24. "Field" means the anti-tumor adoptive immunotherapy.

A.25. "First Commercial Sale" means the first sale in the Territory to a Third Party of the Product by or under the authority of Servier or its Affiliate or sublicensees after receipt of the applicable regulatory approval from the Competent Authority(ies).

A.26. "Good Manufacturing Practices (cGMP)" means (i) EC Directive 2003/94/EEC as amended from time to time and all the relevant associated detailed guidelines; (ii) the current principles and guidelines of Good Manufacturing Practice for medicinal products for human use as required by, but not limited to, the applicable sections of the US Federal Food, Drug and Cosmetic Act, the US Public Health Service Act, the US Code of Federal Regulations, Title 21, Parts 210 (Current Good Manufacturing Practice in Manufacturing, Processing, Packing or Holding of Drugs; General), and relevant US Food and Drug Administration Guidance and Points to Consider for drugs and/or biotechnology-derived products, as amended from time to time; and (iii) the equivalent current law or regulation in any market.

A.27. "IND or IMPD Enabling Data Package" means preclinical studies, cell manufacturing and control data necessary for, at the election of Servier, either an IND filing in the US or IMPD filing in Europe, as described in Exhibit 3 of this Agreement. An updated list of the intellectual property rights Controlled by Cellectis that are associated with such IND or IMPD Enabling Data Package shall be included therein.

A.28. "In Vitro Data Package" [***]

A.29. "In-Vivo Milestone" [***]

A.30. "Joint Intellectual Property" or **"Joint IP"** means all intellectual property rights in Joint Inventions (which for the avoidance of doubt shall include Joint Know-How and Joint Patent).

A.31. "Joint Invention(s)" means an invention arising during the Term that is jointly created by one or more employees, consultants, or contractors of each Party or of any Affiliate or sublicensee of such Party in the course of performing activities under this Agreement.

A.32. "Joint Know-How" means all Know-How arising during the Term that is jointly created by one or more employees, consultants, or contractors of each Party or of any Affiliate of such Party in the course of performing activities under this Agreement.

A.33. "Joint Patent" means a Patent that claims a Joint Invention.

A.34. "Know-How" means all technical information, techniques, data, database rights, discoveries, inventions, practices, methods, knowledge, skill, experience, test data or information necessary for the discovery, development, manufacture use, sale or commercialization of a Pre-Candidate Product, a Candidate Product, or a Product, as appropriate.

A.35. "MAA" means, in relation to any Product, an application filed or to be filed with the European Medicines Agency (or equivalent national agency), for authorization to place a medicinal product on the market in the European Union (or any other territory).

A.36. "Manufacture" means with respect to a Pre-Candidate Product, a Candidate Product or a Product, any and all processes and activities conducted to manufacture preclinical, clinical and commercial quantities of such, in particular, the production, the manufacture, the processing, the filling, the packaging, the labeling, the inspection and the shipping of such Pre-Candidate Product, Candidate Product or Product. Manufacture shall also include the supply of any raw materials or packaging materials with respect thereto, or any intermediate of any of the foregoing, including process and cost optimization, process qualification and validation, commercial manufacture, stability and release testing, quality assurance and quality control. For clarity, "Manufacturing" has a correlative meaning.

A.37. "Manufacturing process validation" [***]

A.38. "[***] Product" or "[***] Candidate Product" means the Product or the Candidate Product directed against [***] Target, as described in [***] Development Plan, as set forth in the Program Activities.

A.39. "Milestone Data" means any information and results supporting the achievement of a Milestone.

A.40. "Net Revenues" [***]

A.41. "**Net Sales**" [***]

A.42. "Option Date" shall mean the date at which the Option to License over a particular Product is exercised by Servier pursuant to Section 4.1 (b).

A.43. "Other Product" or "Other Candidate Product" or "Other Pre-Candidate Product" means a Product or a Candidate Product directed against [***], [***] or [***] Targets.

A.44. "Patent" means (a) issued patent, including any extension, registration, confirmation, reissue, continuation, supplementary protection certificate, divisional, continuation-in-part, re-examination or renewal thereof, (b) pending applications for all of the foregoing, and (c) foreign counterparts of any of the foregoing; in each case to the extent the same has not been held, by a court of competent jurisdiction, to be invalid or unenforceable in a decision from which no appeal can be taken or from which no appeal was taken within the time permitted for appeal.

A.45. "Phase 1" means first time in human clinical trial in the first indication.

A.46. "Phase 1 Data Package" [***]

A.47. "Pre-Candidate Product" means a product developed by Cellectis as per the Original Agreement and/or this Agreement, consisting in an allogenic anti-tumor adoptive T-cell expressing a single chain chimeric antigen receptor (CAR) directed against a particular Target including specific Attributes.

A.48. "Preclinical Development" means any and all non-clinical Development activities performed by a Party until and including animal in vivo Proof of Concept Milestone.

A.49. "Product" means a Candidate Product selected by Servier according to Section 4.1 (b). Except for sections 6.2. and 6.3, Product also means a Substitute Product and/or a Subsequent Product.

A.50. "Program" means the Development activities performed or to be performed by Cellectis relating to a particular Pre-Candidate Product and Candidate Product up to and including IND or IMPD Enabling Data Package or up to and including Phase 1, as applicable, described in the Program Plan.

A.51. "Program Activities" means the activities set forth on Exhibit 4, which (A) have been approved by the JRDC as of the date hereof, describing the Development activities (a) performed for UCART19 [***], or (b) to be performed by Cellectis for (i) the UCART19 [***] and the two first UCART [***] Candidate Products, (ii) the first [***] Candidate Product, and (iii) the Other Pre-Candidate Products, and (B) are provided by the JRDC as per Section 3.2(b) for the other potential Pre-Candidate Product and Candidate Product(s).

A.52. "Program Term" means the duration of each Program.

A.53. "Royalty Term" means on a country-by-country basis and Product-by-Product basis, the period commencing on the First Commercial Sale of a Product in a country and ending on the latest of (a) expiration of the last-to-expire Valid Claim of a Cellectis Patent that Covers such Product in such country or (b) the expiration of the Regulatory Exclusivity Rights with respect to such Product in such country.

A.54. "Servier IP" means any and all Servier Patent(s) and Know-How developed and/or Controlled by Servier and its Affiliates after the 2014 Agreement Date that is necessary or useful for the discovery, development, manufacture, use, sale or commercialization of a Pre-Candidate Product, a Candidate Product or a Product, as appropriate. For avoidance of doubt Servier IP shall include Servier' interest in the Joint Intellectual Property.

A.55. "Servier Know-How" means all Know-How that is developed or Controlled by Servier after the 2014 Agreement Date and thereafter during the Term and (i) that results from Servier's activities with respect to the Development or (ii) is reasonably necessary or useful for the Development, manufacture, and/or Commercialization of a Pre-Candidate Product, a Candidate Product or a Product, as appropriate.

A.56. "Servier Patent" means all Patents that are Controlled by Servier and its Affiliates after the 2014 Agreement Date and thereafter during the Term and that Cover, or would be reasonably necessary or useful for, the Development, manufacture or Commercialization of the Pre-Candidate Product(s), Candidate Product(s) or the Product(s) (including its

composition, formulation, combination, product by process, or method of use, manufacture, preparation or administration). Servier's Patents shall include Servier's interest in Joint Patent that meet the above requirements.

A.57. "Servier Product" means UCART19 [***], corresponding to an allogeneic anti-tumor adoptive T-cell expressing a single chain chimeric antigen receptor (CAR) directed against [***] target, and including specific attributes, as initially developed by Cellectis as per this Agreement, and that are initially licensed by Cellectis to Servier as per this Agreement together with any additional allogeneic anti-tumor adoptive T-cell CARs that bind to [***] as may be optioned by Servier from Cellectis under this Agreement.

A.58. "Servier Sublicensee" means a sublicensee of Servier pursuant to this Agreement, which, for the avoidance of doubt, does not include any sublicense to the [***] Cellectis Patents not owned by Cellectis and/or [***].

A.59. "Servier Targets" means the Targets separately identified in writing to Cellectis by Servier on the date of this Agreement and identified as Servier Targets for the purpose of this Agreement (the "**Target Notice**").

A.60. "Servier Territory" means the world other than the US Partner Territory.

A.61. "Subsequent Product" [***]

A.62. "Substitute Product" [***]

A.63. "[***]" means an artificial restriction enzyme consisting of one or more polypeptides that comprise a sequence from a transcription activator-like effector protein designed to recognize and cleave a recognition site in a target sequence, engineered and sold by Cellectis or its Affiliates in the framework of this Agreement. [***].

A.64. "[***] Cellectis Patents" means the patent and patent applications included in Exhibit 2 of this Agreement.

A.65. "Target" means an antigen expressed on the cell surface of a tumor cell, as listed in Exhibit 5.

A.66. "Targeted Indication" means with respect to a Pre-Candidate Product, a Candidate Product or a Product, the therapeutic indication determined in such Product's Development Plan, and within the Field.

A.67. "Targeted Territory" means with respect to each Pre-Candidate Product, Candidate Product or Product, the following country(ies) or region(s): [***]

A.68. "Term" will have the meaning assigned to such term in Section 11.1.

A.69. "Territory" means any and all countries of the world.

A.70. "Third Party" means any person or entity other than Cellectis, Servier or an Affiliate of Cellectis or Servier.

A.71. "UCART19 Product" or "UCART19 Candidate Product" [***]

A.72. "UCART19 [***]" [***]

A.73. "UCART19 [***]" [***]

A.74. "UCART [***] Product" or "UCART [***] **Candidate Product"** means a Product or a Candidate Product directed against [***] Target.

A.75. "US Partner" means Allogene Therapeutic, Inc., which is a party, together with Servier, to an exclusive license and collaboration agreement pursuant to which Servier sublicensed the US Partner development and commercialization rights for UCART19 and UCART [***] Products in United States of America.

A.76. "US Partner Product Field" means human anti-tumor adoptive immunotherapy.

A.77. "US Partner Product" means an allogeneic anti-tumor adoptive T-cell expressing a single chain chimeric antigen receptor (CAR) targeting [***], and including specific attributes, as initially developed by Cellectis as per the Agreement, and that are initially licensed by Cellectis to Servier as per the US Partner Collaboration Agreement.

A.78. "US Partner Territory" means the United States of America and its territories and possessions.

A.79. "US Sublicense" means an exclusive sublicense agreement with the US Partner for the development and commercialization of UCART19 Products and UCART [***] Products in the United States of America and its territories and possessions.

A.80. "Valid Claim" means a claim of an issued and unexpired patent or patent application included in a Patent, which claim has not been revoked or held invalid or unenforceable by a court or other government agency of competent jurisdiction or has not been held or admitted to be invalid or unenforceable through re-examination or disclaimer, reissue, opposition procedure, nullity suit or otherwise. Notwithstanding the foregoing, if a claim of a pending patent application within a Patent has not issued as a claim of a patent within [***] after the filing date from which such claim takes priority, such claim shall not be a Valid Claim for the purposes of this Agreement, unless and until such claim issues as a claim of any issued patent (from and after which time the same would be deemed a Valid Claim subject to the first sentence of the definition above). With respect to a claim of a pending patent application, the phrase to "infringe a Valid Claim" shall mean to engage in activity that would infringe such claim if it were contained in an issued patent.

EXHIBIT 1
Fees, Payments and Royalties

A.1. Upfront Fee. In consideration for the signature of the 2014 Agreement, Servier paid Cellectis the non-refundable and non-deductible lump sum payment of two million five hundred thousand euros (2,500,000 €), excluding taxes, within [***] of the 2014 Agreement Date and receipt of the corresponding invoice.

A.2. License Fees. Upon exercise of each Option to License for Products pursuant to Section 4.1 herein (except for Substitute Products), Servier will pay Cellectis the non-refundable and non-deductible lump sum payment of [***].

Upon exercise of each Option to License for Subsequent Products pursuant to Section 4.1 herein, Servier will pay Cellectis the non-refundable and non-deductible lump sum payment of [***], excluding taxes.

A.3. Milestone event Payments to Cellectis.

(a) In consideration for the rights granted to Servier under this Agreement Servier will pay to Cellectis for each Candidate Product, Product, Substitute Product or Subsequent Product the following non-refundable milestone payments upon the occurrence of each event as set forth below. No milestone payment will be owed by Servier to Cellectis if the corresponding event to which such milestone payment relates is not deemed as achieved by the JSC pursuant to Section 3.5.

Milestone event	**Milestone payment** (in €)
[***]	[***]

(b) The non-refundable milestones set forth below shall be paid in full for the Candidate Product or the Product (as applicable).

(c) Those milestones set forth below, when already paid for the Candidate Product or the Product, shall not be paid a second time for the Substitute Product. For sake of clarity, the milestones that have not been paid for the Candidate Product or Product shall be paid in full for the Substitute Product.

(d) For Subsequent Products, those milestones shall only be paid at [***] (i.e. the [***] milestone shall only be [***]). For the avoidance of doubt, the first UCART19 Product that reaches the applicable milestone under Section A.3(f) of this Exhibit 1 shall bear [***] of such milestone payments and the second shall bear [***] of such milestone payment, as per this Section A.3(d).

(e) No milestone payment will be owed by Servier to Cellectis if the corresponding event to which such milestone payment relates is not deemed as achieved by the JSC pursuant to Section 3.5.

(f) Servier will pay to Cellectis the following non-refundable milestone payments upon the occurrence of each event:

Milestone event	**Milestone payment** (in €)
[***]	[***]

(g) In the event that Servier grants rights relating to Cellectis IP for the Development and/or Commercialization of a Candidate-Product or Product (including but not limited to a right of first refusal, or a right of first negotiation, or an option) to a Third Party for the territory of the United States of America before the date of exercise of each Option to License pursuant to section 4.1, on a Candidate Product-by-Candidate Product or Product-by-Product basis, Servier undertakes to pay to Cellectis an amount equal to [***] of all sums received by Servier from such Third Party, for such right, before the date of exercise of each Option to License until [***] on a Product by Product basis. Notwithstanding the foregoing, for UCART19 Products and UCART [***] Products, in the event that Servier grants rights relating to Cellectis IP for the Development and/or Commercialization of a Candidate-Product or Product (including but not limited to a right of first refusal, or a right of first negotiation, or an option) to a Third Party for the territory of the United States of America before the date of exercise of each Option to License pursuant to section 4.1, on a Candidate Product-by-Candidate Product or Product-by-Product basis, Servier undertakes to pay to Cellectis an amount equal to [***] of all sums received by Servier from such Third Party, for such right, before the date of exercise of each Option to License [***].

Upon Cellectis' request, Servier shall provide to Cellectis a redacted version of the part of the US Sublicense containing the development milestones payable, on a Product by Product basis, to Servier by the US Partner [***].

A.4. Sales Milestones to Cellectis.

Servier shall pay the following sales milestones the first time that annual Net Sales of a Product reach the following thresholds:

First time annual Net sales of a Product reaches	**Milestone payment** (in €M)
[***]	[***]

A.5. Royalties to Cellectis.

During the Royalty Term(s), Servier shall pay royalties to Cellectis on annual Net Sales of the Products:

Aggregate annual Net Sales of the Products	Royalty
[***]	[***]

For sake of clarity, any and all milestones due under A.4 and A.5 of this Exhibit 1 are due for UCART19 Products and Subsequent Products and UCART [***] Products.

A.6. Royalty Reductions

(a) Joint Patent(s). Notwithstanding the foregoing, should a Product, at any time, be solely Covered by Joint Patent in a given country within the Territory, then the royalties payable by Servier to Cellectis for such Product in such country shall be reduced by [***] of the amount otherwise payable hereunder (e.g., [***]) as of the date such situation occurs.

(b) Competition on the Target. Notwithstanding the foregoing, if there are and as soon as there are, in a given country within the Territory, sales of an allogeneic CART cell therapy targeting the same Target as a Product occurring before the First Commercial Sale of a Product, the royalties payable to Cellectis hereunder for the Product in such country shall be reduced by [***] of the amount otherwise payable hereunder (e.g., [***]) as of the date of such first sales.

(c) Third Party Royalty Payments. If Servier or any of its Affiliates or sublicensee (i) determines in its good faith judgment with advice from a external legal attorney that it is necessary or advisable to obtain a license from any Third Party in order to make, have made, use, sell, offer for sale or import any Product and pursuant to such license is required to pay any consideration, in the form of a royalty based on sales of such Product, or (ii) is required by any court of competent jurisdiction to pay damages and/or such license fees to such a Third Party in order to make, have made, use, sell, offer for sale or import any Product, then Servier shall use commercially reasonable efforts to negotiate a favorable economic license and Servier will be entitled to deduct up to [***] of such payments (until full reimbursement by Cellectis) from the royalties associated to such Product otherwise payable under Section A.5 of this Exhibit 1 (Royalties to Cellectis), provided however that in a given year, Royalties of Cellectis shall not be reduced of more than [***] than the initial value stated in Section A.5 of this Exhibit 1.

(d) The foregoing shall be without prejudice to any payment Cellectis has to make to Third Parties on the basis of intellectual property that: (i) is licensed by Cellectis prior to or as of the Effective Date; (ii) is intellectual property that Cellectis had knowledge of potential infringement from a Third Party prior to the exercise by Servier of the exclusive Option to License and that Cellectis did not disclose same to Servier in writing at that time at the latest; or (iii) is licensed or acquired by Cellectis after the Effective Date without Servier's prior written consent and related to the Product or uses or methods of manufacture thereof (or of its components).

A.7. Milestones already achieved at the Effective Date

(a) The Parties hereby acknowledge that the following Milestones have been achieved and the following payments have been paid by Servier as of the Effective Date.

Upfront payments and milestones (2014 Agreement)	Payment Amount
[***]	[***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

EXHIBIT 2

[***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

EXHIBIT 3

[***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

EXHIBIT 4

[***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

EXHIBIT 5

[***]

[***] CONFIDENTIAL MATERIAL REDACTED AND SEPARATELY FILED WITH THE COMMISSION.

Confidential
CLS-16186

MANAGEMENT SERVICES AGREEMENT

This Agreement is made by and between **CELLECTIS SA,** a French *Société Anonyme,* located at 8, rue de la Croix Jarry, 75013 Paris, France, (hereinafter "CLS"); **CELLECTIS, INC.,** a Delaware corporation, located at 430 East 29th Street, New York, New York, 10016, USA (hereinafter "CLI"); and **CALYXT, INC.,** a Delaware corporation, located at 600 County Road D West, Suite 8, New Brighton, MN 55112, USA, (hereinafter "CLX"). CLS, CLI, and CLX are thereafter named individually, a "Party" and together the "Parties".

WHEREAS:

The Parties are members of the same group of companies (the **"Group"**). CLS is the parent company of CLI and CLX (the **"Subsidiaries"**).

Because of its size and position in the global market, CLS has, within its corporate headquarters, a large number of staff that carries out a number of specialized functions. Through its headquarters' staff, CLS carries out a number of activities from which the Subsidiaries, directly or indirectly, benefit.

Because of its specificity, each Subsidiary has a qualified staff. Each Party wishes to benefit from other Subsidiaries capacity in particular domains.

For the purpose of the present agreement, each Party which provides the Services for the benefit of another Party is called the **"Provider"** and each Party which receives the Services from another Party is called the **"Beneficiary"**.

Each Party agrees that it is appropriate for a proportion of the costs incurred by the Provider which relate to activities carried out that directly or indirectly benefit the Beneficiary, either at the explicit request of the Beneficiary, or otherwise, to be charged by the Provider to the Beneficiary .

THE PARTIES AGREE AS FOLLOWS:

1. PURPOSE

The purpose of this agreement (the **"Agreement")** is to confirm in writing and to specify the terms and conditions of the provision by the Provider to the Beneficiary of the Services indicated below.

2. NATURE OF SERVICES

2.1 Each Party, as Provider, shall throughout the term of this Agreement, provide services as listed below (the **"Services")** that each of the other Parties, as Beneficiary, may require from time to time. The Subsidiaries shall act with the sole direction of Cellectis SA in providing the Services under this Agreement.

(i) Finances, including but not limited to investor relations, advices in structuring internal accounting, costs control; keeping of the mandatory books and accounts, support in structuring and developing internal administrative procedures; advice in conducting internal audit and assistance in internal audit, with the purpose of ensuring proper control; improving financial return on assets, assistance in the preparation of the budget and operating plans; assistance in compliance with fiscal obligations, such as filing tax returns, computing and paying taxes; management of local accounting function; assistance in evaluating financial needs; financial services and treasury; centralized foreign currency hedging and more generally centralized financial risks management in order to optimize costs.

(ii) Legal, including but not limited to legal advices on matters with domestic and international aspects and consequences; insurances; general tax and legal planning, including advice in reorganising and restructuring in order to optimize Beneficiary's performance; drafting and negotiation of agreements in accordance with applicable laws and regulations and the group standards.

(iii) Intellectual Property including but not limited filing, maintenance and prosecution of patent application and patents, defense of intellectual property rights.

(iv) Human Resources, including but not limited to contractual, administrative, social security and fiscal activities connected to the ordinary and extraordinary management of personnel; selection and hiring of personnel; assistance in defining career paths; assistance in defining compensations and benefit schemes (including stock option plans); definition of personnel evaluation process; training of personnel; supply of staff for limited period; coordination of the sharing of personnel on a temporary on a permanent basis; management of redundancies.

(v) Information Technology, including but not limited to building, development and management of the information system; study, development, installation and periodic/extraordinary maintenance of software; study, development, installation and periodic/extraordinary maintenance of hardware system; supply and transmission of data; backup services.

(vi) Research and Development, including but not limited to research and development activities.

(vii) Business Development, including but not limited to study, development and coordination of the marketing activities; study, development and coordination of the sale promotions; study, development and coordination of the advertising campaigns; providing industry forecast and/or market research; identifying of sales opportunities; providing representational and marketing services in overseas countries where a Beneficiary does not have a discrete presence of its own.

(viii) Communication, including but not limited to advice and support with respect to internal and external communications policy and techniques; providing a creditable, informative and continuing source of news material; publicising the activities as part of Group publicity; minimising the media impact of news stories which could adversely affect the Beneficiary's reputation; organising press briefings and interviews which demonstrate the Group' technology leadership in support of Beneficiary's marketing effort; providing guidance and direction in the development of Beneficiary's advertising campaigns; establishing and maintaining a Beneficiary's Internet site.

(ix) Strategy (General Management), including but not limited to assisting the Beneficiary in developing and implementing the strategic plan, including the identification of suitable acquisition targets; maintaining data on products, markets, competitors, forecasts ... necessary for the planning process or divestments; assisting in the preparation of, or reviewing justifications for, acquisitions, disposals, business expansion, capital expenditure etc... assisting a Beneficiary in negotiating with vendors of target companies or with purchasers for the sale of existing businesses and with potential joint venture partners; liaising with outside advisors for the above.

The Provider may subcontract to a third party any of the Services.

3. PERFORMANCE OF SERVICES

3.1 Information and collaboration of the Parties

Close collaboration between the Provider and the Beneficiary is necessary for the proper performance of the all or part of the Services.

The Provider and the Beneficiary undertake to meet regularly in order to review the performance of the Services for the past period and to define the services for the subsequent one, if applicable.

3.2 Liability

The liability of the Provider shall be limited to the breach in the performance of the Services, which has been established by the Beneficiary and will be limited to the amount of the remuneration received by the Provider under the Agreement.

3.3 Hierarchical and disciplinary powers

The personnel of the Provider shall in all circumstances remain under the disciplinary authority of the Provider.

The Provider shall, in its capacity of employer, ensure the administrative, accounting and employment management of its employees involved in the performance of the Services provided for in this agreement, as the case may be.

4. REMUNERATION

4.1 **Management Fees.** In consideration for the Services actually performed by the Provider to the Beneficiary, the Beneficiary shall pay to the Provider fees ("Management Fees") consisting of:

(i) Reimbursement of all costs and expenses reasonably incurred by the Provider in connection with the provision of the Services by the Provider to the Beneficiary for such calendar quarter ("Costs and Expenses"). Such Costs and Expenses correspond to an allocation of salary and social contribution and indirect costs incurred by the Provider, provided that the basis of such allocation is specified in Exhibit 1,

(ii) Payment of a mark-up corresponding to a percentage of certain of the Costs and Expenses, as specified in Exhibit 1, and

(iii) the Provider will recharge the Beneficiary of any actual costs and expenses of Services which have been subcontracted by the Provider on behalf of the Beneficiary (i.e. the direct costs)

4.2 **Quarterly payments based on estimates.** Non-final invoices and payments of the Management Fees shall be made by the Beneficiary on a quarterly basis, based on an estimate made by the Provider and provided to the Beneficiary as soon as practicable before the end of each calendar quarter.

4.3 **Annual final payment.** Within thirty (30) days following the end of each calendar year, the Provider shall deliver to the Beneficiary:

(i) a statement of the actual Costs and Expenses incurred in providing the Management Services during the past year, setting forth the basis for calculation in such detail as reasonably required (the "Final Costs and Expenses"),

(ii) a statement of the directs costs incurred during the past year,

(iii) the documentation supporting such statements, and

(iv) an invoice or a credit (as appropriate) corresponding to the difference between the actual costs declared by the Provider as per Section 4.3 (i), and the estimated costs initially paid as per Section 4.2. Such invoice or credit shall be paid within 30 days after receipt.

4.4 **Audit Right.** The Beneficiary shall have access to the relevant books and files of the Provider for the purposes of verifying the calculation of Costs and Expenses, and the true-up adjustment, during normal business hours at the Company's premises or as otherwise mutually agreed. The Company' staff shall provide assistance to the Beneficiary for such purposes.

4.5 **Taxes.** It is understood and agreed between the Parties that any payments made under this Agreement are exclusive of any value added or similar tax ("VAT"), which will be added thereon as applicable. Where VAT is properly added to a payment made under this Agreement, the Party making the payment (i.e. the Beneficiary) will pay the amount of VAT only on receipt of a valid tax invoice issued in accordance with the laws! and regulations of the country in which the VAT is chargeable. In addition, in the event any of the payments made by the Beneficiary pursuant to this Agreement become subject to withholding taxes under the laws of any jurisdiction, the Beneficiary will deduct and withhold the amount of such taxes for the account of the Provider, to the extent required by law, such amounts payable to the Provider will be reduced by the amount of taxes deducted and withheld, and the Beneficiary will pay the amounts of such taxes to the proper governmental authority in a timely manner and promptly transmit to the Provider an official tax certificate or other evidence of such tax obligations together with proof of payment from the relevant governmental authority of all amounts deducted and withheld sufficient to enable them to claim such payment of taxes. Any such withholding taxes required under applicable law to be paid or withheld will be an expense of, and borne solely by the Beneficiary, and the Provider will provide the Beneficiary with reasonable assistance to enable the Beneficiary to recover such taxes as permitted by law.

5. DURATION

5.1 This Agreement shall take effect as of 1st January 2016.

5.2 This agreement is entered into for an initial period ending 31 December 2016, and is automatically renewable for successive period(s) of one year, unless earlier terminated in accordance with Section 5.3 or Section 5.4.

5.3 Each Party has the right to terminate the Agreement at the anniversary date of Agreement, by giving three (3) months prior notice.

5.4 The Agreement may be terminated:

(a) by the board of directors of Cellectis SA upon thirty (30) days' written notice for any reason in its sole discretion, or

(b) by Cellectis SA upon sixty (60) days' written notice in the following event:

(i) change of control of a Party;

(ii) sale of all or a substantial part of the assets of a Party;

(iii) final judgment, order or decree which materially and adversely affects the ability of a Party to perform under this Agreement; or

(iv) Cellectis SA makes a general assignment for the benefits of its creditors, file a petition of bankruptcy or for liquidation, is adjudged insolvent or bankrupt, commences any proceedings for a reorganization or arrangements of debts, dissolution or liquidation.

5.5 Upon termination of this Agreement, the Beneficiary shall surrender to the Provider any and all books, records, documents and other property in the possession or control of the Beneficiary relating to this Agreement and to the business, finance, technology , trademark or affairs of the Provider, and except as required by law, shall not retain any copies of the same.

6. CONFIDENTIALITY

6.1 During the term of this Agreement and for a period of 10 years thereafter, each Party (the "Recipient") undertakes to treat as confidential all information disclosed directly or indirectly by the other Party ("the Discloser") and to hold such information in strict confidence and shall not disclose, communicate or in any way divulge to any other person or entity any such information. The Receiving Party shall only be entitled to disclose, on a need to know and permitted basis, information to its directors, employees, consultants, cocontractants (collectively the "Authorized Recipients"); provided that the Recipient has previously bound such Authorized Recipients by confidentiality and restricted use obligations at least as stringent than those set forth in this Section 6.1. The Recipient shall be responsible towards the Discloser for any breach by its Authorized Recipients of any such confidentiality and restricted use obligations.

6.2 For the purpose of this Agreement, shall not be deemed confidential, any information that the Recipient can demonstrate, by competent evidence, that:

(a) at the time of disclosure or acquisition is generally available to the public, or after the time of disclosure or acquisition is generally available to the public through no act or omission of the Recipient and its Authorized Recipients;

(b) was legally in the possession and at the free disposal of the Recipient prior to disclosure by the Discloser, as evidenced by written records then in the possession of the Recipient; or

(c) is rightfully made available to the Recipient by others without recourse to such information disclosed by the Discloser.

6.3 The Recipient is entitled to disclose the Discloser' information in order to comply with the requirements of applicable law or governmental regulation or definitive court order, provided that

the Recipient shall first notify the Discloser of such required disclosure and of each information concerned and shall limit such disclosure as far as possible under applicable law. Such disclosure shall, however, not relieve the Recipient of its other obligations contained herein.

7. MISCELLANEOUS

7.1 No amendment to this Agreement shall be valid unless embodied in a writing executed by each of the Parties hereto. No waiver of any of the provisions of this Agreement shall be valid unless embodied in a writing executed by the Party against whom the waiver is sought to be enforced.

7.2 This Agreement constitutes the entire understanding and agreement between the Parties with respect to the subject matter hereof and supersedes all prior agreement, general terms and conditions, understanding or arrangements, whether written or oral, including the Management Services Agreement signed by Cellectis SA and its subsidiaries on September 7, 2010 as amended.

7.3 Severability. In the event that any clause of this Agreement becomes void, avoidable, unenforceable, invalid, illegal or inapplicable, the validity of this Agreement shall not be affected nor shall any of the Parties be released from the performance of this Agreement. In such an event, the Parties will negotiate in good faith in order to substitute, if possible, the relevant unlawful clause with a lawful clause corresponding to the spirit and object of the original clause.

7.4 Independent Contractors. Both Parties are independent contractors under this Agreement. Nothing herein contained will be deemed to create an employment, agency, joint venture or partnership relationship between the Parties hereto or any of their agents or employees, or any other legal arrangement that would impose liability upon one Party for the act or failure to act of the other Party. Neither Party will have any express or implied power to enter into any contracts or commitments or to incur any liabilities in the name of, or on behalf of, the other Party, or to bind the other Party in any respect whatsoever.

7.5 Assignment. This Agreement is personal to the Subsidiaries. Therefore each Subsidiaries is neither entitled nor empowered to assign this Agreement or any part hereof, or have any third party substituting for itself in this Agreement or part of it, or be assisted by any third party in the performance of the obligations hereunder, without the prior written consent of CLS. This Agreement may be freely assigned by CLS as part of a business sale, merger, split-off or spin-off. In the event that this Agreement is assigned to any company, CLS agrees that all terms and clauses hereof shall have the same effects as if the Agreement had been originally made with said company.

8. APPLICABLE LAW

8.1 This Agreement is governed by and interpreted according to the French law.

8.2 Any litigation that may arise under this agreement, in particular in relation to its validity, interpretation, performance or termination, shall be submitted to the *Tribunal de Grande Instance* of Paris.

/s/ André Choulika
CELLECTIS, INC.
André CHOULIKA, CEO

/s/ Federico Tripodi
CALYXT, INC.
Federico TRIPODI, CEO

/s/ David Sourdive
CELLECTIS, SA
David SOURDIVE, Deputy CEO

EXHIBIT 1

The pricing methodology, identifies the cost centers and applies an allocation key generally specific for each service identified. Those allocations keys applied to the full cost of the cost centers, may depend on ratio of full time employees ("FTE"), ratio of active users, reasonable estimate of time spent, etc., depending on the specificities of each service provided.

We specifically identify the party that performs/incurs the service/cost and the party that benefits from such service/cost in the sections below as each service may or may not be subject to a different mark-up depending on the party that performs/incurs the service/cost.

The calculation should be made in the following order CLI to CLS and then CLS to CLX and CLI.

Out of pocket related to all services costs listed below are subject to a recharge of the costs incurred.

Services performed by Cellectis, Inc. (CLI) on behalf of Cellectis SA (CLS):

Types of Services	Costs and Expenses	Basis of Allocation of the Costs and Expenses	Mark-up
R&D – Pfizer collaboration	Salaries and social contribution costs	Time spent	8%
	Indirect costs		0%
R&D – internal products	Salaries and social contribution costs	Time spent	8%
		Indirect costs	0%
Communication	Salaries and social contributions costs	Time spent	10%
	Indirect costs		0%
Finance	Salaries and social contributions costs	Time spent	4%
	Indirect costs		0%
Business Development	Costs incurred	20% of costs incurred	0%

Services performed by Cellectis SA (CLS) on behalf of Calyxt, Inc. (CLX):

Types of Services	Costs and Expenses	Basis of Allocation of the Costs and Expenses	Mark-up
General Management	Salaries and social contribution costs of CLS CEO and his assistant	Time spent	10%
	Indirect costs		0%
Finances	Salaries and social contribution costs	Time spent	4%
	Indirect costs		0%
IT – LIMS use	Salaries and social contribution costs	Number of CLX's users of the LIMS	4%
	Indirect costs		0%
IT – internal support	Salary and social contribution costs	Number of CLX's FTE	4%
	Indirect costs		0%
Intellectual Property	Salaries and social contribution costs	Time spent	10%
	Indirect costs		0%
Human Resources	Salaries and social contribution costs	Number of CLX's FTE	10%
	Indirect costs		0%
Legal	Salaries and social contribution costs	Time spent	10%
	Indirect costs		0%
Communication	Salaries and social contribution costs	Time spent	10%
	Indirect costs		0%

Services performed by Cellectis SA (CLS) on behalf of Cellectis, Inc. (CLI):

Types of Services	Costs and Expenses	Basis of Allocation of the Costs and Expenses	Mark-up
General Management	Salaries and social contribution costs of CLS CEO and his assistant	Time spent	10%
	Indirect costs		0%
Finance	Salaries and social contribution costs	Time spent	4%
	Indirect costs		0%
IT – LIMS use	Salaries and social contribution costs	Number of CLI's users of the LIMS	4%
	Indirect costs		0%
IT – internal support	Salaries and social contribution costs	Number of CLI's FTE	4%
	Indirect costs		0%
Human Resources	Salaries and social contribution costs	Number of CLI's FTE	10%
	Indirect costs		0%
Legal	Salaries and social contribution costs	Time spent	10%
	Indirect costs		0%

Services performed by Cellectis, Inc. (CLI) on behalf of Calyxt, Inc. (CLX):

Types of Services	Costs and Expenses	Basis of Allocation of the Costs and Expenses	Mark-up
Business Development	Costs incurred	80%	0%

Exhibit 4.28

FIRST AMENDMENT TO THE
MANAGEMENT SERVICES AGREEMENT

This FIRST AMENDMENT TO THE MANAGEMENT SERVICES AGREEMENT (the "**Amendment**") is entered into and made effective as of July 25, 2017 by and among Cellectis S.A. ("**CLS**"), Cellectis, Inc. ("**CLI**") and Calyxt, Inc. ("**CLX**"), each a Party and together the Parties.

WHEREAS, CLS, CLI and CLX entered into that certain Management Services Agreement (the "**Management Services Agreement**"), dated January 1, 2016; and

WHEREAS, the Parties have agreed to amend the Management Services Agreement to revise the termination provision.

NOW, THEREFORE, in consideration of the agreements and obligations set forth herein and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree that the Management Services Agreement is hereby amended as follows:

1. Section 2.1 is hereby amended to include the following at the end of the section:

Further, Provider shall not unilaterally increase the amount of Services provided to Beneficiary from the previous year without the Beneficiary's prior written consent. If the Provider decides to decrease the amount of Services, it shall notify such decision to the Beneficiary at least ninety (90) days before such change and the Provider and the Beneficiary shall act with its best business efforts to allow for the smooth transition of Services to Beneficiary without disruption of the Beneficiary's business and operations. Notwithstanding the foregoing, and subject to the prior written approval of Provider, Beneficiary may determine certain of the Services identified in Section 2.1((i)-(ix)) provided by Provider may become duplicative of those undertaken independently by Beneficiary and Beneficiary shall not be charged for any such Services that are deemed duplicative and identified as such in the Annual Budget as set forth in Section 4.2 below.

2. Section 4 **RENUMERATION** shall be amended as follows:

4.1 **Management Fees**. Shall remain as stated.

4.2 shall be replaced with the following new provision:

4.2. Annual Budget. Prior to December 15 of each calendar year, Provider will mutually agree on the Services to be provided to the Beneficiary in the next following calendar year ("Annual Budget"); provided, however, that Provider will not be able to unilaterally increase the amount of services provided on the previous year without Beneficiary's written consent. Provider will prepare an estimated budget of the Management Fees, Costs and Expenses, direct costs and mark-up provided and broken down by time and hourly cost by position and by month. The types of Services, Management Fees, Costs and Expenses, direct costs and mark-up provided or charged by Provider to Beneficiary in the Annual Budget shall be incorporated by December 15th annually into an amended Exhibit 1 to be attached hereto.

4.3 shall be replaced with the following new provision:

4.3. **Variances to Annual Budget**. The Parties acknowledge that from time-to-time additional services or purchases not contemplated in the Annual Budget and forecast may be required (including but not limited to: special projects, trait vetting, strategic analysis, additional support services, consulting and professional services, etc.) In the event that additional Services are requested or to be provided in excess of $50,000 that are not included in the then current Annual Budget, the CEO of the Provider and the CEO of the Beneficiary shall discuss the nature of the additional Services and the additional costs before any additional services are commenced. If approved, the costs of the additional Services shall be added to the Annual Budget and amend Exhibit 1 to include such additional services and be signed by both Parties.

4.4 shall be replaced with the following new provision new provision 4.4: [existing **4.4 Audit Rights** to remain unchanged but renumbered as **4.7**]

4.4 Semi-annual forecast. By June 15th of each calendar year, if the actual Services provided during the first half of the current year are materially different from the Services provided in the Annual Budget, Provider shall provide to Beneficiary a forecast of the Costs and Expenses of Management Services and direct costs for the remaining 6 months of the then current calendar year.

4.5 shall be replaced with the following new provision new provision 4.5: [existing **4.5 Taxes** to remain unchanged but renumbered as **4.8**]

4.5 Estimated quarterly payments. Non-final invoices and payments of the Management Fees, Costs and Expenses, direct costs and mark-up, performed by the Provider for the Beneficiary and as set forth on the quarterly estimates made by the Provider and provided to the Beneficiary per current Exhibit 1, shall be submitted and paid by the Beneficiary to Provider within five business days before the end of each calendar quarter.

New provision 4.6 shall be added to Section 4:

4.6 Quarterly reporting. By the fifteenth business day after the end of each calendar quarter, Provider will provide to Beneficiary

(i) a statement of actual Costs and Expenses incurred in providing the Management Services during the past quarter, setting forth the basis for calculation in such detail as reasonable required (the "Final Quarterly Costs and Expenses"),

(ii) a statement of direct costs incurred during the past quarter,

(iii) the documents supporting such statements, and

(iv) an invoice or a credit (as appropriate) corresponding to the difference between actual costs declared by the Provider as per Section 4.6(i), and the estimated costs initially paid as per section 4.5. Such invoice or credit shall be paid within 30 days after receipt.

4.7 Audit Rights to remain unchanged but renumbered from 4.4 of the Agreement.

4.8 Taxes to remain unchanged but renumbered from 4.5 of the Agreement.

3. Section 5.4 is deleted in its entirety and replacing it with the following:

"**5.4** This Agreement may be terminated:

(a) by CLS, with respect to CLI or CLX, as applicable, effective upon written notice of termination to CLI or CLX, as applicable, if:

(i) CLI or CLX, as applicable, defaults in the performance or observance of any material term, condition or agreement contained in this Agreement and such default continues for a period of 30 days after written notice thereof specifying such default and requesting that the same be remedied in such 30-day period; provided, however, that if the fact, circumstance or condition that is the subject of such obligation cannot reasonably be remedied within such 30-day period and if, within such period, CLI or CLX, as applicable, provides reasonable evidence to CLS that it has commenced, and thereafter proceeds with all due diligence, to remedy the fact, circumstance or condition that is the subject of such obligation, such period shall be extended for a reasonable period satisfactory to CLS, acting reasonably, for CLI or CLX, as applicable, to remedy the same;

(ii) CLI or CLX, as applicable, engages in any act of gross negligence, fraud or willful misconduct in performance of its obligations under this Agreement;

(iii) CLI or CLX, as applicable, makes a general assignment for the benefit of its creditors, institutes proceedings to be adjudicated voluntarily bankrupt, consents to the filing of a petition of bankruptcy against it, is adjudicated by a court of competent jurisdiction as being bankrupt or insolvent, seeks reorganization

under any bankruptcy law or consents to the filing of a petition seeking such reorganization or has a decree entered against it by a court of competent jurisdiction appointing a receiver liquidator, trustee or assignee in bankruptcy or in insolvency; or

(iv) CLI or CLX, as applicable, or substantially all of their respective assets, is acquired by an unrelated third party.

(b) by CLI, with respect to CLS or CLX, as applicable, effective upon written notice of termination to CLS or CLX, as applicable, if:

(i) CLS or CLX, as applicable, defaults in the performance or observance of any material term, condition or agreement contained in this Agreement and such default continues for a period of 30 days after written notice thereof specifying such default and requesting that the same be remedied in such 30-day period; provided, however, that if the fact, circumstance or condition that is the subject of such obligation cannot reasonably be remedied within such 30-day period and if, within such period, CLS or CLX, as applicable, provides reasonable evidence to CLI that it has commenced, and thereafter proceeds with all due diligence, to remedy the fact, circumstance or condition that is the subject of such obligation, such period shall be extended for a reasonable period satisfactory to CLI, acting reasonably, CLS or CLX, as applicable, to remedy the same;

(ii) CLS or CLX, as applicable, engages in any act of gross negligence, fraud or willful misconduct in performance of its obligations under this Agreement;

(iii) CLS or CLX, as applicable, makes a general assignment for the benefit of its creditors, institutes proceedings to be adjudicated voluntarily bankrupt, consents to the filing of a petition of bankruptcy against it, is adjudicated by a court of competent jurisdiction as being bankrupt or insolvent, seeks reorganization under any bankruptcy law or consents to the filing of a petition seeking such reorganization or has a decree entered against it by a court of competent jurisdiction appointing a receiver liquidator, trustee or assignee in bankruptcy or in insolvency; or

(iv) CLS or CLX, as applicable, or substantially all of their respective assets, is acquired by an unrelated third party.

(c) by CLX, with respect to CLS or CLI, as applicable, effective upon written notice of termination to CLS or CLI, as applicable, if:

(i) CLS or CLI, as applicable, defaults in the performance or observance of any material term, condition or agreement contained

in this Agreement and such default continues for a period of 30 days after written notice thereof specifying such default and requesting that the same be remedied in such 30-day period; provided, however, that if the fact, circumstance or condition that is the subject of such obligation cannot reasonably be remedied within such 30-day period and if, within such period, CLS or CLI, as applicable, provides reasonable evidence to CLX that it has commenced, and thereafter proceeds with all due diligence, to remedy the fact, circumstance or condition that is the subject of such obligation, such period shall be extended for a reasonable period satisfactory to CLX, acting reasonably, CLS or CLI, as applicable, to remedy the same;

(ii) CLS or CLI, as applicable, engages in any act of gross negligence, fraud or willful misconduct in performance of its obligations under this Agreement;

(iii) CLS or CLI, as applicable, makes a general assignment for the benefit of its creditors, institutes proceedings to be adjudicated voluntarily bankrupt, consents to the filing of a petition of bankruptcy against it, is adjudicated by a court of competent jurisdiction as being bankrupt or insolvent, seeks reorganization under any bankruptcy law or consents to the filing of a petition seeking such reorganization or has a decree entered against it by a court of competent jurisdiction appointing a receiver liquidator, trustee or assignee in bankruptcy or in insolvency; or

(iv) CLS or CLI, as applicable, or substantially all of their respective assets, is acquired by an unrelated third party."

4. Section 5.5 shall be amended and replaced with the following:

Upon termination of this Agreement pursuant to sections 5.3 and 5.4 above, the Beneficiary shall surrender to the Provider all books, records, documents, information and other property that is solely that of the Provider, and not subject to any other license or agreement between the parties at the time of termination, except if such books, records, documents, information and other property are necessary for the Beneficiary to operate its current activities or to comply with applicable laws and regulations. For sake of clarity, Section 6 of the Agreement (Confidentiality) shall apply to such books, records, documents, information and other property.

5. All other provisions of the Management Services Agreement not amended above shall remain in full force and effect.

[*Signature Page Follows*]

IN WITNESS WHEREOF, the Parties have caused this Amendment to be duly executed by their respective authorized officers as of the day and year first written above.

CELLECTIS S.A.

By: /s/ David Sourdive
Name: David Sourdive
Title: Deputy Chief Executive Officer

CELLECTIS, INC.

By: /s/ André Choulika
Name: André Choulika
Title: Chief Executive Officer

CALYXT, INC.

By: /s/ Federico Tripodi
Name: Federico Tripodi
Title: Chief Executive Officer

[*Signature Page to First Amendment to Management Services Agreement*]

Exhibit 4.29

SEPARATION AGREEMENT

THIS SEPARATION AGREEMENT, dated as of July 25, 2017, is by and between CELLECTIS S.A., a French *société anonyme* ("**Cellectis**") and CALYXT, INC., a Delaware corporation (the "**Company**" and each of Cellectis and the Company, a "**Party**" and, together, the "**Parties**"). Capitalized terms used herein shall have the respective meanings assigned to them in Article 1 hereof.

R E C I T A L S

WHEREAS, Cellectis is the owner of all of the issued and outstanding Common Stock of the Company prior to the proposed initial public offering by the Company; and

WHEREAS, the Parties wish to set forth certain agreements that will govern certain matters between them following the Effective Date.

NOW, THEREFORE, in consideration of the mutual agreements, provisions and covenants contained in this Agreement, the Parties, intending to be legally bound, hereby agree as follows:

ARTICLE 1
DEFINITIONS

Section 1.01. *Certain Definitions*. For the purpose of this Agreement the following terms shall have the following meanings:

"**Action**" means any demand, action, suit, countersuit, arbitration, inquiry, proceeding or investigation by or before any Governmental Authority or any federal, state, local, foreign or international arbitration or mediation tribunal.

"**Affiliate**" of any Person means a Person that, directly or indirectly, controls, is controlled by, or is under common control with such Person *provided*, *however*, that, for purposes of this Agreement, the Company shall not be considered an Affiliate of any of Cellectis and its Subsidiaries other than the Company, and each of Cellectis and its Subsidiaries other than the Company shall not be considered an Affiliate of the Company. As used herein, "**control**" means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such entity, whether through ownership of voting securities or other interests, by contract or otherwise. For purposes of this definition, "**controlling**," "**controlled by**," and "**under common control with**" have correlative meanings.

"**Agreement**" means this Separation Agreement, including all of the schedules hereto.

"**Ancillary Agreements**" means, collectively, the Shareholders Agreement, the Management Services Agreement, the License Agreement and other agreements related thereto.

"**Annual Financial Statements**" has the meaning set forth in Section 7.01(e).

"**Applicable Period**" has the meaning set forth in Section 7.02.

"**Business Day**" means any day other than a Saturday, Sunday or a day on which banking institutions are authorized or obligated by Law to be closed in New York, New York or Paris, France.

"**Cellectis**" has the meaning set forth in the preamble hereto.

"**Cellectis Accounts**" has the meaning set forth in Section 3.02(a).

"**Cellectis Annual Statements**" has the meaning set forth in Section 7.01(e).

"**Cellectis Auditors**" has the meaning set forth in Section 7.02(b).

"**Cellectis Books and Records**" means originals or true and complete copies thereof, including electronic copies (if available) of (a) minute books, corporate charters and bylaws or comparable constitutive documents, records of share issuances and related corporate records, of the Cellectis Group and (b) all books and records relating to (i) Cellectis employees, (ii) the purchase of materials, supplies and services for the Cellectis Business and (ii) dealings with customers of the Cellectis Business.

"**Cellectis Business**" means any business or operations of the Cellectis Group (whether conducted independently or in association with one or more third parties through a partnership, joint venture or other contractual arrangement or mutual enterprise) other than the Company Business.

"**Cellectis Group**" means Cellectis and each other Person that either (x) is controlled directly or indirectly by Cellectis immediately after the Effective Date or (y) becomes directly or indirectly controlled by Cellectis following the Effective Date; *provided*, however, that neither the Company nor any other member of the Company Group shall be members of the Cellectis Group.

"**Cellectis Indemnitees**" has the meaning set forth in Section 4.03.

"**Cellectis Public Filings**" has the meaning set forth in Section 7.01(l).

"**Commission**" means the U.S. Securities and Exchange Commission.

"**Common Stock**" means the common stock of the Company.

"**Company**" has the meaning set forth in the preamble hereto.

"**Company Accounts**" has the meaning set forth in Section 3.02(a).

"**Company Auditors**" has the meaning set forth in Section 7.02(a).

"**Company Books and Records**" means originals or true and complete copies thereof, including electronic copies (if available), of (a) all minute books, corporate charters and bylaws or comparable constitutive documents, records of share issuances and related corporate records of each member of the Company Group and (b) all books and records exclusively relating to (i) Company employees, (ii) the purchase of materials, supplies and services for the Company Business and (iii) dealings with customers of the Company Business.

"**Company Business**" means any business or operations of the Company Group (whether conducted independently or in association with one or more third party through a partnership, joint venture or other contractual arrangement or mutual enterprise), *provided* that the Company Business shall not include any Cellectis Business.

"**Company Group**" means the Company and each other Person that either (x) is controlled directly or indirectly by the Company immediately as of the Effective Date or (y) becomes directly or indirectly controlled by the Company following the Effective Date.

"**Company Indemnitees**" has the meaning set forth in Section 4.04.

"**Company Public Documents**" has the meaning set forth in Section 7.01(h).

"**Consents**" means any consents, waivers or approvals from, or notification requirements to, any third parties.

"**Contract**" means any written or oral commitment, contract, subcontract, agreement, lease, sublease, license, understanding, sales order, purchase order, instrument, indenture, note or other commitment that is binding on any Person or any part of its property under applicable Law.

"**Coverage End Date**" has the meaning set forth in Section 3.05(a).

"**Covered Claims**" has the meaning set forth in Section 3.05(b).

"**Disclosing Party**" has the meaning set forth in Section 6.06(a).

"**Disclosure Documents**" means (i) any form, statement, schedule or other material filed with or furnished to the Commission, any other Governmental Authority or any securities exchange by or on behalf of any Party or any of its Affiliates, including the IPO Registration Statement, and (ii) any information statement, prospectus, offering memorandum, offering circular or similar disclosure document, free writing prospectus, roadshow, testing-the-waters materials and any schedule thereto or amendment thereof or document incorporated by reference therein, whether or not filed with or furnished to the Commission, any other Governmental Authority or any securities exchange by or on behalf of any Party or any of its Affiliates.

"**Effective Date**" means the date of the closing of the IPO.

"**Escalation Notice**" has the meaning set forth in Section 8.02(a).

"**Exchange Act**" means the Securities Exchange Act of 1934, as amended, together with the rules and regulations promulgated thereunder.

"**Financial Statements**" means the Annual Financial Statements and Quarterly Financial Statements collectively.

"**Governmental Authority**" means any nation or government, any state, municipality or other political subdivision thereof, and any entity, body, agency, commission, department, board, bureau, court, tribunal or other instrumentality, whether federal, state, local, domestic, foreign or multinational, exercising executive, legislative, judicial, regulatory, administrative or other similar functions of, or pertaining to, government and any executive official thereof.

"**Group**" means either the Company Group or the Cellectis Group, as the context requires.

"**Guarantee**" has the meaning set forth in Section 3.04(a).

"**IFRS**" means the International Financial Reporting Standards issued by the International Accounting Standards Board and interpretations issued by the IFRS Interpretation Committee of the IASB and adopted by the Cellectis Group.

"**Indemnifying Party**" has the meaning set forth in Section 4.05(a).

"**Indemnitee**" has the meaning set forth in Section 4.05(a).

"**Indemnity Payment**" has the meaning set forth in Section 4.05(a).

"**Information**" means information in written, oral, electronic or other tangible or intangible forms, stored in any medium, including without limitation studies, reports, records, books, Contracts, instruments, surveys, discoveries, ideas, concepts, know-how, techniques, designs, specifications, drawings, blueprints, diagrams, models, prototypes, samples, flow charts, data, computer data, disks, diskettes, tapes, computer programs or other software, marketing plans, customer names, communications by or to attorneys (including, subject to the limitations contemplated by this Agreement, attorney-client privileged communications), memoranda and other materials prepared by attorneys or under their direction (including, subject to the limitations contemplated by this Agreement, attorney work product), and other technical, financial, employee or business information or data.

"**Insurance Policies**" or "**Insurance Policy**" means insurance policies and insurance contracts of any kind, including primary, excess and umbrella, comprehensive general liability, directors and officers, automobile, products, workers' compensation, employee dishonesty, property and crime insurance policies and self-insurance and captive insurance company arrangements, together with the rights, benefits and privileges thereunder.

"**Insurance Proceeds**" means those monies:

(a) received by an insured from a third party insurance carrier;

(b) paid by a third party insurance carrier on behalf of the insured; or

(c) received (including by way of setoff) from any third party in the nature of insurance, contribution or indemnification in respect of any Liability;

in each such case net of any applicable premium adjustments (including reserves and retrospectively rated premium adjustments) and net of any costs or expenses incurred in the collection thereof and excluding, for the avoidance of doubt, proceeds from any self-insurance, captive insurance or similar program.

"**Intercompany Accounts**" has the meaning set forth in Section 3.01(a).

"**IPO**" means the initial public offering of shares of Common Stock pursuant to the IPO Registration Statement.

"**IPO Registration Statement**" means the registration statement on Form S-l (File No. 333-218924) filed under the Securities Act, pursuant to which issuances of the Common Stock in the IPO will be registered, together with all amendments thereto (including post-effective amendments and registration statements filed pursuant to Rule 462(b) under the Securities Act).

"**Law**" means any United States or non-United States federal, national, supranational, state, provincial, local or similar law (including common law), statute, ordinance, regulation, rule, code, order, treaty, license, permit, authorization, registration, approval, consent, decree, injunction, judgment, notice of liability, request for information, binding judicial or administrative interpretation or other requirement, in each case, enacted, promulgated, issued, entered or otherwise put into effect by a Governmental Authority.

"**Liabilities**" means any and all indebtedness, claims, debts, taxes, liabilities, demands, causes of action, and obligations, whether accrued, fixed or contingent, mature or inchoate, known or unknown, reflected on a balance sheet or otherwise, including, without limitation, those arising under any Law, Action or any judgment of any court of any kind or any award of any arbitrator of any kind, and those arising under any Contract, commitment or undertaking.

"**License Agreement**" means that certain license agreement by and between Cellectis and the Company, dated as of the Effective Date.

"**Losses**" means any and all damages, losses, deficiencies, taxes, obligations, penalties, judgments, settlements, claims, payments, fines, charges, interest, costs and expenses, whether or not resulting from third party claims, including the costs and expenses of any and all Actions and demands, assessments, judgments, settlements and compromises relating thereto and the costs and expenses of attorneys', accountants', consultants' and other professionals' fees and expenses incurred in the investigation or defense thereof or the enforcement of rights hereunder.

"**Management Services Agreement**" means that certain Management Services Agreement, dated January 1, 2016, as amended from time to time, including pursuant to Amendment No. 1 thereto dated as of the Effective Date.

"**Party**" or "**Parties**" have the meanings set forth in the preamble hereto.

"**Person**" means an individual, a general or limited partnership, a corporation, a trust, a joint venture, an unincorporated organization, a limited liability entity, any other entity and any Governmental Authority.

"**Prime Rate**" means the Wall Street Journal Published Prime (if published in a range, the lowest number in the range will be used) in effect on the fourth (4th) Tuesday of the month prior to the beginning of each calendar quarter.

"**Privilege**" has the meaning set forth in Section 6.08(a).

"**Quarterly Financial Statements**" has the meaning set forth in Section 7.01(d).

"**Receiving Party**" has the meaning set forth in Section 6.06(a).

"**Securities Act**" means the Securities Act of 1933, as amended, together with the rules and regulations promulgated thereunder.

"**Shared Insurance Policies**" means Insurance Policies in existence prior to the Coverage End Date where both the Company Business and the Cellectis Business are eligible for coverage and/or where the employees, directors or agents of both the Company Business and the Cellectis Business are eligible for coverage.

"**Subsidiary**" means, when used with respect to any Person, (a) a corporation in which such Person or one or more Subsidiaries of such Person, directly or indirectly, owns capital stock having a majority of the total voting power in the election of directors of all outstanding shares of all classes and series of capital stock of such corporation entitled generally to vote in such election; and (b) any other Person (other than a corporation) in which such Person or one or more Subsidiaries of such Person, directly or indirectly, has (i) a majority ownership interest or (ii) the power to elect or direct the election of a majority of the members of the governing body of such first-named Person.

"**Surviving Contract**" has the meaning set forth in Section 3.01(b).

"**Third Party Claim**" has the meaning set forth in Section 4.06(a).

"**U.S. GAAP**" means accounting principles generally accepted in the United States of America, applied on a consistent basis.

ARTICLE 2

THE IPO AND ACTIONS PENDING THE IPO; OTHER TRANSACTIONS

Section 2.01. *The IPO*. The Company shall cooperate with, and take all actions reasonably requested by, Cellectis in connection with the IPO. In furtherance thereof, to the extent not undertaken and completed prior to the execution of this Agreement:

(a) The Company shall file such amendments or supplements to the IPO Registration Statement as may be necessary in order to cause the same to remain effective as required by the underwriting agreement for the IPO. The Company shall also prepare, file with the Commission and cause to become effective any registration statements or amendments thereof that are required to reflect the establishment of, or amendments to, any employee benefit and other plans necessary or appropriate in connection with the IPO or the other transactions contemplated by this Agreement or the Ancillary Agreements.

(b) The Company shall use its best efforts to take all such action as may be necessary or appropriate under state securities and blue sky laws of the United States (and any comparable Laws under any foreign jurisdictions) in connection with the IPO; *provided that* the Company shall not be required to qualify as a foreign corporation in any state or jurisdiction or consent to service of process in any state or jurisdiction other than with respect to claims arising out of the IPO.

Section 2.02. *Termination of the IPO Process*. Notwithstanding anything to the contrary contained herein, prior to the Effective Date, as between the Company and Cellectis, Cellectis may in its sole discretion terminate or abandon the IPO or any aspect of the IPO and the other transactions contemplated hereby or by any Ancillary Agreement in connection with the IPO and the Company shall, subject to compliance with its obligations under the underwriting agreement for the IPO, take all actions directed by Cellectis in that regard.

ARTICLE 3

THE SEPARATION

Section 3.01. *Termination of Agreements*. (a) Except as set forth in Section 3.01(b), in furtherance of the releases and other provisions of Section 4.01 hereof, the Company and each Person in the Company Group, on the one hand, and Cellectis and each Person in the Cellectis Group, on the other hand, hereby terminate any and all agreements, arrangements, commitments or understandings (including all intercompany accounts payable or accounts receivable between a member of the Cellectis Group, on the one hand, and a member of the Company Group, on the other hand ("**Intercompany Accounts**") accrued as of the Effective Date), whether or not in writing, between or among the Company and any Person in the Company Group, on the one hand, and Cellectis and any Person in the Cellectis Group, on the other hand, effective as of the Effective Date. No such terminated agreement, arrangement, commitment, understanding or Intercompany Account (including any provision thereof which purports to survive termination) shall be of any further force or effect after the Effective Date. Each Party shall, at the reasonable request of any other Party, take, or cause to be taken, such other actions as may be necessary to effect the foregoing.

(b) The provisions of Section 3.01(a) shall not apply to any of the following agreements, arrangements, commitments, understandings or Intercompany Accounts (or to any of the provisions thereof): (i) this Agreement; (ii) the Ancillary Agreements (and each other agreement or instrument expressly contemplated by this Agreement, or any Ancillary Agreement to be entered into by any of the Parties or any Person in their respective Groups); (iii) any agreements, arrangements, commitments or understandings set forth or described on Schedule 3.01(b)(iii); (iv) any agreements, arrangements, commitments or understandings to which any Person other than solely the Parties and their respective Affiliates is a party; and (v) any other agreements, arrangements, commitments, understandings or Intercompany Accounts that this Agreement or any Ancillary Agreement expressly contemplates will survive the Effective Date (collectively, the "**Surviving Contracts**").

(c) Notwithstanding anything in this Agreement to the contrary, in the event the Parties agree in writing that an agreement, arrangement, commitment or understanding terminated pursuant to Section 3.01(a) should have remained in force or effect after the Effective Date, such agreement, arrangement, commitment or understanding shall pursuant to this Section 3.01(c) be deemed a Surviving Contract and each Party shall, at the reasonable request of any other Party, take, or cause to be taken, such other actions as may be necessary to effect the foregoing.

Section 3.02. *Bank Accounts; Cash Balances*. (a) Other than in respect of Surviving Contracts, to the extent not completed prior to the Effective Date, each of Cellectis and the Company agree to take, or cause the respective members of their respective Groups to take, as soon as practicable after the Effective Date, all actions necessary to amend all Contracts governing each bank and brokerage account owned by the Company or any other member of the Company Group (collectively, the "**Company Accounts**") so that such Company Accounts, if linked (whether by automatic withdrawal, automatic deposit or any other authorization to transfer funds from or to, hereinafter "**linked**") to any bank or brokerage account owned by Cellectis or any other member of the Cellectis Group (collectively, the "**Cellectis Accounts**") are de-linked from the Cellectis Accounts. The Company hereby agrees to repay promptly following the IPO all amounts outstanding in respect of the current account agreement signed between the Company and Cellectis on March 7, 2011.

(b) It is intended that, following consummation of the actions contemplated by Section 3.02(a), the Company and Cellectis will maintain separate bank accounts and separate cash management processes.

(c) With respect to any outstanding checks issued by Cellectis, the Company, or any of their respective Subsidiaries prior to the Effective Date, such outstanding checks shall be honored following the Effective Date by the Person or Group owning the account on which the check is drawn.

(d) Other than in connection with the Surviving Contracts, as between Cellectis and the Company (and the members of their respective Groups), all payments made and reimbursements received after the Effective Date by either Party (or member of its Group) that relate to a business, asset or Liability of the other Party (or member of its Group), shall be held by such Party in trust for the use and benefit of the Party entitled thereto and, promptly upon receipt by such Party of any such payment or reimbursement, such Party shall pay over, or shall cause the applicable member of its Group to pay over to the other Party the amount of such payment or reimbursement without right of set-off.

Section 3.03. *Other Ancillary Agreements*. Each of Cellectis and the Company will execute and deliver, and cause each of their applicable Subsidiaries to execute and deliver, as applicable, all Ancillary Agreements to which it is a party, in each case to be effective as of the Effective Date.

Section 3.04. *Guarantees*. (a) Other than in respect of the agreement(s) listed in Schedule 3.04 hereto, Cellectis and the Company shall each use their commercially reasonable efforts to cause a member of the Company Group to be substituted in all respects for all members of the Cellectis Group, as applicable, and for the members of the Cellectis Group, as applicable, to be otherwise removed or released, effective as of the Effective Date, in respect of all obligations of any member of the Company Group under each guarantee, indemnity, surety bond, letter of credit and letter of comfort (each, a "**Guarantee**"), given or obtained by any member of the Cellectis Group for the benefit of any member of the Company Group or the Company Business. If Cellectis and the Company have been unable to effect any such substitution, removal, release and termination with respect to any such Guarantee as of the Effective Date then, following the Effective Date, the Company shall effect such substitution, removal, release and termination as soon as reasonably practicable after the Effective Date; provided that from and after the Effective Date, the Company shall indemnify against, hold harmless and promptly reimburse the members of the Cellectis Group for any payments made by members of the Cellectis Group and for any and all Liabilities of the members of the Cellectis Group arising out of, or in performing, in whole or in part, any performance obligation in accordance with the underlying obligation under any such Guarantee (except to the extent the performance obligation under any such Guarantee shall have been triggered solely by an act or failure to act of the applicable guarantor (rather than the underlying obligor)).

(b) Cellectis and the Company shall each use their commercially reasonable efforts to cause a member of the Cellectis Group to be substituted in all respects for all members of the Company Group, as applicable, and for the members of the Company Group, as applicable, to be otherwise removed or released, effective as of the Effective Date, in respect of all obligations of any member of the Cellectis Group under each Guarantee, given or obtained by any member of the Company Group for the benefit of any member of the Cellectis Group or the Cellectis Business. If Cellectis and the Company have been unable to effect any such substitution, removal, release and termination with respect to any such Guarantee as of the Effective Date then, following the Effective Date, Cellectis shall effect such substitution, removal, release and termination as soon as reasonably practicable after the Effective Date; provided that from

and after the Effective Date, Cellectis shall indemnify against, hold harmless and promptly reimburse the members of the Company Group for any payments made by members of the Company Group and for any and all Liabilities of the members of the Company Group arising out of, or in performing, in whole or in part, any performance obligation in accordance with the underlying obligation under any such Guarantee (except to the extent the performance obligation under any such Guarantee shall have been triggered solely by an act or failure to act of the applicable guarantor (rather than the underlying obligor)).

Section 3.05. *Insurance Policies*

(a) As of the date at which Cellectis and its Affiliates cease to hold in excess of 50% of the outstanding shares of Common Stock, or at any time before Cellectis and its Affiliates cease to hold in excess of 50% of the outstanding shares of Common Stock, at Cellectis' request (the "**Coverage End Date**"), the coverage under all Shared Insurance Policies shall continue in force only for the benefit of Cellectis and other members of the Cellectis Group and not for the benefit of the Company or any other member of the Company Group. Effective from and after the Coverage End Date, the Company shall arrange for its own Insurance Policies with respect to the Company Business covering all periods (whether prior to or following the Coverage End Date) and agrees not to seek, through any means, benefit from any of Cellectis' or its Affiliates' Insurance Policies that may provide coverage for claims relating in any way to the Company Business following the Coverage End Date.

(b) Where Shared Insurance Policies with an unaffiliated third party insurer (and excluding, for the avoidance of doubt, any self-insurance, captive insurance or similar program) cover Company Liabilities reported after the Coverage End Date but are with respect to an occurrence prior to the Coverage End Date, under an occurrence-based Shared Insurance Policy (collectively, "**Covered Claims**"), then the members of the Company Group may notify Cellectis of such claim and Cellectis shall seek coverage for such Covered Claims under such Shared Insurance Policies, control the prosecution and defense of such Covered Claims and forward any insurance recoverables with respect thereto, without any prejudice or limitation to Cellectis seeking insurance under the Shared Insurance Policies for its own claims. After the Coverage End Date, Cellectis shall procure and administer the Shared Insurance Policies, provided that such administration shall in no way limit, inhibit or preclude the right of the members of the Company Group to insurance coverage thereunder in accordance with this Section 3.05(b), in each case, with respect to Covered Claims. The Company shall promptly notify Cellectis of any Covered Claims, and Cellectis agrees to reasonably cooperate with the Company concerning the pursuit by the Company of any such Covered Claim, in each case at the expense of the Company (to the extent such expenses are not covered by the applicable Shared Insurance Policies).

(c) The Company shall be responsible for complying with terms of the Shared Insurance Policies to obtain coverage for such Covered Claims, including if the Shared Insurance Policy requires any payments to be made in connection therewith (including self-insured retentions or deductibles), and the Company shall make any such required

payments and maintain any required or appropriate accruals or reserves for such Covered Claims. Any proceeds received by Cellectis from any insurance carrier that relate to Covered Claims shall be paid promptly to the Company. In the event that Covered Claims relate to the same occurrence for which Cellectis is seeking coverage under such Shared Insurance Policies and for which the Parties have a shared defense, the Company and Cellectis shall jointly defend any such claim and waive any conflict of interest necessary to conduct a joint defense, and shall bear any expenses in connection therewith on a pro rata basis in proportion to the assessed value of the claim or claims against such Party (to the extent such expenses are not covered by the applicable Shared Insurance Policies), including self-insured retentions or deductibles. In the event that policy limits under an applicable Shared Insurance Policy are not sufficient to fund all claims of Cellectis and members of the Cellectis Group and the Company and members of the Company Group, any amounts simultaneously due shall be paid to the respective entities in proportion to the assessed value of each respective entity's claim or claims.

Section 3.06. *Coverage End Date Determination*. Cellectis shall use commercially reasonable efforts to provide written confirmation informing the Company that the Coverage End Date has occurred. Cellectis shall use commercially reasonable efforts to provide such written confirmation promptly, but in any case within five Business Days after the Coverage End Date.

ARTICLE 4
MUTUAL RELEASES; INDEMNIFICATION; COOPERATION

Section 4.01. *Release of Pre-Effective Date Claims*. (a) Except as provided in Section 4.01(c) and Section 4.04, effective as of the Effective Date, the Company does hereby, for itself and for each Person in the Company Group as of the Effective Date and their respective successors and assigns and all Persons who at any time prior to the Effective Date, have been directors, officers, agents or employees of any Person in the Company Group (in each case, in their respective capacities as such), remise, release and forever discharge Cellectis and each Person in the Cellectis Group, and all Persons who at any time prior to the Effective Date have been stockholders, directors, officers, managers, members, agents or employees of any Person in the Cellectis Group (in each case, in their respective capacities as such), and their respective heirs, executors, administrators, successors and assigns, from any and all Liabilities whatsoever between or among the Company or any Person in the Company Group, on the one hand, and Cellectis or any Person in the Cellectis Group, on the other hand, whether at law or in equity (including any rights of contribution or recovery), whether arising under any Contract, by operation of Law or otherwise, existing or arising from any acts or events occurring or failing to occur or alleged to have occurred or to have failed to occur or any conditions existing or alleged to have existed in each case on or before the Effective Date.

(b) Except as provided in Section 4.01(c) and Section 4.03, effective as of the Effective Date, Cellectis does hereby, for itself and for each Person in the Cellectis Group as of the Effective Date and their respective successors and assigns and all Persons who at any time prior to the Effective Date, have been directors, officers, agents or employees

of any Person in the Cellectis Group (in each case, in their respective capacities as such), remise, release and forever discharge the Company and each Person in the Company Group, and all Persons who at any time prior to the Effective Date have been stockholders, directors, officers, managers, members, agents or employees of any Person in the Company Group (in each case, in their respective capacities as such), and their respective heirs, executors, administrators successors and assigns, from any and all Liabilities whatsoever between or among the Company or any Person in the Company Group, on the one hand, and Cellectis or any Person in the Cellectis Group, on the other hand, whether at law or in equity (including any rights of contribution or recovery), whether arising under any Contract, by operation of Law or otherwise, existing or arising from any acts or events occurring or failing to occur or alleged to have occurred or to have failed to occur or any conditions existing or alleged to have existed in each case on or before the Effective Date.

(c) Nothing contained in Section 4.01(a) or (b) shall (x) impair any right of any Person to enforce any Surviving Contract in accordance with its terms or (y) release any Person from:

(i) any Liability provided in or resulting from any Surviving Contract;

(ii) any Liability assumed or retained by, or transferred, assigned or allocated to the Group of which such Person is a member in accordance with, or any other Liability of any Person in any Group under, this Agreement or any Ancillary Agreement;

(iii) any Liability provided in or resulting from any Contract or understanding that is entered into after the Effective Date between a member of the Cellectis Group, on the one hand, and a member of the Company Group, on the other hand;

(iv) any Liability that the Parties may have with respect to claim for indemnification, recovery or contribution brought pursuant to this Agreement or any Ancillary Agreement, which Liability shall be governed by the provisions of this Article 4 or, if applicable, the appropriate provisions of the Ancillary Agreements; or

(v) any Liability the release of which would result in the release of any Person other than a Person released pursuant to this Section 4.01.

In addition, nothing contained in Section 4.01(a) shall release Cellectis from indemnifying any director, officer or employee of the Company who was a director, officer or employee of Cellectis or any of its Affiliates on or prior to the Effective Date, to the extent such director, officer or employee is or becomes a named defendant in any Action with respect to which he or she was entitled to such indemnification pursuant to obligations existing prior to the Effective Date, it being understood that if the underlying obligation giving rise to such Action is a Liability of the Company, the Company shall indemnify Cellectis for such Liability (including Cellectis' costs to indemnify the director, officer or employee) in accordance with the provisions set forth in this Article 4.

(d) The Company shall not make, and shall not permit any Person in the Company Group to make, any claim or demand, or commence any Action asserting any claim or demand, including any claim of contribution, recovery or any indemnification, against Cellectis or any Person in the Cellectis Group, or any other Person released pursuant to Section 4.01(a), with respect to any Liabilities released pursuant to Section 4.01(a). Cellectis shall not make, and shall not permit any Person in the Cellectis Group to make, any claim or demand, or commence any Action asserting any claim or demand, including any claim of contribution, recovery or any indemnification against the Company or any Person in the Company Group, or any other Person released pursuant to Section 4.01(b), with respect to any Liabilities released pursuant to Section 4.01(b).

(e) It is the intent of each of Cellectis and the Company, by virtue of the provisions of this Section 4.01, to provide for a full and complete release and discharge of all Liabilities existing or arising from all acts and events occurring or failing to occur or alleged to have occurred or to have failed to occur and all conditions existing or alleged to have existed in each case on or before the Effective Date, between or among the Company or any Person in the Company Group, on the one hand, and Cellectis or any Person in the Cellectis Group, on the other hand (including any contractual agreements or arrangements existing or alleged to exist between or among any such Persons on or before the Effective Date), except as expressly set forth in Section 4.01(c). At any time, at the request of the other Party, each Party shall cause each Person in its respective Group and to the extent practicable each other Person to execute and deliver releases reflecting the provisions hereof.

(f) If any Person associated with either Cellectis or the Company (including any of their respective directors, officers, agents or employees) initiates an Action with respect to claims released by this Section 4.01, the Party with which such Person is associated shall indemnify the other Party against such Action in accordance with the provisions set forth in this Article 4.

Section 4.02. *Pending, Threatened and Unasserted Claims*. The Company shall assume liability for all claims, including pending, threatened and unasserted claims, relating to actions or omissions relating to the Company Business and Cellectis shall assume liability for all pending, threatened and unasserted claims relating to actions or omissions relating to the Cellectis Business. In the event of any third-party claims that name both Parties as defendants, each Party will cooperate with the other Party to defend against such claims.

Section 4.03. *Indemnification by the Company*. Except as provided in Section 4.05, the Company shall indemnify, defend and hold harmless each member of the Cellectis Group and each of their Affiliates and each member of the Cellectis Group's and their respective Affiliates' directors, officers, employees and agents, and each of the heirs, executors, successors and assigns of any of the foregoing (collectively, the "**Cellectis Indemnitees**"), from and against any and all Losses of the Cellectis Indemnitees relating to, arising out of or resulting from (without duplication and including any such Losses arising by way of setoff, counterclaim or defense or enforcement of any lien):

(a) (x) any untrue statement or alleged untrue statement of a material fact contained in any Disclosure Document of any member of the Company Group or any omission or alleged omission to state a material fact in any such Disclosure Document required to be stated therein or necessary to make the statements therein not misleading, except insofar as any such Losses are caused by any untrue statement or alleged untrue statement of a material fact in such Disclosure Document or any omission or alleged omission to state a material fact in such Disclosure Document required to be stated therein or necessary to make the statements therein not misleading based upon information relating to Cellectis furnished to the Company in writing by Cellectis expressly for use therein, and (y) any untrue statement or alleged untrue statement of a material fact contained in any Disclosure Document of any member of the Cellectis Group or any omission or alleged omission to state a material fact in any such Disclosure Document required to be stated therein or necessary to make the statements therein not misleading that is based upon information relating to the Company furnished to Cellectis in writing by the Company expressly for use in such Disclosure Document;

(b) the Company Business, including the failure of the Company or any other member of the Company Group to pay, perform or otherwise promptly discharge any Liability relating to, arising out of or resulting from the Company Business in accordance with its terms, whether prior to or after the Effective Date or the date hereof; and

(c) any breach by the Company or any Person in the Company Group of this Agreement or any Ancillary Agreement, unless such Ancillary Agreement expressly provides for separate indemnification therein, in which case, any such indemnification claims with respect to a breach thereunder shall be made thereunder.

Section 4.04. *Indemnification by Cellectis*. Except as provided in Section 4.05, Cellectis shall indemnify, defend and hold harmless each member of the Company Group and each of their Affiliates and each member of the Company Group's and their respective Affiliates' directors, officers, employees and agents, and each of the heirs, executors, successors and assigns of any of the foregoing (collectively, the "**Company Indemnitees**"), from and against any and all Losses of the Company Indemnitees relating to, arising out of or resulting from (without duplication and including any such Losses arising by way of setoff, counterclaim or defense or enforcement of any lien):

(a) any untrue statement or alleged untrue statement of a material fact contained in any Disclosure Document of any member of the Company Group or any omission or alleged omission to state a material fact in any such Disclosure Document required to be stated therein or necessary to make the statements therein not misleading that is based upon information relating to Cellectis furnished to the Company in writing by Cellectis expressly for use in such Disclosure Document;

(b) the Cellectis Business, including the failure of Cellectis or any other member of the Cellectis Group to pay, perform or otherwise promptly discharge any Liability relating to, arising out of or resulting from the Cellectis Business in accordance with its terms, whether prior to or after the Effective Date or the date hereof; and

(c) any breach by Cellectis or any Person in the Cellectis Group of this Agreement or any Ancillary Agreement, unless such Ancillary Agreement expressly provides for separate indemnification therein, in which case, any such indemnification claims with respect to a breach thereunder shall be made thereunder.

Section 4.05. *Indemnification Obligations Net of Insurance Proceeds and Other Amounts*. (a) The Parties intend that any Loss subject to indemnification or reimbursement pursuant to this Article 4 will be net of Insurance Proceeds that actually reduce the amount of the Loss. Accordingly, the amount which any Party (an "**Indemnifying Party**") is required to pay to any Person entitled to indemnification hereunder (an "**Indemnitee**") will be reduced by any Insurance Proceeds theretofore actually recovered by or on behalf of the Indemnitee in respect of the related Loss. If an Indemnitee receives a payment (an "**Indemnity Payment**") required by this Agreement from an Indemnifying Party in respect of any Loss and subsequently receives Insurance Proceeds, then the Indemnitee will pay to the Indemnifying Party an amount equal to the excess of the Indemnity Payment received over the amount of the Indemnity Payment that would have been due if the Insurance Proceeds had been received, realized or recovered before the Indemnity Payment was made.

(b) An insurer that would otherwise be obligated to pay any claim shall not be relieved of the responsibility with respect thereto or, solely by virtue of the indemnification provisions hereof, have any subrogation rights with respect thereto, it being expressly understood and agreed that no insurer or any other third party shall be entitled to a "wind-fall" (i.e., a benefit such insurer or other third party would not be entitled to receive in the absence of the indemnification provisions) by virtue of the indemnification provisions hereof. Nothing contained in this Agreement or any Ancillary Agreement shall obligate any Person in any Group to seek to collect or recover any Insurance Proceeds.

(c) Any Indemnity Payment made by the Company shall be (i) increased as necessary so that after making all payments in respect to taxes imposed on or attributable to such Indemnity Payment, each Cellectis Indemnitee receives a net amount equal to the sum it would have received had no such taxes been imposed and (ii) reduced to take account of any net tax benefit actually realized by an Cellectis Indemnitee arising from the incurrence or payment of the Loss to which the Indemnity Payment relates. Any Indemnity Payment made by Cellectis shall be (i) increased as necessary so that after making all payments in respect to taxes imposed on or attributable to such Indemnity Payment, each Company Indemnitee receives a net amount equal to the sum it would have received had no such taxes been imposed and (ii) reduced to take account of any net tax benefit actually realized by a Company Indemnitee arising from the incurrence or payment of the Loss to which the Indemnity Payment relates.

(d) If an indemnification claim is covered by the indemnification provisions of an Ancillary Agreement, the claim shall be made under the Ancillary Agreement to the extent applicable and the provisions thereof shall govern such claim. In no event shall any Party be entitled to double recovery from the indemnification provisions of this Agreement and any Ancillary Agreement.

Section 4.06. *Procedures for Indemnification of Third Party Claims*. (a) If an Indemnitee shall receive notice or otherwise learn of the assertion by a Person (including any Governmental Authority) who is not a Person in the Cellectis Group or the Company Group of any claim or of the commencement by any such Person of any Action with respect to which an Indemnifying Party may be obligated to provide indemnification to such Indemnitee pursuant to Section 4.03 or Section 4.04, or any other Section of this Agreement (collectively, a "**Third Party Claim**"), such Indemnitee shall give such Indemnifying Party written notice thereof as promptly as practicable (and in any event within 45 days) after becoming aware of such Third Party Claim. Any such notice shall describe the Third Party Claim in reasonable detail. Notwithstanding the foregoing, the failure of any Indemnitee or other Person to give notice as provided in this Section 4.06(a) shall not relieve the related Indemnifying Party of its obligations under this Article 4, except to the extent, and only to the extent, that such Indemnifying Party is materially prejudiced by such failure to give notice.

(b) An Indemnifying Party may elect (but shall not be required) to defend, at such Indemnifying Party's own expense and by such Indemnifying Party's own counsel (which counsel shall be reasonably satisfactory to the Indemnitee), any Third Party Claim; provided that the Indemnifying Party shall not be entitled to defend and shall pay the reasonable fees and expenses of one separate counsel for all Indemnitees if the claim for indemnification relates to or arises in connection with any criminal action, indictment or allegation. Within 45 days after the receipt of notice from an Indemnitee in accordance with Section 4.06(a) (or sooner, if the nature of such Third Party Claim so requires), the Indemnifying Party shall notify the Indemnitee of its election whether the Indemnifying Party will assume responsibility for defending such Third Party Claim, which election shall specify any reservations or exceptions to its defense. After notice from an Indemnifying Party to an Indemnitee of its election to assume the defense of a Third Party Claim, such Indemnitee shall have the right to employ separate counsel and to participate in (but not control) the defense, compromise, or settlement thereof, but the fees and expenses of such counsel shall be the expense of such Indemnitee; provided, however, in the event that (i) the Indemnifying Party has elected to assume the defense of the Third Party Claim but has specified, and continues to assert, any reservations or exceptions in such notice or (ii) the Third Party Claim involves injunctive or equitable relief, then, in any such case, the reasonable fees and expenses of one separate counsel for all Indemnitees shall be borne by the Indemnifying Party.

(c) If an Indemnifying Party elects not to assume responsibility for defending a Third Party Claim, or fails to notify an Indemnitee of its election as provided in Section 4.06(b), such Indemnitee may defend such Third Party Claim at the cost and expense of the Indemnifying Party. Any legal fees and expenses actually incurred by the Indemnitee in connection with defending such claim shall be paid by the Indemnifying Party.

(d) Unless the Indemnifying Party has failed to assume the defense of the Third Party Claim in accordance with the terms of this Agreement, no Indemnitee may settle or compromise any Third Party Claim without the consent of the Indemnifying Party. If an Indemnifying Party has failed to assume the defense of the Third Party Claim within the time period specified in clause (b) above, it shall not be a defense to any obligation to pay any amount in respect of such Third Party Claim that the Indemnifying Party was not consulted in the defense thereof, that such Indemnifying Party's views or opinions as to the conduct of such defense were not accepted or adopted, that such Indemnifying Party does not approve of the quality or manner of the defense thereof or that such Third Party Claim was incurred by reason of a settlement rather than by a judgment or other determination of liability.

(e) In the case of a Third Party Claim, no Indemnifying Party shall consent to entry of any judgment or enter into any settlement of the Third Party Claim without the consent of the Indemnitee if the effect thereof is (i) to permit any injunction, declaratory judgment, other order or other non-monetary relief to be entered, directly or indirectly, against any Indemnitee or (ii) to ascribe any fault on any Indemnitee in connection with such defense.

(f) Notwithstanding the foregoing, the Indemnifying Party shall not, without the prior written consent of the Indemnitee, settle or compromise any Third Party Claim or consent to the entry of any judgment which does not include as an unconditional term thereof the delivery by the claimant or plaintiff to the Indemnitee of a written release from all Liability in respect of such Third Party Claim.

Section 4.07. *Additional Matters*. (a) Any claim on account of a Loss which does not result from a Third Party Claim shall be asserted by written notice given by the Indemnitee to the related Indemnifying Party. Such Indemnifying Party shall have a period of 30 days after the receipt of such notice within which to respond thereto. If such Indemnifying Party does not respond within such 30-day period, such Indemnifying Party shall be deemed to have refused to accept responsibility to make payment. If such Indemnifying Party does not respond within such 30-day period or rejects such claim in whole or in part, such Indemnitee shall be free to pursue such remedies as may be available to such Indemnitee as contemplated by this Agreement and the Ancillary Agreements.

(b) In the event of payment by or on behalf of any Indemnifying Party to any Indemnitee in connection with any Third Party Claim, such Indemnifying Party shall be subrogated to and shall stand in the place of such Indemnitee as to any events or circumstances in respect of which such Indemnitee may have any right, defense or claim relating to such Third Party Claim against any claimant or plaintiff asserting such Third Party Claim or against any other Person. Such Indemnitee shall cooperate with such Indemnifying Party in a reasonable manner, and at the cost and expense of such Indemnifying Party, in prosecuting any subrogated right, defense or claim.

(c) In the event of an Action in which the Indemnifying Party is not a named defendant, if either the Indemnitee or Indemnifying Party shall so request, the Parties shall endeavor to substitute the Indemnifying Party for the named defendant or otherwise hold the Indemnifying Party as party thereto, if at all practicable. If such substitution or addition cannot be achieved for any reason or is not requested, the named defendant shall allow the Indemnifying Party to manage the Action as set forth in this Section, and the Indemnifying Party shall fully indemnify the named defendant against all costs of defending the Action (including court costs, sanctions imposed by a court, attorneys' fees, experts fees and all other external expenses), the costs of any judgment or settlement, and the cost of any interest or penalties relating to any judgment or settlement with respect to such Third Party Claim.

Section 4.08. *Remedies Cumulative*. The remedies provided in this Article 4 shall be cumulative and, subject to the provisions of Article 6, shall not preclude assertion by any Indemnitee of any other rights or the seeking of any and all other remedies against any Indemnifying Party.

Section 4.09. *Survival of Indemnities*. The indemnity agreements contained in this Article 4 shall remain operative and in full force and effect, regardless of (i) any investigation made by or on behalf of any Indemnitee; and (ii) the knowledge by the Indemnitee of Liabilities for which it might be entitled to indemnification hereunder. The rights and obligations of each of Cellectis and the Company and their respective Indemnitees under this Article 4 shall survive the merger or consolidation of any Party, the sale or other transfer by any Party of any assets or businesses or the assignment by it of any Liabilities, or the change of form or change of control or corporate reorganization of any Party.

Section 4.10. *Special Damages*. NOTWITHSTANDING ANY OTHER PROVISION OF THIS AGREEMENT OR ANY ANCILLARY AGREEMENT TO THE CONTRARY, IN NO EVENT WILL EITHER PARTY OR ANY OF ITS GROUP MEMBERS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, COLLATERAL, CONSEQUENTIAL OR PUNITIVE DAMAGES OR LOST PROFITS SUFFERED BY AN INDEMNITEE, HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, IN CONNECTION WITH ANY DAMAGES ARISING HEREUNDER OR THEREUNDER (INCLUDING IN RESPECT OF ANY LOSS IN THE VALUE OF COMMON STOCK); PROVIDED, HOWEVER, THAT TO THE EXTENT AN INDEMNIFIED PARTY IS REQUIRED TO PAY ANY SPECIAL, INCIDENTAL, INDIRECT, COLLATERAL, CONSEQUENTIAL OR PUNITIVE DAMAGES OR LOST PROFITS TO A PERSON WHO IS NOT A MEMBER OF EITHER GROUP IN CONNECTION WITH A THIRD PARTY CLAIM, SUCH DAMAGES WILL CONSTITUTE DIRECT DAMAGES AND NOT BE SUBJECT TO THE LIMITATION SET FORTH IN THIS SECTION 4.10.

ARTICLE 5
CERTAIN BUSINESS MATTERS

Section 5.01. *No Restriction on Competition*. It is the explicit intent of each of the Parties hereto that the provisions of this Agreement shall not include any non-competition or other similar restrictive arrangements with respect to the range of business

activities which may be conducted by the Parties. Accordingly, each of the Parties acknowledges and agrees that nothing set forth in this Agreement shall be construed to create any explicit or implied restriction or other limitation on (i) the ability of any Party to engage in any business or other activity which competes with the business of any other Party or (ii) the ability of any Party to engage in any specific line of business or engage in any business activity in any specific geographic area.

ARTICLE 6
EXCHANGE OF INFORMATION; CONFIDENTIALITY

Section 6.01. *Agreement for Exchange of Information; Archives.* (a) Each of Cellectis and the Company, on behalf of its respective Group, agrees to provide, or cause to be provided, to the other Group, at any time before or after the Effective Date, as soon as reasonably practicable after written request therefor, access to any Information in the possession or under the control of such respective Group that can be retrieved without unreasonable disruption to its business which the requesting Party reasonably needs (i) to comply with reporting, disclosure, filing, record retention or other requirements imposed on the requesting Party (including under applicable securities or tax Laws) by a Governmental Authority having jurisdiction over the requesting Party, (ii) for use in any other judicial, regulatory, administrative, tax or other proceeding or in order to satisfy audit, accounting, regulatory, litigation, environmental, tax or other similar requirements, in each case other than claims or allegations that one Party to this Agreement or any member of its Group has against the other Party or any member of its Group, or (iii) subject to the foregoing clause (ii), to comply with its obligations under this Agreement.

(b) After the Effective Date, each of the Cellectis Group on the one hand, and the Company Group on the other hand, shall provide to such other Group access during regular business hours (as in effect from time to time) to Information that relates to (i) the business and operations of such other Group, or (ii) the intellectual property covered by the License Agreement, in each case that are located in archives retained or maintained by such other Group (or, if such Information does not exclusively relate to a Party's business, to the portions of such Information that so exclusively relate), subject to the requirements of any applicable state and/or federal regulation such as a Code of Conduct or Standard of Conduct, to the personnel, properties and information of such Party and its Subsidiaries, and only insofar as such access is reasonably required by the other Party for legitimate business reasons, and only for the duration such access is required, and relates to such other Party or the conduct of the business prior to the Effective Date. The Company or Cellectis, as applicable, may obtain copies (but not originals) at their own expense of such Information for bona fide business purposes.

(c) After the Effective Date, each of Cellectis and the Company shall provide, or cause to be provided, to the other Party (in such form as the providing Party retains such Information for its own use) all financial and other data and Information in such Party's possession or control as such requesting Party determines necessary or advisable in order to prepare its financial statements and reports or filings with any Governmental Authority.

(d) After the Effective Date, upon reasonable written notice, the Parties shall furnish or cause to be furnished to each other and their employees, counsel, auditors and representatives reasonable access, during normal business hours, to such Information and reasonable assistance as is required by applicable Law, including Section 404 of the Sarbanes-Oxley Act of 2002, or is reasonably necessary for financial reporting and accounting matters (including with respect to the preparation of any financial statements), letters of representation, reports or forms, the preparation and filing of any tax returns or the defense of any tax claim or assessment. In the event any Party reasonably determines that any such provision of Information could be commercially detrimental, violate any Law or Contract, or result in the waiver any Privilege, the Parties shall take all commercially reasonable measures to permit the compliance with such obligations in a manner that avoids any such harm or consequence, and shall thereafter be deemed to have complied with such obligation.

Section 6.02. *Ownership of Information*. Any Information owned by one Group that is provided to a requesting Party pursuant to Section 6.01 shall be deemed to remain the property of the providing Party. Unless expressly set forth in this Agreement, nothing contained in this Agreement shall be construed as granting or conferring any right, title or interest (whether by license or otherwise) in, to or under any such Information.

Section 6.03. *Record Retention*. To facilitate the possible exchange of Information pursuant to this Article 6 and other provisions of this Agreement after the Effective Date, the Parties agree to use their commercially reasonable efforts to retain all Information in their respective possession or control on the Effective Date in accordance with the policies of Cellectis as in effect from time to time or such other policies as may be reasonably adopted by the appropriate Party after the Effective Date. For the avoidance of doubt, such policies shall be deemed to apply to any Information in a Party's possession or control on the Effective Date relating to the other Party or members of its Group.

Section 6.04. *Limitations of Liability*. Except as otherwise provided in this Article 6, no Party shall have any liability to any other Party in the event that any Information exchanged or provided pursuant to this Agreement is found to be inaccurate or the requested Information is not provided, in the absence of willful misconduct by the Party requested to provide such Information. No Party shall have any liability to any other Party if any Information is destroyed after commercially reasonable efforts by such Party to comply with the provisions of Section 6.03.

Section 6.05. *Production of Witnesses; Records; Cooperation*. (a) After the Effective Date, except in the case of any Action involving or relating to a conflict or dispute between any member of the Cellectis Group, on the one hand, and any member of the Company Group, on the other hand, each Party hereto will use its commercially reasonable efforts to make available to each other Party, upon written request, the then current directors, officers, employees, other personnel and agents of the Person in its respective Group as witnesses and any books, records or other documents within its control or which it otherwise has the ability to make available, to the extent that any such Person (giving consideration to business demands of such directors, officers, employees,

other personnel and agents) or books, records or other documents may reasonably be required in connection with any Action in which indemnification is or may reasonably be expected to be sought that the requesting Party may from time to time be involved. The requesting Party shall bear all costs and expenses in connection therewith.

(b) If an Indemnifying Party or Indemnitee chooses to defend or to seek to compromise or settle any Third Party Claim, the other Party shall make available to such Indemnifying Party or Indemnitee, as applicable, upon written request then current directors, officers, employees, other personnel and agents of the Persons in its respective Group as witnesses and any Information within its control or possession, to the extent that any such Person (giving consideration to business demands of such directors, officers, employees, other personnel and agents) or books, records or other documents may reasonably be required in connection with such defense, settlement or compromise, or such prosecution, evaluation or pursuit, as the case may be, and shall otherwise reasonably cooperate in such defense, settlement or compromise, or such prosecution, evaluation or pursuit, as the case may be.

(c) Without limiting the foregoing, the Parties shall cooperate and consult to the extent reasonably necessary with respect to any Actions in which indemnification is or may reasonably be expected to be sought.

(d) The obligation of the Parties to provide witnesses pursuant to this Section 6.05 is intended to be interpreted in a manner so as to facilitate cooperation and shall include the obligation to provide as witnesses employees and other officers without regard to whether the witness or the employer of the witness could assert a possible business conflict (subject to the exception set forth in the first sentence of Section 6.05(a)).

(e) In connection with any matter contemplated by this Section 6.05 the Parties will enter into a mutually acceptable joint defense agreement so as to maintain to the extent practicable any applicable attorney-client privilege or work product immunity of any Person in any Group.

Section 6.06. *Confidentiality*. (a) Subject to Section 6.07, each of Cellectis and the Company (each, a "**Receiving Party**"), on behalf of itself and each Person in its respective Group, agree to hold, and to cause its respective directors, officers, employees, agents, accountants, counsel and other advisors and representatives to hold in strict confidence, with at least the same degree of care that applies to the confidential and proprietary information of Cellectis pursuant to policies in effect as of the Effective Date, all Information with respect to Cellectis, solely concerning the Company Business (for which the Company shall be the "**Disclosing Party**") and with respect to the Company, concerning the Cellectis Business (for which Cellectis shall be the "**Disclosing Party**") that is accessible to it, in its possession (including Information in its possession prior to the Effective Date) or furnished by the Disclosing Party or any Person in its respective Group, or accessible to, in the possession of, or furnished to the Company's respective directors, officers, employees, agents, accountants, counsel and other advisors and representatives at any time pursuant to this Agreement or otherwise, except, in each case,

to the extent that such Information (i) is or becomes part of the public domain through no breach of this Agreement by the Receiving Party or any of its Group, its respective directors, officers, employees, agents, accountants, counsel and other advisors and representatives, (ii) information that was independently developed following the Effective Date by employees or agents of the Receiving Party or any Person in its respective Group, its respective directors, officers, employees, agents, accountants, counsel and other advisors and representatives who have not accessed or otherwise received the applicable Information; provided that such independent development can be demonstrated by competent, contemporaneous written records of the Receiving Party or any Person in its respective Group, or (iii) becomes available to the Receiving Party or any Person in its respective Group following the Effective Date on a non-confidential basis from a third party who is not bound directly or indirectly by a duty of confidentiality to the Disclosing Party.

(b) Each Party acknowledges that it and the other members of the other Party Group may have in their possession confidential or proprietary Information of third parties that was received under confidentiality or non-disclosure agreements with such third party prior to the Effective Date. Such Party will hold, and will cause the other members of its Group and their respective directors, officers, employees, agents, accountants, counsel, consultants and other advisors and representatives to hold, in strict confidence the confidential and proprietary information of third parties to which they or any other member of their respective Groups has access, in accordance with the terms of any agreements entered into prior to the Effective Date between one or more members of such Party's Group (whether acting through, on behalf of, or connection with, the separated businesses) and such third parties.

(c) Upon the written request of a Party, the other Party shall promptly destroy any copies of such confidential or proprietary Information (including any extracts therefrom) specifically identified by the requesting Party to be destroyed, except to the extent required by Cellectis policies (in the case of Cellectis holding more than 50% of the outstanding Common Stock of the Company) or prohibited by applicable Law. Upon the written request of such requesting Party, the other Party shall cause one of its duly authorized officers to certify in writing to such requesting Party that the requirements of the preceding sentence have been satisfied in full.

(d) Notwithstanding anything to the contrary in this Article 6, (i) to the extent that an Ancillary Agreement or other Contract pursuant to which a Party or a Person in its respective Group is bound or its confidential Information is subject provides that certain Information shall be maintained confidential on a basis that is more protective of such Information or for a longer period of time than provided for herein, then the applicable provisions contained in such Ancillary Agreement or other Contract shall control with respect thereto and (ii) a Party and the Persons in its respective Group shall have no right to use any Information of the Disclosing Party unless otherwise provided for in this Agreement, an Ancillary Agreement or Contract between the Parties or a Person in its respective Group.

Section 6.07. *Protective Arrangements*. In the event that the Receiving Party or any Person in its Group either determines on the advice of its counsel that it is required to disclose any Information pursuant to applicable Law (including the rules and regulations of the Commission or any national securities exchange) or receives any request or demand from any Governmental Authority to disclose or provide Information of the Disclosing Party (or any Person in the Disclosing Party's Group) that is subject to the confidentiality provisions hereof, such Party shall notify the other Party prior to disclosing or providing such Information and shall cooperate at the expense of such other Party in seeking any reasonable protective arrangements (including by seeking confidential treatment of such Information) requested by such other Party. Subject to the foregoing, the Person that received such a request or determined that it is required to disclose Information may thereafter disclose or provide Information to the extent required by such Law (as so advised by counsel) or requested or required by such Governmental Authority; provided, however, that such Person provides the other Party, to the extent legally permissible, upon request with a copy of the Information so disclosed.

Section 6.08. *Preservation of Legal Privileges*. (a) Cellectis and the Company recognize that the members of their respective Groups possess and will possess information and advice that has been previously developed but is legally protected from disclosure under legal privileges, such as the attorney-client privilege or work product exemption and other concepts of legal protection ("**Privilege**"). Each Party recognizes that they shall be jointly entitled to the Privilege with respect to such privileged information and that each shall be entitled to maintain, preserve and assert for its own benefit all such information and advice, but both Parties shall ensure that such information is maintained so as to protect the Privileges with respect to the other Party's interest. To that end, neither Party will knowingly waive or compromise any Privilege associated with such information and advice without the prior written consent of the other Party. In the event that privileged information is required to be disclosed to any arbitrator or mediator in connection with a dispute between the Parties, such disclosure shall not be deemed a waiver of Privilege with respect to such information, and any Party receiving it in connection with a proceeding shall be informed of its nature and shall be required to safeguard and protect it.

(b) Upon receipt by either Party of any subpoena, discovery or other request that may call for the production or disclosure of information that is the subject of a Privilege, or if a Party obtains knowledge that any current or former employee of a Party has received any subpoena, discovery or other request that may call for the production or disclosure of such information, such Party shall provide the other Party a reasonable opportunity to review the information and to assert any rights it may have under this Section 6.08 or otherwise to prevent the production or disclosure of such information. Absent receipt of written consent from the other Party to the production or disclosure of information that may be covered by a Privilege, each Party agrees that it will not produce or disclose any information that may be covered by a Privilege unless a court of competent jurisdiction has entered a final, nonappealable order finding that the information is not entitled to protection under any applicable Privilege.

(c) Cellectis' transfer of Company Books and Records and other Information to the Company, Cellectis' agreement to permit the Company to obtain Information existing prior to the Effective Date, the Company's transfer of Cellectis Books and Records and other Information and the Company's agreement to permit Cellectis to obtain Information existing prior to the Effective Date are made in reliance on Cellectis' and the Company's respective agreements, as set forth in Section 6.06, Section 6.07 and this Section 6.08, to maintain the confidentiality of such Information and to take the steps provided herein for the preservation of all Privileges that may belong to or be asserted by Cellectis or the Company, as the case may be. The access to Information being granted pursuant to Section 6.01 hereof, the agreement to provide witnesses and individuals pursuant to Section 6.06 hereof and the disclosure to Cellectis and the Company of Privileged Information relating to the Company Business or Cellectis Business (if any) pursuant to this Agreement shall not be asserted by Cellectis or the Company to constitute, or otherwise deemed, a waiver of any Privilege that has been or may be asserted under this Section 6.08 or otherwise. Nothing in this Agreement shall operate to reduce, minimize or condition the rights granted to Cellectis and the Company in, or the obligations imposed upon the Parties by, this Section 6.08.

ARTICLE 7
FINANCIAL AND OTHER COVENANTS

Section 7.01. *Disclosure and Financial Controls*. The Company agrees that, for so long as Cellectis is required to consolidate the results of operations and financial position of the Company and any other members of the Company Group or to account for its investment in the Company under the equity method of accounting (determined in accordance with IFRS and consistent with reporting requirements under Cellectis policies applicable at the Effective Date and under applicable Law):

(a) Disclosure of Financial Controls. The Company will, and will cause each other member of the Company Group to, maintain, as of and after the Effective Date, disclosure controls and procedures and internal control over financial reporting as defined in Exchange Act Rule 13a-15; the Company will cause each of its principal executive and principal financial officers to sign and deliver certifications to the Company's periodic reports and will include the certifications in the Company's periodic reports, as and when required pursuant to Exchange Act Rule 13a-14 and Item 601 of Regulation S-K; the Company will cause its management to evaluate the Company's disclosure controls and procedures and internal control over financial reporting (including any change in internal control over financial reporting) as and when required pursuant to Exchange Act Rule 13a-15; the Company will disclose in its periodic reports filed with the Commission information concerning the Company management's responsibilities for and evaluation of the Company's disclosure controls and procedures and internal control over financial reporting (including, without limitation, the annual management report and attestation report of the Company's independent auditors relating to internal control over financial reporting) as and when required under Items 307 and 308 of Regulation S-K and other applicable Commission rules; and, without limiting the general application of the foregoing, the Company will, and will cause each other member of the Company Group to, maintain as of and after the Effective Date internal systems and procedures that will

provide reasonable assurance that (A) the Financial Statements are reliable and timely prepared in accordance with GAAP or IFRS (as applicable) and applicable Law, (B) all transactions of members of the Company Group are recorded as necessary to permit the preparation of the Financial Statements, (C) the receipts and expenditures of members of the Company Group are authorized at the appropriate level within the Company, and (D) unauthorized use or disposition of the assets of any member of the Company Group that could have a material effect on the Financial Statements is prevented or detected in a timely manner.

(b) Fiscal Year. The Company will, and will cause each member of the Company Group organized in the U.S. to maintain a fiscal year that commences and ends on the same calendar days as Cellectis' fiscal year commences and ends, and to maintain monthly accounting periods that commence and end on the same calendar days as Cellectis' monthly accounting periods commence and end. The Company will, and will cause each member of the Company Group organized outside the U.S. to maintain a fiscal year that commences and ends on the same calendar days as the fiscal year of the corresponding members of the Cellectis Group organized outside the U.S. commences and ends, and to maintain monthly accounting periods that commence and end on the same calendar days as the monthly accounting periods of the corresponding members of the Cellectis Group organized outside the U.S. commence and end.

(c) Monthly and Quarterly Financial Information. The Company and each of its Subsidiaries and Affiliates will deliver to Cellectis an income statement and balance sheet on a monthly basis for such period in such format and detail as Cellectis reasonably requests, including for purposes of Cellectis to prepare reconciliations with respect to its financial statements. The Company and each of its Subsidiaries and Affiliates will deliver to Cellectis an income statement and balance sheet and supplemental data related to cash flows and other necessary disclosures on a quarterly basis in such format and detail as Cellectis may reasonably request. The Company will be responsible for reviewing its results and data and for informing Cellectis immediately of any post-closing adjustments that come to its attention. The Company must provide final sign-off of its results, using Cellectis' materiality standards, no later than seven Business Days after the quarterly close period end for the income statement, for the balance sheet, cash flow and supplemental data. A certification will be provided by the Controller and Chief Financial Officer and Chief Executive Officer of the Company pertaining to the quarter financials and internal controls no later than five Business Days prior to Cellectis' filing or furnishing of its quarterly financial statements with the Commission.

(d) Quarterly Financial Statements. As soon as practicable and no later than 14 Business Days after the quarterly close period, the Company will deliver to Cellectis drafts of (A) the consolidated financial statements of the Company Group (and notes thereto) for such periods and for the period from the beginning of the current fiscal year to the end of such quarter, setting forth in each case in comparative form for each such fiscal quarter of the Company the consolidated figures (and notes thereto) for the corresponding quarter and periods of the previous fiscal year and all in reasonable detail and prepared in accordance with Article 10 of Regulation S-X and GAAP or IFRS (as applicable), and (B) a discussion and analysis by management of the Company Group's

financial condition and results of operations for such fiscal period, including, without limitation, an explanation of any material period-to-period change and any off-balance sheet transactions, all in reasonable detail and prepared in accordance with Item 303(b) of Regulation S-K; provided, however, that the Company will deliver such information at such earlier time upon Cellectis written request with 30 days' notice resulting from Cellectis' determination to accelerate the timing of the filing or furnishing of its financial statements with the Commission. The information set forth in (A) and (B) above is referred to in this Agreement as the "**Quarterly Financial Statements**." No later than five Business Days prior to the date the Company publicly files the Quarterly Financial Statements with the Commission or otherwise makes such Quarterly Financial Statements publicly available, the Company will deliver to Cellectis the final form of the Company Quarterly Financial Statements and certifications thereof by the principal executive and financial officers of the Company in substantially the forms required under Commission rules for periodic reports and in form and substance satisfactory to Cellectis, including for purposes of Cellectis to prepare reconciliations with respect to its financial statements; provided, however, that the Company may continue to revise such Quarterly Financial Statements prior to the filing thereof in order to make corrections and non-substantive changes which corrections and changes will be delivered by the Company to Cellectis as soon as practicable, and in any event within eight hours of making any such corrections or changes; provided, further, that Cellectis' and the Company's financial representatives will actively consult with each other regarding any changes (whether or not substantive) which the Company may consider making to its Quarterly Financial Statements and related disclosures during the five Business Days immediately prior to any anticipated filing by the Company with the Commission, with particular focus on any changes which would have an effect upon Cellectis' financial statements or related disclosures. In addition to the foregoing, no Quarterly Financial Statement or any other document which refers, or contains information not previously publicly disclosed with respect to the ownership of the Company by Cellectis or the IPO and transactions contemplated by this Agreement and the Ancillary Agreements following the Effective Date, will be filed with the Commission or otherwise made public by any Company Group member without the prior written consent of Cellectis, which consent shall not be unreasonably withheld. Notwithstanding anything to the contrary in this Section 7.01(d), the Company will not file its Quarterly Financial Statements with the Commission unless otherwise required by applicable Law or approved by Cellectis.

(e) Annual Financial Statements. On an annual basis, the Company will deliver to Cellectis an income statement and balance sheet and supplemental data related to cash flows and other necessary disclosures for such period in such format and detail as Cellectis may reasonably request, including for purposes of Cellectis to prepare reconciliations with respect to its financial statements. The Company will be responsible for reviewing its results and data and for informing Cellectis immediately of any post-closing adjustments within eight hours of its awareness. The Company must provide final sign-off of its results, using Cellectis' materiality standards, no later than seven Business Days after the annual close period end for the income statement, for the balance sheet, for the cash flow and supplemental data. A certification will be provided by the Controller and Chief Financial Officer and Chief Executive Officer of the Company pertaining to the financials and internal controls no later than seven Business Days prior to Cellectis'

filing of its audited annual financial statements (the "**Cellectis Annual Statements**") with the Commission. As soon as practicable, and in any event no later than 15 Business Days prior to the date on which Cellectis has notified the Company that Cellectis intends to file its annual report on Form 20-F or other document containing annual financial statements with the Commission, the Company will deliver to Cellectis any financial and other information and data with respect to the Company Group and its business, properties, financial position, results of operations and prospects as is reasonably requested by Cellectis in connection with the preparation of Cellectis' financial statements and annual report on Form 20-F. As soon as practicable, and in any event no later than fifteen Business Days prior to the date on which the Company is required to file an annual report on Form 10-K or other document containing its Annual Financial Statements (as defined below) with the Commission, the Company will deliver to Cellectis drafts of (A) the consolidated financial statements of the Company Group (and notes thereto) for such year, setting forth in each case in comparative form the consolidated figures (and notes thereto) for the previous fiscal years and all in reasonable detail and prepared in accordance with Regulation S-X and GAAP or IFRS (as applicable) and (B) a discussion and analysis by management of the Company Group's financial condition and results of operations for such year, including, without limitation, an explanation of any material period-to-period change and any off-balance sheet transactions, all in reasonable detail and prepared in accordance with Items 303(a) and 305 of Regulation S-K. The information set forth in (A) and (B) above is referred to in this Agreement as the "**Annual Financial Statements.**" The Company will deliver to Cellectis all revisions to such drafts as soon as any such revisions are prepared or made. No later than five Business Days prior to the date the Company publicly files the Annual Financial Statements with the Commission or otherwise makes such Annual Financial Statements publicly available, the Company will deliver to Cellectis the final form of its annual report on Form 10-K and certifications thereof by the principal executive and financial officers of the Company in substantially the forms required under Commission rules for periodic reports and in form and substance satisfactory to Cellectis; provided, however, that the Company may continue to revise such Annual Financial Statements prior to the filing thereof in order to make corrections and non-substantive changes which corrections and changes will be delivered by the Company to Cellectis as soon as practicable, and in any event within eight hours of making any such corrections or changes; provided, further, that Cellectis' and the Company's financial representatives will actively consult with each other regarding any changes (whether or not substantive) which the Company may consider making to its Annual Financial Statements and related disclosures during the five Business Days immediately prior to any anticipated filing with the Commission. In addition to the foregoing, no Annual Financial Statement or any other document which refers, or contains information not previously publicly disclosed with respect to the ownership of the Company by Cellectis or the IPO and transactions contemplated by this Agreement and the Ancillary Agreements following the Effective Date will be filed with the Commission or otherwise made public by any Company Group member without the prior written consent of Cellectis, which consent shall not be unreasonably withheld. Beginning with the 2017 fiscal year, the Company will use its reasonable best efforts to deliver to Cellectis, no later than five Business Days prior to the date on which Cellectis has notified the Company that Cellectis intends to file the

Cellectis Annual Statements with the Commission, the final form of the Annual Financial Statements accompanied by an opinion thereon by the Company's independent certified public accountants. Notwithstanding anything to the contrary in this Section 7.01(e), the Company will not file its Annual Financial Statements with the Commission unless otherwise required by applicable Law or approved by Cellectis.

(f) Affiliate Financial Statements. The Company will deliver to Cellectis all quarterly financial statements and annual financial statements of each Company Affiliate which is itself required to file financial statements with the Commission or otherwise make such financial statements publicly available, with such financial statements to be provided in the same manner and detail and on the same time schedule as Quarterly Financial Statements and Annual Financial Statements required to be delivered to Cellectis pursuant to this Section 7.01.

(g) Conformity with Cellectis Financial Presentation. All information provided by any Company Group member to Cellectis or filed with the Commission pursuant to Section 7.01(c) through (f) inclusive will be consistent in terms of format and detail and otherwise with the financial presentation in the prospectus for the IPO and as otherwise presently presented in financial reports to the Board of Directors of Cellectis, with such changes therein as may be requested by Cellectis from time to time consistent with changes in such accounting principles and practices.

(h) Company Reports Generally. The Company shall, and shall cause each Company Group member that files information with the Commission, to deliver to Cellectis: (A) substantially final drafts, as soon as the same are prepared, of (x) all reports, notices and proxy and information statements to be sent or made available by such Company Group member to its respective security holders, (y) all regular, periodic and other reports to be filed or furnished under Sections 13, 14 and 15 of the Exchange Act (including reports on Forms 10-K, 10-Q and 8-K and annual reports to shareholders), and (z) all registration statements and prospectuses to be filed by such Company Group member with the Commission or any securities exchange pursuant to the listed company manual (or similar requirements) of such exchange (collectively, the documents identified in clauses (x), (y) and (z) are referred to in this Agreement as "**Company Public Documents**"), and (B) as soon as practicable, but in no event later than five Business Days (other than with respect to Form 8-Ks) prior to the earliest of the dates the same are printed, sent or filed, current drafts of all such Company Public Documents and, with respect to Form 8-Ks, as soon as practicable, but in no event later than three Business Days prior to the earliest of the dates the same are printed, sent or filed in the case of planned Form 8-Ks and as soon as practicable, but in no event less than two hours in the case of unplanned Form 8-Ks; provided, however, that the Company may continue to revise such Company Public Documents prior to the filing thereof in order to make corrections and non-substantive changes which corrections and changes will be delivered by the Company to Cellectis as soon as practicable, and in any event within eight hours of making any such corrections or changes; provided, further, that Cellectis and the Company financial representatives will actively consult with each other regarding any changes (whether or not substantive) which the Company may consider making to any of its Company Public Documents and related disclosures prior to any anticipated filing

with the Commission, with particular focus on any changes which would have an effect upon Cellectis' financial statements or related disclosures. In addition to the foregoing, no Company Public Document or any other document which refers, or contains information not previously publicly disclosed with respect to the ownership of the Company by Cellectis or the IPO and transactions contemplated by this Agreement and the Ancillary Agreements following the Effective Date will be filed with the Commission or otherwise made public by any Company Group member without the prior written consent of Cellectis.

(i) Budgets and Financial Projections. The Company will, as promptly as practicable, deliver to Cellectis copies of all annual budgets and financial projections (including initial annual budgets and reforecasts after the first and third quarters of each fiscal year, each consistent in terms of format and detail mutually agreed upon by the Parties) relating to the Company on a consolidated basis and will provide Cellectis an opportunity to meet with management of the Company to discuss such budgets and projections.

(j) Other Information. With reasonable promptness, the Company will deliver to Cellectis such additional financial and other information and data with respect to the Company Group and their business, properties, financial positions, results of operations and prospects as from time to time may be reasonably requested by Cellectis.

(k) Press Releases and Similar Information. The Company and Cellectis will consult with each other as to the timing of their annual and quarterly earnings releases and any interim financial guidance for a current or future period and will give each other the opportunity to review the information therein relating to the Company Group and to comment thereon. Cellectis and the Company will make reasonable efforts to issue their respective annual and quarterly earnings releases at approximately the same time on the same date. Company shall coordinate the timing of its respective earnings release conference calls with Cellectis earning calls timing, such that the Company shall issue its annual and quarterly earnings release no later than five days before the Cellectis' annual and quarterly earnings release, provided that Cellectis will inform the Company of its next financial year agenda quarterly releases not later than December 15 of the preceding year. No later than eight hours prior to the time and date that a Party intends to publish its regular annual or quarterly earnings release or any financial guidance for a current or future period, such Party will deliver to the other Party copies of substantially final drafts of all related press releases and other statements to be made available by any member of that Party's Group to employees of any member of that Party's Group or to the public concerning any matters that could be reasonably likely to have a material financial impact on the earnings, results of operations, financial condition or prospects of any Company Group member. In addition, prior to the issuance of any such press release or public statement that meets the criteria set forth in the preceding two sentences, the issuing Party will consult with the other Party regarding any changes (other than typographical or other similar minor changes) to such substantially final drafts. Immediately following the issuance thereof, the issuing Party will deliver to the other Party copies of final drafts of all press releases and other public statements. Prior to the Effective Date, the Company shall consult with Cellectis prior to issuing any press releases or otherwise making public

statements with respect to the IPO and transactions contemplated by this Agreement and the Ancillary Agreements following the Effective Date or any of the other transactions contemplated hereby and prior to making any filings with any Governmental Authority with respect thereto.

(l) Cooperation on Cellectis Filings. The Company will cooperate fully, and cause Company Auditors to cooperate fully, with Cellectis to the extent requested by Cellectis in the preparation of Cellectis' public earnings or other press releases, quarterly reports, annual reports to shareholders, annual reports on Form 20-F, any current reports on Form 6-K and any other proxy, information and registration statements, reports, notices, prospectuses and any other filings or furnishings made by Cellectis with the Commission, any national or non-U.S. securities exchange or otherwise made publicly available (collectively, the "**Cellectis Public Filings**"). The Company agrees to provide to Cellectis all information that Cellectis reasonably requests in connection with any Cellectis Public Filings or that, in the judgment of Cellectis' legal counsel, is required to be disclosed or incorporated by reference therein under any Law, rule or regulation. The Company will provide such information in a timely manner on the dates requested by Cellectis (which may be earlier than the dates on which the Company otherwise would be required hereunder to have such information available) to enable Cellectis to prepare, print and release all Cellectis Public Filings on such dates as Cellectis will determine but in no event later than as required by applicable Law. The Company will use its commercially reasonable efforts to cause Company Auditors to consent to any reference to them as experts in any Cellectis Public Filings required under any Law, rule or regulation. If and to the extent requested by Cellectis, the Company will diligently and promptly review all drafts of such Cellectis Public Filings and prepare in a diligent and timely fashion any portion of such Cellectis Public Filing pertaining to the Company. Prior to any printing or public release of any Cellectis Public Filing, an appropriate executive officer of the Company will, if requested by Cellectis, certify that the information relating to any Company Group member or the Company Business in such Cellectis Public Filing is accurate, true, complete and correct in all material respects. Unless required by Law, rule or regulation, the Company will not publicly release any financial or other information which conflicts with the information with respect to any Company Group member or the Company Business that is included in any Cellectis Public Filing without Cellectis' prior written consent. Prior to the release or filing thereof, Cellectis will provide the Company with a draft of any portion of a Cellectis Public Filing containing information relating to the Company Group and will give the Company an opportunity to review such information and comment thereon; provided that Cellectis will determine in its sole and absolute discretion the final form and content of all Cellectis Public Filings.

(m) The Company must comply with Cellectis policies including without limitation the policies regarding the reporting requirements (such as the use of internal IT reporting tools like SAP, or other Cellectis internal IT systems).

Section 7.02. *Auditors and Audits; Annual Statements and Accounting*. The Company agrees that for so long as Cellectis is required to consolidate the results of operations and financial position of the Company and any other members of the Company Group or to account for its investment in the Company under the equity method of accounting (determined in accordance with GAAP or IFRS (as applicable) and consistent with reporting requirements under applicable Law) (an "**Applicable Period**"); provided that the Company's obligations pursuant to Section 7.02(e) and (f) shall continue beyond an Applicable Period to the extent any amendments to, or restatements or modifications of, Cellectis Public Filings are necessary with respect to any such Applicable Period:

(a) Selection of Company Auditors. Unless required by Law, the Company will not select a different accounting firm than Ernst & Young (or its affiliate accounting firms) (unless so directed by Cellectis in accordance with a change by Cellectis in its accounting firm) to serve as its (and the Company Affiliates') independent certified public accountants ("**Company Auditors**") without Cellectis' prior written consent; provided, however, that, to the extent any such Company Affiliates are currently using a different accounting firm to serve as their independent certified public accountants, such Company Affiliates may continue to use such accounting firm provided such accounting firm is reasonably satisfactory to Cellectis.

(b) Audit Timing. Beginning with the 2017 fiscal year, the Company will use its best efforts to enable Company Auditors to complete their audit such that they will date their opinion on the Annual Financial Statements on the same date that Cellectis' independent certified public accountants ("**Cellectis Auditors**") date their opinion on the Cellectis Annual Statements, and to enable Cellectis to meet its timetable for the printing, filing and public dissemination of the Cellectis Annual Statements, all in accordance with Section 7.01(a) hereof and as required by applicable Law, *provided* that, if the Cellectis Annual Statements shall be dated as of a date such that compliance with this Section 7.02(b) would cause the Company to fail to timely comply with any filing requirement of the Commission, then the Company shall be permitted to cause the Company Auditors to date their opinion on such earlier date as may be required to achieve such compliance.

(c) Quarterly Review. Beginning with the first fiscal quarter after the Effective Date, the Company shall use its best efforts to enable Cellectis' Auditors to complete their quarterly review procedures on the Quarterly Financial Statements on the same date that Cellectis Auditors complete their quarterly review procedures on Cellectis' quarterly financial statements.

(d) Information Needed by Cellectis. The Company will provide to Cellectis on a timely basis all information that Cellectis reasonably requires to meet its schedule for the preparation, printing, filing, and public dissemination of the Cellectis Annual Statements in accordance with Section 7.01(a) hereof and as required by applicable Law. Without limiting the generality of the foregoing, the Company will provide all required financial information with respect to the Company Group to the Company's Auditors in a sufficient and reasonable time and in sufficient detail to permit Company Auditors to take all steps and perform all reviews necessary to provide sufficient assistance to Cellectis' Auditors with respect to information to be included or contained in the Cellectis Annual Statements.

(e) Access to Company Auditors. The Company will authorize Company's Auditors to make available to Cellectis' Auditors both the personnel who performed, or are performing, the annual audit and quarterly reviews of the Company and work papers related to the annual audit and quarterly reviews of the Company, in all cases within a reasonable time prior to Company Auditors' opinion date, so that Cellectis' Auditors are able to perform the procedures they consider necessary to take responsibility for the work of Company's Auditors as it relates to Cellectis Auditors' report on Cellectis' financial statements, all within sufficient time to enable Cellectis to meet its timetable for the printing, filing and public dissemination of the Cellectis Annual Statements.

(f) Access to Records. At Cellectis' request, for so long as Cellectis and its Affiliates beneficially own, in the aggregate, at least 50% of the outstanding shares of Common Stock of the Company, Cellectis and its employees and other representatives and potential transferees of its Common Stock and their representatives shall have the right to consult with and advise senior management of the Company and to review the Company's books and records so that Cellectis may conduct audits relating to Company business, including without limitation the financial statements or other financial information provided by the Company under this Agreement as well as to the internal accounting controls, operations and Contracts of the Company Group upon reasonable advance notice, provided that such parties, potential transferees and their respective representatives agree to keep any such confidential, non-public information about the Company confidential (except as may be required by law or applicable listing standards then in effect) and agree to comply with all applicable securities laws in connection therewith.

(g) Notice of Changes. Subject to Section 7.01(g), the Company will give Cellectis as much prior notice as reasonably practicable of any proposed determination of, or any significant changes in, the Company's accounting estimates or accounting principles from those in effect on the Effective Date. The Company will consult with Cellectis and, if requested by Cellectis, the Company will consult with Cellectis' Auditors with respect thereto. The Company will not make any such determination or changes without Cellectis' prior written consent if such a determination or a change would be required to be disclosed in the Company's or Cellectis' financial statements as filed with the Commission or otherwise publicly disclosed therein.

(h) Accounting Changes Requested by Cellectis. Notwithstanding clause (g) above, the Company will make any changes in its accounting estimates or accounting principles that are requested by Cellectis in order for the Company's accounting practices and principles to be consistent with those of Cellectis.

(i) Special Reports of Deficiencies or Violations. The Company will report in reasonable detail to Cellectis the following events or circumstances promptly after any executive officer of the Company or any member of the Board of Directors of the Company becomes aware of such matter: (A) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting; (B) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting; (C) any illegal act within the meaning of Section 10A(b) and (f) of the Exchange Act; and (D) any report of a material violation of Law that an attorney representing any Company Group member has formally made to any officers or directors of the Company pursuant to the SEC's attorney conduct rules (17 C.F.R. Part 205).

Section 7.03. *Retention of Certain Services*. As long as Cellectis and its Affiliates beneficially own at least 50% of the outstanding shares of Common Stock of the Company, Cellectis shall continue to provide the services as defined in the Management Services Agreement, pursuant to the terms as agreed between the Parties from time to time.

ARTICLE 8
DISPUTE RESOLUTION

Section 8.01. *Disputes*. Except as otherwise specifically provided in any Ancillary Agreement, the procedures for discussion, negotiation and mediation set forth in this Article 8 shall apply to all disputes, controversies or claims (whether arising in contract, tort or otherwise) between or among any Person in the Cellectis Group and the Company Group that may arise out of or relate to, or arise under or in connection with this Agreement, or the transactions contemplated hereby or thereby (including all actions taken in furtherance of the transactions contemplated hereby on or prior to the Effective Date.

Section 8.02. *Escalation; Mediation*. (a) It is the intent of the Parties to use their respective commercially reasonable efforts to resolve expeditiously any dispute, controversy or claim between or among them with respect to the matters covered by this Agreement or any Ancillary Agreement that may arise from time to time on a mutually acceptable negotiated basis. In furtherance of the foregoing, any Party involved in a dispute, controversy or claim with respect to such matters may deliver a notice (an "**Escalation Notice**") demanding an in person meeting involving representatives of the Parties at a senior level of management of the Parties (or if the Parties agree, of the appropriate strategic business unit or division within such entity). A copy of any such Escalation Notice shall be given to the General Counsel, or like officer or official, of each Party involved in the dispute, controversy or claim (which copy shall state that it is an Escalation Notice pursuant to this Agreement). Any agenda, location or procedures for such discussions or negotiations between the Parties may be established by the Parties from time to time; provided, however, that the Parties shall use their commercially reasonable efforts to meet within 30 days of the delivery of the Escalation Notice.

(b) If the Parties are not able to resolve the dispute, controversy or claim through the escalation process referred to above, then the matter shall be referred to mediation. The Parties shall retain a mediator to aid the Parties in their discussions and negotiations by informally providing advice to the Parties. Any opinion expressed by the mediator shall be strictly advisory and shall not be binding on the Parties, nor shall any opinion expressed by the mediator be admissible in any other proceeding. The mediator may be chosen from a list of mediators previously selected by the Parties or by other agreement of the Parties. Costs of the mediation shall be borne equally by the Parties involved in the matter, except that each Party shall be responsible for its own expenses. Mediation shall be a prerequisite to the commencement of any Action by either Party.

Section 8.03. *Court Actions*. (a) In the event that any Party, after complying with the provisions set forth in Section 8.02 above, desires to commence an Action, such Party, subject to Section 11.18, may submit the dispute, controversy or claim (or such series of related disputes, controversies or claims) to any court of competent jurisdiction as set forth in Section 11.18.

(b) Unless otherwise agreed in writing, the Parties will continue to provide service and honor all other commitments under this Agreement during the course of dispute resolution pursuant to the provisions of this Article 8, except to the extent such commitments are the subject of such dispute, controversy or claim.

ARTICLE 9
FURTHER ASSURANCES

Section 9.01. *Further Assurances*. (a) In addition to the actions specifically provided for elsewhere in this Agreement, each of the Parties will cooperate with each other and shall use its (and will cause their respective Subsidiaries and Affiliates to use) commercially reasonable efforts, prior to, on and after the Effective Date, to take, or cause to be taken, all actions, and to do, or cause to be done, all things, reasonably necessary, proper or advisable under applicable Laws, regulations and agreements to consummate and make effective the transactions contemplated by this Agreement and the Ancillary Agreements.

(b) Without limiting the foregoing, prior to, on and after the Effective Date, each Party shall cooperate with the other Party, and without any further consideration, at the expense of such other Party, to execute and deliver, or use its commercially reasonable efforts to cause to be executed and delivered, all instruments, including instruments of conveyance, assignment and transfer, and to make all filings with, and to obtain all consents, approvals or authorizations of, any Governmental Authority or any other Person under any permit, license, agreement, indenture, order, decree, financial assurance (including letter of credit) or other instrument (including any Consents or governmental approvals), and to take all such other actions as such Party may reasonably be requested to take by such other Party hereto from time to time, consistent with the terms of this Agreement, in order to effectuate the provisions and purposes of this Agreement and the Ancillary Agreements and the other transactions contemplated hereby and thereby.

(c) On or prior to the Effective Date, Cellectis and the Company in their respective capacities as direct and indirect stockholders of their respective Subsidiaries, shall each ratify any actions which are reasonably necessary or desirable to be taken by Cellectis, the Company or any other Subsidiary of the Company or Cellectis, as the case may be, to effectuate the transactions contemplated by this Agreement.

ARTICLE 10
TERMINATION

Section 10.01. *Termination*. This Agreement may be terminated in whole or in part at any time after the consummation of the IPO upon the earlier of (i) mutual written consent of Cellectis and the Company and (ii) the date on which Cellectis and its Affiliates cease to hold at least 15% of the outstanding shares of Common Stock of the Company.

Section 10.02. *Effect of Termination*. In the event of any termination of this Agreement in whole or in part, no Party (or any of its directors, officers, members or managers) shall have any Liability or further obligation to any other Party with respect to the portions of the Agreement so terminated.

ARTICLE 11
MISCELLANEOUS

Section 11.01. *Counterparts; Entire Agreement; Conflicting Agreements*. (a) This Agreement may be executed in one or more counterparts, all of which shall be considered one and the same agreement, and shall become effective when one or more counterparts have been signed by each of the Parties and delivered to the other Party. Execution of this Agreement or any other documents pursuant to this Agreement by facsimile or other electronic copy of a signature shall be deemed to be, and shall have the same effect as, executed by an original signature.

(b) This Agreement, the Ancillary Agreements, the Surviving Contracts, the exhibits, the schedules and appendices hereto and thereto contain the entire agreement between the Parties with respect to the subject matter hereof, supersede all previous agreements, negotiations, discussions, writings, understandings, commitments and conversations with respect to such subject matter and there are no agreements or understandings between the Parties with respect to such subject matter other than those set forth or referred to herein or therein.

(c) In the event of any inconsistency between this Agreement and any Schedule hereto, the Schedule shall prevail. Subject to Section 4.05(d), in the event and to the extent that there shall be a conflict between the provisions of this Agreement and the provisions of any Ancillary Agreement, the Ancillary Agreement shall control with respect to the subject matter thereof, and this Agreement shall control with respect to all other matters.

Section 11.02. *No Construction Against Drafter*. The Parties acknowledge that this Agreement and all the terms and conditions contained herein have been fully reviewed and negotiated by the Parties. Having acknowledged the foregoing, the Parties agree that any principle of construction or rule of law that provides that, in the event of any inconsistency or ambiguity, an agreement shall be construed against the drafter of the agreement shall have no application to the terms and conditions of this Agreement.

Section 11.03. *Governing Law*. This Agreement shall be governed by and construed and interpreted in accordance with the Laws of the State of New York, without regard to the conflict of laws principles thereof that would result in the application of any Law other than the Laws of the State of New York.

Section 11.04. *Assignability*. This Agreement shall be binding upon and inure to the benefit of the Parties hereto and their respective successors and permitted assigns; *provided, however*, that no Party hereto may assign its respective rights or delegate its respective obligations under this Agreement without the express prior written consent of the other Party or Parties hereto.

Section 11.05. *Third Party Beneficiaries*. Except for the indemnification rights under this Agreement of any Cellectis Indemnitee or Company Indemnitee in their respective capacities as such (a) the provisions of this Agreement are solely for the benefit of the Parties and are not intended to confer upon any Person (including employees of the Parties hereto) except the Parties any rights or remedies hereunder, and (b) there are no third party beneficiaries of this Agreement and this Agreement shall not provide any third person (including employees of the Parties hereto) with any remedy, claim, liability, reimbursement, claim of action or other right in excess of those existing without reference to this Agreement.

Section 11.06. *Notices*. All notices or other communications under this Agreement shall be in writing and shall be deemed to be duly given when (a) delivered in person, (b) deposited in the United States mail or private express mail, postage prepaid, addressed or (c) sent via email, in each case as follows:

If to Cellectis, to:

Cellectis S.A.
8, rue de la Croix Jarry
75013 Paris, France
Attention: Chief Executive Officer
Facsimile: +33 (0)1 81 69 16 06
E-mail: andre.choulika@cellectis.com

If to the Company to:

Calyxt, Inc.
600 County Road D West
Suite 8
New Brighton, MN 55112
Attention: Chief Executive Officer
E-mail: Federico.tripodi@calyxt.com

Any Party may, by notice to the other Party, change the physical or email address to which such notices are to be given. Any notice that is required under Article 7 to be given by a Party within a time period measured in hours, where the specified deadline to give such notice would fall between the hours of midnight to 7:00 a.m. local time for such Party on a particular day will be considered to have been given in a timely manner if the notice is delivered before 9:00 a.m. local time on such day.

Section 11.07. *Severability*. If any provision of this Agreement or the application thereof to any Person or circumstance is determined by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions hereof or the application of such provision to Persons or circumstances or in jurisdictions other than those as to which it has been held invalid or unenforceable, shall remain in full force and effect and shall in no way be affected, impaired or invalidated thereby, so long as the economic or legal substance of the transactions contemplated hereby is not affected in any manner adverse to any Party. Upon such determination, the Parties shall negotiate in good faith in an effort to agree upon such a suitable and equitable provision to effect the original intent of the Parties.

Section 11.08. *Force Majeure*. No Party shall be deemed in default of this Agreement to the extent that any delay or failure in the performance of its obligations under this Agreement results from any cause beyond its reasonable control and without its fault or negligence, such as acts of God, acts of civil or military authority, embargoes, epidemics, war, riots, insurrections, fires, explosions, earthquakes, floods, unusually severe weather conditions, labor problems or unavailability of parts, or, in the case of computer systems, any failure in electrical or air conditioning equipment. In the event of any such excused delay, the time for performance shall be extended for a period equal to the time lost by reason of the delay.

Section 11.09. *Late Payments*. Except as expressly provided to the contrary in this Agreement or in any Ancillary Agreement, any amount not paid when due pursuant to this Agreement (and any amounts billed or otherwise invoiced or demanded and properly payable that are not paid within 30 days of such bill, invoice or other demand) shall accrue interest at a rate per annum equal to the Prime Rate plus 2%.

Section 11.10. *Expenses*. Except as otherwise specified in this Agreement or the Ancillary Agreements or as otherwise agreed in writing between Cellectis and the Company, Cellectis and the Company shall each be responsible for its own fees, costs and expenses paid or incurred in connection with the IPO.

Section 11.11. *Headings*. The article, section and paragraph headings contained in this Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this Agreement.

Section 11.12. *Survival of Covenants*. The covenants contained in this Agreement, indemnification obligations and liability for the breach of any obligations contained herein, shall survive the Effective Date and the other transactions contemplated by this Agreement shall remain in full force and effect.

Section 11.13. *Waivers of Default*. Waiver by any Party of any default by the other Party of any provision of this Agreement shall not be deemed a waiver by the waiving Party of any subsequent or other default, nor shall it prejudice the rights of the other Party.

Section 11.14. *Specific Performance*. In the event of any actual or threatened default in, or breach of, any of the terms, conditions and provisions of this Agreement, the Party or Parties who are or are to be thereby aggrieved shall have the right to specific performance and injunctive or other equitable relief of its rights under this Agreement, in addition to any and all other rights and remedies at law or in equity, and all such rights and remedies shall be cumulative.

Section 11.15. *Amendments*. No provisions of this Agreement shall be deemed waived, amended, supplemented or modified by any Party, unless such waiver, amendment, supplement or modification is in writing and signed by the authorized representative of the Party against whom it is sought to enforce such waiver, amendment, supplement or modification.

Section 11.16. *Interpretation*. Words in the singular shall be held to include the plural and vice versa and words of one gender shall be held to include the other genders as the context requires. The terms "hereof", "herein" and "herewith" and words of similar import shall, unless otherwise stated, be construed to refer to this Agreement as a whole (including all of the schedules, exhibits and appendices hereto) and not to any particular provision of this Agreement. Article, Section, Exhibit, Schedule and Appendix references are to the Articles, Sections, Exhibits, Schedules and Appendices to this Agreement unless otherwise specified. The word "including" and words of similar import when used in this Agreement means "including, without limitation", unless the context otherwise requires or unless otherwise specified.

Section 11.17. *Waiver of Jury Trial*. EACH OF THE PARTIES HEREBY WAIVES TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY WITH RESPECT TO ANY COURT PROCEEDING DIRECTLY OR INDIRECTLY ARISING OUT OF AND PERMITTED UNDER OR IN CONNECTION WITH THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED BY THIS AGREEMENT. EACH OF THE PARTIES HEREBY (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF THE OTHER PARTY HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THE FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT HAS BEEN INDUCED TO ENTER INTO THIS AGREEMENT AND THE TRANSACTIONS CONTEMPLATED BY THIS AGREEMENT, AS APPLICABLE, BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION 11.17.

Section 11.18. *Submission to Jurisdiction; Waivers*. With respect to any Action relating to or arising out of this Agreement, subject to the provisions of Article 8, each Party to this Agreement irrevocably (a) consents and submits to the exclusive jurisdiction of the courts of the State of New York and any court of the United States located in the Borough of Manhattan in New York City; (b) waives any objection which such Party

may have at any time to the laying of venue of any Action brought in any such court, waives any claim that such Action has been brought in an inconvenient forum and further waives the right to object, with respect to such Action, that such court does not have jurisdiction over such Party; and (c) consents to the service of process at the address set forth for notices in Section 11.06 herein; provided, however, that such manner of service of process shall not preclude the service of process in any other manner permitted under applicable Law.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized representatives as of the date set forth above.

CELLECTIS S.A.

By: /s/ André Choulika
Name: André Choulika
Title: Chief Excutive Officer

CALYXT, INC.

By: /s/ Federico Tripodi
Name: Federico Tripodi
Title: Chief Excutive Officer

[*Signature Page to the Separation Agreement*]

Schedule 3.01(b)(iii)

Stockholders Agreement by and among Calyxt, Inc., Cellectis S.A. and the Persons listed on Schedule A thereto, dated as of July 25, 2017

Current account agreement between Calyxt, Inc. and Cellectis S.A., dated March 7, 2011

Letter of Credit with Société Générale to cover the New Brighton offices

Exhibit 4.30

STOCKHOLDERS AGREEMENT

THIS STOCKHOLDERS AGREEMENT (as it may be amended from time to time in accordance with the terms hereof, this "**Agreement**"), dated as of July 25, 2017, is made by and among Calyxt, Inc., a Delaware corporation (the "**Company**"), Cellectis S.A., a French *société anonyme* ("**Cellectis**") and the Persons listed on Schedule A hereto (each, a "**Non-Cellectis Holder**" and collectively, the "**Non-Cellectis Holders**").

RECITALS

WHEREAS, Cellectis beneficially owned all of the outstanding Company Shares (as defined below) prior to the consummation of the Company's proposed initial public offering (the "**IPO**"); and

WHEREAS, in connection with the IPO, the Company, Cellectis and the Non-Cellectis Holders desire to provide for certain rights and obligations of Cellectis, the Company and the Non-Cellectis Holders upon and after the consummation of the IPO.

NOW, THEREFORE, in consideration of the foregoing and the mutual promises, covenants and agreements of the Parties, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

ARTICLE 1

DEFINITIONS

Section 1.01. *Definitions*. As used in this Agreement, the following terms shall have the following meanings:

"**Additional Piggyback Rights**" has the meaning set forth in Section 4.02(c).

"**Affiliate**" of any Person means any other Person directly or indirectly controlling or controlled by or under direct or indirect common control with such Person; *provided*, *however*, that, for purposes of this Agreement, the Company shall not be considered an "**Affiliate**" of any of Cellectis and its Subsidiaries other than the Company, and each of Cellectis and its Subsidiaries other than the Company shall not be considered an "**Affiliate**" of the Company. As used herein, "**control**" means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such entity, whether through ownership of voting securities or other interests, by contract or otherwise. For purposes of this definition, "**Affiliated**," "**controlling**," "**controlled by**," and "**under common control with**" have correlative meanings.

"**Agreement**" has the meaning set forth in the preamble.

"**Automatic Shelf Registration Statement**" has the meaning set forth in Section 4.04.

"**Beneficially Owned**" has the meaning set forth in Rule 13d-3 under the Exchange Act, but without reference to clause (d)(1) of such Rule.

"**Board of Directors**" means the board of directors of the Company.

"**Business Day**" means any day other than a Saturday, Sunday or day on which banking institutions in New York, New York are authorized or obligated by law or executive order to close.

"**Cellectis**" has the meaning set forth in the preamble.

"**Claims**" has the meaning set forth in 4.09(a).

"**Company**" has the meaning set forth in the preamble.

"**Company Shares**" means common stock of the Company and any and all securities of any kind whatsoever of the Company that may be issued by the Company after the date hereof in respect of, in exchange for, or in substitution of, Company Shares, pursuant to any stock dividends, stock splits, reverse stock splits, combinations, reclassifications, recapitalizations, share exchange, consolidation or other reorganizations and the like occurring after the date hereof.

"**Company Shares Equivalents**" means all options, warrants and other securities convertible into, or exchangeable or exercisable for (at any time or upon the occurrence of any event or contingency and without regard to any vesting or other conditions to which such securities may be subject) Company Shares or other equity securities of the Company (including any note or debt security convertible into or exchangeable for Company Shares or other equity securities of the Company).

"**Demand Exercise Notice**" has the meaning set forth in Section 4.01(a).

"**Demand Registration**" has the meaning set forth in Section 4.01(a).

"**Demand Registration Request**" has the meaning set forth in Section 4.01(a).

"**Director**" means a member of the Board of Directors.

"**Exchange Act**" means the Securities Exchange Act of 1934, as amended, and any successor thereto, and any rules and regulations promulgated thereunder, all as the same shall be in effect from time to time.

"**Expenses**" means any and all fees and expenses incident to the Company's performance of or compliance with Article 4, including: (i) SEC, stock exchange and FINRA registration and filing fees and all listing fees and fees with respect to the inclusion of securities on the NASDAQ or on any other securities market on which the Company Shares are listed or quoted, (ii) fees and expenses of compliance with state securities or "blue sky" laws and in connection with the preparation of a "blue sky" survey, including reasonable fees and expenses of outside "blue sky" counsel, (iii) printing and copying expenses, (iv) messenger and delivery expenses, (v) expenses incurred in connection with any road show, (vi) fees and disbursements of counsel for the Company, (vii) with respect to each registration, the fees

and disbursements of one counsel for the Participating Holder(s) (selected by the Majority Participating Holders), (viii) fees and disbursements of all independent public accountants (including the expenses of any audit and/or comfort letter and updates thereof) and fees and expenses of other Persons, including special experts, retained, or authorized to be retained, by the Company, (ix) fees and expenses payable to any qualified independent underwriter required under applicable FINRA rules, (x) any other fees and disbursements of underwriters, if any, customarily paid by issuers or sellers of securities (excluding, for the avoidance of doubt, any underwriting commission, discount or spread), (xi) any rating agency fees, and (xii) expenses for securities law liability insurance.

"**FINRA**" means the Financial Industry Regulatory Authority.

"**Governing Documents**" means (i) with respect to the Company, the certificate of incorporation of the Company, as amended or modified from time to time, and the by-laws of the Company, as amended or modified from time to time and (ii) with respect to any other Person, such Person's certificate of incorporation, by-laws or other similar constitutive documents.

"**Governmental Authority**" means any nation or government, any state, municipality or other political subdivision thereof, and any entity, body, agency, commission, department, board, bureau, court, tribunal or other instrumentality, whether federal, state, local, domestic, foreign or multinational, exercising executive, legislative, judicial, regulatory, administrative or other similar functions of, or pertaining to, government and any executive official thereof.

"**Holder**" means (i) Cellectis so long as it holds any Registrable Securities and (ii) any Person owning Registrable Securities who is a Permitted Transferee and becomes party to this Agreement.

"**Independent Director**" means a Director who qualifies, as of the date of such Director's election or appointment to the Board of Directors and as of any other date on which the determination is being made, as an "independent director" pursuant to SEC rules and applicable listing standards, as amended from time to time, as determined by the Board of Directors without the vote of such Director.

"**Initiating Holder**" has the meaning set forth in Section 4.01(a).

"**IPO**" has the meaning set forth in the recitals.

"**Litigation**" means any action, proceeding or investigation in any court or before any Governmental Authority.

"**Majority Participating Holders**" means (i) Cellectis if it is participating in an offering of Registrable Securities pursuant to Sections 4.01 or Section 4.02 or (ii) otherwise, the Participating Holders holding more than 50% of the Registrable Securities proposed to be included in such offering.

"**Manager**" has the meaning set forth in Section 4.01(c).

Any "**Necessary Action**" means, with respect to a specified result, all actions (to the extent such actions are permitted by law and by the Governing Documents) necessary to cause such result, including (i) voting or providing a written consent or proxy with respect to the Company Shares, (ii) causing the adoption of stockholders' resolutions and amendments to the Governing Documents, (iii) causing Directors (to the extent such Directors were nominated or designated by the Person obligated to undertake the Necessary Action, and subject to any fiduciary duties that such Directors may have as Directors) to act in a certain manner or causing them to be removed in the event they do not act in such a manner, (iv) executing agreements and instruments, and (v) making, or causing to be made, with governmental, administrative or regulatory authorities, all filings, registrations or similar actions that are required to achieve such result.

"**Non-Cellectis Holder**" and "**Non-Cellectis Holders**" have the meaning set forth in the preamble.

"**Participating Holders**" means all Holders of Registrable Securities which are proposed to be included in any registration or offering of Registrable Securities pursuant to Section 4.01 or Section 4.02.

"**Party**" means the Company, Cellectis, the Non-Cellectis Holders and any Permitted Transferee who becomes a Party pursuant to Article 5.

"**Permitted Transferee**" means in the case of any Holder, (i) any Affiliate of such Holder that executes a customary joinder agreement to this Agreement or (ii) a Person or Affiliated Persons to whom such Holder transferred a number of Company Shares such that after giving effect to such transfer such Person or Affiliated Persons Beneficially Owns or Own, in the aggregate, at least 10% of the then outstanding Company Shares.

"**Person**" means an individual, partnership, limited liability company, corporation, trust, other entity, association, estate, unincorporated organization or a government or any agency or political subdivision thereof.

"**Piggyback Shares**" has the meaning set forth in Section 4.03(a)(iv).

"**Registrable Securities**" means any Company Shares held by the Holders at any time (including those held as a result of the conversion or exercise of Company Shares Equivalents); *provided* that, as to any Registrable Securities held by a particular Holder, such securities shall cease to be Registrable Securities when (A) a registration statement with respect to the sale of such securities shall have been declared effective under the Securities Act and such securities shall have been disposed of in accordance with such registration statement, or (B) (x) such securities are eligible to be sold by such Holder in a single transaction in compliance with the requirements of Rule 144 under the Securities Act, as such Rule 144 may be amended (or any successor provision thereto) without volume limitations under Rule 144 and (y) such Holder no longer Beneficially Owns in the aggregate a number of Company Shares equal to at least 10% of the then outstanding Company Shares.

"**Rule 144**" and "**Rule 144A**" have the meaning set forth in Section 4.12.

"**SEC**" means the U.S. Securities and Exchange Commission.

"**Section 4.03(a) Sale Number**" has the meaning set forth in Section 4.03(a).

"**Section 4.03(b) Sale Number**" has the meaning set forth in Section 4.03(b).

"**Section 4.03(c) Sale Number**" has the meaning set forth in Section 4.03(c).

"**Securities Act**" means the U.S. Securities Act of 1933, as amended, and any successor thereto, and any rules and regulations promulgated thereunder, all as the same shall be in effect from time to time.

"**Subsidiary**" means, when used with respect to any Person, (a) a corporation in which such Person or one or more Subsidiaries of such Person, directly or indirectly, owns capital stock having a majority of the total voting power in the election of directors of all outstanding shares of all classes and series of capital stock of such corporation entitled generally to vote in such election; and (b) any other Person (other than a corporation) in which such Person or one or more Subsidiaries of such Person, directly or indirectly, has (i) a majority ownership interest or (ii) the power to elect or direct the election of a majority of the members of the governing body of such first-named Person.

"**Valid Business Reason**" has the meaning set forth in Section 4.01(a)(iv).

"**WKSI**" has the meaning set forth in Section 4.04.

Section 1.02. *Other Interpretive Provisions*.

(a) The meanings of defined terms are equally applicable to the singular and plural forms of the defined terms.

(b) The words "**hereof**," "**herein**," "**hereunder**" and similar words refer to this Agreement as a whole and not to any particular provision of this Agreement; and any subsection and Section references are to this Agreement unless otherwise specified.

(c) The term "**including**" is not limiting and means "**including without limitation**."

(d) The captions and headings of this Agreement are for convenience of reference only and shall not affect the interpretation of this Agreement.

(e) Whenever the context requires, any pronouns used herein shall include the corresponding masculine, feminine or neuter forms.

ARTICLE 2

REPRESENTATIONS AND WARRANTIES

Each of the Parties hereby represents and warrants, solely with respect to itself (and, in each case to the extent applicable in the case of Parties who are natural persons), to each other Party that:

Section 2.01. *Existence; Authority; Enforceability*. Such Party has the power and authority to enter into this Agreement and to carry out its obligations hereunder. Such Party is duly organized and validly existing under the laws of its jurisdiction of organization, and the execution of this Agreement, and the performance of its obligations hereunder, have been authorized by all Necessary Action, and no other act or proceeding on its part is necessary to authorize the execution of this Agreement or the performance of its obligations hereunder. This Agreement has been duly executed by it and constitutes its legal, valid and binding obligation, enforceable against it in accordance with its terms except as the same may be affected by bankruptcy, insolvency, moratorium or similar laws, or by legal or equitable principles relating to or limiting the rights of contracting parties generally.

Section 2.02. *Absence of Conflicts*. The execution and delivery by such Party of this Agreement and the performance of its obligations hereunder does not (a) conflict with, or result in the breach of any provision of the constitutive documents of such Party; (b) result in any violation, breach, conflict, default or event of default (or an event which with notice, lapse of time, or both, would constitute a default or event of default), or give rise to any right of acceleration or termination or any additional payment obligation, under the terms of any contract, agreement or permit to which such Party is a party or by which such Party's assets or operations are bound or affected; or (c) violate any law applicable to such Party, except, in the case of clause (b), as would not have a material adverse effect on such Party's ability to perform its obligations hereunder.

Section 2.03. *Consents*. Other than as has already been obtained, no consent, waiver, approval, authorization, exemption, registration, license or declaration is required to be made or obtained by such Party in connection with the execution, delivery or performance of this Agreement, except in each case, as would not have a material adverse effect on such Party's ability to perform its obligations hereunder.

ARTICLE 3

GOVERNANCE

Section 3.01. *Board of Directors*.

(a) Effective as of the date of this Agreement, the Board of Directors shall be composed of five Directors, each of whom shall be a designee of Cellectis and two of whom shall be "independent directors" pursuant to applicable listing standards, in each case in accordance with the Company's Governing Documents.

(b) From and after the date of this Agreement, so long as Cellectis and its Affiliates Beneficially Own, in the aggregate, a number of Company Shares equal to at least 15% of the then outstanding Company Shares, Cellectis shall have the right, but not the obligation, to nominate for the Board of Directors a number of designees equal to the greater of: (i) three designees and (ii) a majority of the Directors. In the event that at any time the number of designees of Cellectis who are members of the Board of Directors is fewer than the total number of designees Cellectis is entitled to nominate pursuant to this Section 3.01(b), Cellectis shall have the right, at any time, to nominate such additional designees to which it is entitled, in which case the Company shall take, or cause to be taken, all Necessary Action to, (A) increase the size of the Board of Directors as required to enable Cellectis to so nominate such additional designees and (B) appoint such additional designees nominated by Cellectis to such newly created directorships. So long as Cellectis and its Affiliates Beneficially Own, in the aggregate, a number of Company Shares equal to at least 15% of the then outstanding Company Shares, no change shall be made to the number of Directors on the Board of Directors without the prior approval of Cellectis.

(c) The Company shall take all Necessary Action to cause the Board of Directors to be constituted as set forth in this Section 3.01 (including appointing or removing designees nominated by Cellectis and filling any vacancies created by reason of death, disability, retirement, removal or resignation of the Cellectis' designees with a new designee of Cellectis). The Company agrees to include in the slate of nominees recommended by the Board of Directors and in the Company's proxy statement or notice of each meeting at which Directors are to be elected those persons designated pursuant to this Section 3.01 and to use its best efforts to cause the election or appointment of each such designee to the Board of Directors, including nominating such designees to be elected as Directors.

(d) Any nominee designated by Cellectis pursuant to this Section 3.01 may be removed (with or without cause) from time to time and at any time by Cellectis upon notice to the Company, and may otherwise only be removed for cause (subject to Cellectis' rights under this Section 3.01 with respect to any vacancy created thereby).

(e) The Company shall enter into indemnification agreements and maintain Directors and Officers liability insurance for the benefit of each nominee of Cellectis elected or appointed to the Board of Directors with respect to all periods during which such individual is a member of the Board of Directors, on terms, conditions and amounts substantially similar to the terms, conditions and amounts of the Company's current Directors and Officers liability insurance policy, and shall use commercially reasonable efforts to cause such indemnification and insurance to be maintained in full force and effect. The Company shall provide each such nominee with all benefits (including all fees and entitlements) on substantially the same terms and conditions as are provided to other members of the Board of Directors performing similar roles.

(f) The Company shall reimburse the designees of Cellectis for all reasonable out-of-pocket expenses incurred in connection with their attendance at meetings of the Board of Directors and any committees thereof.

Section 3.02. *Chairman; Committees.*

(a) For so long as Cellectis is entitled to nominate Directors for election to the Board of Directors pursuant to Section 3.01(b), Cellectis shall have the right to designate the Director to serve in the role of Chairman of the Board of Directors and to have at least one of their designated Directors serve on each committee of the Board of Directors, to the extent such Directors are permitted to serve on such committees under SEC rules and applicable listing standards then in effect.

(b) The Company agrees to use its best efforts to cause the appointment of the Director designated by Cellectis to serve in the role of Chairman and the Directors designated by Cellectis to the committees of the Board of Directors in accordance with this Section 3.02.

Section 3.03. *Information; Duties.*

(a) For so long as Cellectis and its Affiliates Beneficially Own, in the aggregate, a number of Company Shares equal to at least 15% of the then outstanding Company Shares, the Company agrees that (i) the Directors designated by Cellectis may share confidential, non-public information about the Company with Cellectis and its Affiliates and (ii) Cellectis and its employees and other representatives and potential transferees of its Company Shares and their representatives shall have the right to consult with and advise senior management of the Company and to review the Company's books and records upon reasonable advance notice, in each case only to the extent reasonably necessary in connection with their investment in the Company, including any potential sales thereof, provided that such parties, potential transferees and their respective representatives agree to keep any such confidential, non-public information about the Company confidential (except as may be required by law or applicable listing standards then in effect) and agree to comply with all applicable securities laws in connection therewith.

(b) At any time during which the Company does not file reports with the SEC that contain (a) audited annual financial statements of the Company and (b) unaudited interim quarterly financial statements of the Company, the Company shall deliver to Cellectis, within 10 days after the Company would have been required to file the relevant report with the SEC (as if the Company were a non-accelerated filer), consolidated balance sheets of the Company and the related consolidated statements of income, cash flows and stockholders equity, including footnotes, as of the end of each fiscal year and the end of each of the first three fiscal quarters in each fiscal year of the Company.

(c) The Company agrees that, notwithstanding anything to the contrary in any other agreement or at law or in equity, when Cellectis or its Affiliates take any action under this Agreement (including in their respective capacities as Holders) to give or withhold consent, Cellectis and such Affiliates shall, to the fullest extent permitted by law, have no duty to consider the interests of the Company or other Holders, if any, or any other stockholder of the Company and may act exclusively in their and their Affiliates' respective own interests; *provided*, *however*, that the foregoing shall in no way affect the obligations of the Parties to comply with the provisions of this Agreement.

Section 3.04. *Controlled Company*.

(a) For so long as the Company qualifies as a "controlled company" under the applicable listing standards then in effect, the Company will elect to be a "controlled company" for purposes of such applicable listing standards, and will disclose in its annual meeting proxy statement that it is a "controlled company" and the basis for that determination. The Company and Cellectis acknowledge and agree that, as of the date of this Agreement, the Company is a "controlled company." If the Company ceases to qualify as a "controlled company" under applicable listing standards then in effect, Cellectis and the Company will take whatever action may be reasonably necessary, if any, to cause the Company to comply with SEC rules and applicable listing standards then in effect.

(b) After the Company ceases to qualify as a "controlled company" under applicable listing standards then in effect, Cellectis shall cause a sufficient number of their designees to qualify as "independent directors" to ensure that the Board of Directors complies with such applicable listing standards in the time periods required by the applicable listing standards then in effect.

Section 3.05. *Cellectis Reserved Matters*.

(a) For so long as Cellectis and its Affiliates Beneficially Own, in the aggregate, a number of Company Shares equal to at least 50% of the then outstanding Company Shares, the following matters shall require the prior approval of Cellectis:

(i) any modification to the Company's or any future Subsidiary of the Company's share capital (e.g., share capital increase or decrease) the creation of any Subsidiary, any grant of stock-based compensation, any distributions or public or private offering, merger, spin-off, liquidation, winding up or carve-out transactions;

(ii) the annual business plan and annual budget of the Company and any modification thereof;

(iii) any external growth transactions by the Company exceeding $500,000 and not included in the approved annual business plan and annual budget of the Company;

(iv) any investment and disposition decisions of the Company exceeding $500,000 and not included in the approved annual business plan and annual budget of the Company (it being understood that this excludes the purchase and sale of inventory as a part of the normal course of business);

(v) any related-party agreement or any agreement or transaction between the executives or stockholders of the Company, on the one hand, and the Company or any of its Subsidiaries, on the other hand;

(vi) any decision pertaining to the recruitment, dismissal or removal, or increase of the compensation of executives and corporate officers of the Company;

(vii) any material decision of the Company relating to material litigation of the Company;

(viii) any decision of the Company relating to the opening of a social or restructuring plan or pre-insolvency proceedings of the Company;

(ix) any buyback by the Company of Company Shares;

(x) any new borrowings or debts of the Company exceeding $500,000 and early repayment of loans of the Company, if any (it being understood that Cellectis will approve the entering into of contracts for revolving loans and other short-term loans and the repayment of such for financing general operating activities, such as revolving loans for inventory or factoring of receivables);

(xi) grants by the Company of any pledges on securities of the Company;

(xii) development of any new activities and businesses not described in the annual business plan and annual budget of the Company;

(xiii) entry by the Company into any material agreement or partnership; and

(xiv) any offshore and relocation activities.

(b) For so long as Cellectis and its Affiliates Beneficially Own, in the aggregate, a number of Company Shares equal to at least 15% of the then outstanding Company Shares, the following matters shall require the prior approval of Cellectis:

(i) any amendment to the Company's Governing Documents that would change:

(A) the name of the Company;

(B) the jurisdiction of incorporation of the Company;

(C) the location of the Company's principal executive offices;

(D) the purpose or purposes for which the Company is incorporated; or

(E) this Article 3;

(ii) any regular or special dividends to holders of the Company Shares;

(iii) the commencement of any voluntary, or the Company's consent to any, proceeding for the dissolution, winding up or bankruptcy of the Company or a material Subsidiary (or group of Subsidiaries that are collectively material) of the Company;

(iv) any public or private offering, merger, amalgamation or consolidation of the Company or the spinoff of a business of the Company or any sale, conveyance, transfer or other disposition of the Company's assets; and

(v) any appointment to the Board of Directors contrary to this Agreement or the Governing Documents.

ARTICLE 4

REGISTRATION RIGHTS

Section 4.01. *Registration*.

(a) *Demand Registrations*. If the Company shall receive from either Cellectis or any other Holder or group of Holders holding at least 10% of the then outstanding Company Shares, in either case at any time beginning 180 days after the effective date of the registration statement filed in connection with the IPO (or such earlier time as agreed by the Company) a written request that the Company file a registration statement with respect to Registrable Securities (a "**Demand Registration Request**," and the registration so requested is referred to herein as a "**Demand Registration**," and the sender(s) of such request pursuant to this Agreement shall be known as the "**Initiating Holder(s)**"), then the Company shall, within five days of the receipt thereof, give written notice (the "**Demand Exercise Notice**") of such request to all other Holders, and subject to the limitations of this Section 4.01, use its reasonable best efforts to effect, as soon as practicable, the registration under the Securities Act (including by means of a shelf registration pursuant to Rule 415 thereunder if so requested and if the Company is then eligible to use such a registration) of all Registrable Securities that the Holders request to be registered. There is no limitation on the number of Demand Registrations pursuant to this Section 4.01 which the Company is obligated to effect. However, the Company shall not be obligated to take any action to effect any Demand Registration:

(i) within three months after a Demand Registration pursuant to this Section 4.01 that has been declared, ordered or become automatically effective;

(ii) during the period starting with the date 15 days prior to its good faith estimate of the date of filing of, and ending on a date 90 days after the effective date of, a Company-initiated registration (other than a registration relating solely to the sale of securities to employees of the Company pursuant to a stock option, stock purchase or similar plan or to an SEC Rule 145 transaction), *provided* that the Company is actively employing in good faith all reasonable efforts to cause such registration statement to become effective;

(iii) where the anticipated offering price, before any underwriting discounts or commissions, is equal to or less than $25,000,000;

(iv) if the Company shall furnish to such Holders a certificate signed by the Chief Executive Officer of the Company stating that in the good faith judgment of the

Board of Directors, any registration of Registrable Securities should not be made or continued (or sales under a shelf registration statement should be suspended) because (i) such registration (or continued sales under a shelf registration statement) would materially interfere with a material financing, acquisition, corporate reorganization or merger or other material transaction or event involving the Company or any of its subsidiaries or (ii) the Company is in possession of material non-public information, the disclosure of which has been determined by the Board of Directors to not be in the Company's best interests (in either case, a "**Valid Business Reason**"), then (x) the Company may postpone filing a registration statement relating to a Demand Registration Request or suspend sales under an existing shelf registration statement until five Business Days after such Valid Business Reason no longer exists, but in no event for more than 90 days after the date the Board of Directors determines a Valid Business Reason exists and (y) in case a registration statement has been filed relating to a Demand Registration Request, if the Valid Business Reason has not resulted from actions taken by the Company, the Company may cause such registration statement to be withdrawn and its effectiveness terminated or may postpone amending or supplementing such registration statement until five Business Days after such Valid Business Reason no longer exists, but in no event for more than 90 days after the date the Board of Directors determines a Valid Business Reason exists; and the Company shall give written notice to the Participating Holders of its determination to postpone or withdraw a registration statement or suspend sales under a shelf registration statement and of the fact that the Valid Business Reason for such postponement, withdrawal or suspension no longer exists, in each case, promptly after the occurrence thereof; *provided*, *however*, that the Company shall not defer its obligation in this manner for more than a total of 90 days in any 12 month period; or

(v) in any particular jurisdiction in which the Company would be required to qualify to do business or to execute a general consent to service of process in effecting such registration, qualification or compliance.

If the Company shall give any notice of postponement, withdrawal or suspension of any registration statement pursuant to clause (iv) of this Section 4.01(a), the Company shall not, during the period of postponement, withdrawal or suspension, register any Company Shares, other than pursuant to a registration statement on Form S-4 or S-8 (or an equivalent registration form then in effect). Each Holder of Registrable Securities agrees that, upon receipt of any notice from the Company that the Company has determined to withdraw or suspend any registration statement pursuant to clause (iv) of this Section 4.01(a), such Holder will discontinue its disposition of Registrable Securities pursuant to such registration statement and, if so directed by the Company, will deliver to the Company (at the Company's expense) all copies, other than permanent file copies, then in such Holder's possession of the prospectus covering such Registrable Securities that was in effect at the time of receipt of such notice. If the Company shall have withdrawn or prematurely terminated a registration statement filed pursuant to a Demand Registration (whether pursuant to clause (iv) of this Section 4.01(a) or as a result of any stop order, injunction or other order or requirement of the SEC or any other governmental agency or court), the Company shall not be considered to have effected an effective registration for the purposes of this Agreement until the Company shall have filed a new

registration statement covering the Registrable Securities covered by the withdrawn registration statement and such registration statement shall have been declared effective and shall not have been withdrawn. If the Company shall give any notice of withdrawal, suspension or postponement of a registration statement, the Company shall, not later than five Business Days after the Valid Business Reason that caused such withdrawal, suspension or postponement no longer exists (but in no event later than 90 days after the date of the postponement, suspension or withdrawal), use its reasonable best efforts to effect the registration under the Securities Act of the Registrable Securities covered by the withdrawn, suspended or postponed registration statement in accordance with this Section 4.01 unless the Initiating Holders shall have withdrawn such request, in which case the Company shall not be considered to have effected an effective registration for the purposes of this Agreement), and such registration shall not be withdrawn, suspended or postponed pursuant to clause (iv) of this Section 4.01(a).

(b)

(i) The Company, subject to Sections 4.03 and 4.06, shall include in a Demand Registration (x) the Registrable Securities of the Initiating Holders and (y) the Registrable Securities of any other Holder of Registrable Securities, which shall have made a written request to the Company for inclusion in such registration pursuant to Section 4.02 (which request shall specify the maximum number of Registrable Securities intended to be disposed of by such Participating Holder) within 5 days after the receipt of the Demand Exercise Notice.

(ii) The Company shall, as expeditiously as possible, but subject to the limitations set forth in this Section 4.01, use its reasonable best efforts to (x) effect such registration under the Securities Act (including by means of a shelf registration pursuant to Rule 415 under the Securities Act if so requested and if the Company is then eligible to use such a registration) of the Registrable Securities which the Company has been so requested to register, for distribution in accordance with such intended method of distribution and (y) if requested by the Majority Participating Holders, obtain acceleration of the effective date of the registration statement relating to such registration.

(c) In connection with any Demand Registration, the Majority Participating Holders shall have the right to designate the lead managing underwriter (any lead managing underwriter for the purposes of this Agreement, the "**Manager**") in connection with such registration and each other managing underwriter for such registration, in each case subject to consent of the Company, not be unreasonably withheld.

(d) If so requested by the Initiating Holder(s), the Company (together with all Holders proposing to distribute their securities through such underwriting) shall enter into an underwriting agreement in customary form with the underwriter or underwriters selected for such underwriting in accordance with the terms of this Agreement.

(e) Any Holder that intends to sell Registrable Securities by means of a shelf registration pursuant to Rule 415 thereunder, shall give the Company two days' prior notice of any such sale.

Section 4.02. *Piggyback Registrations.*

(a) If, at any time or from time to time the Company will register or commence an offering of any of its securities for its own account or otherwise (other than pursuant to registrations on Form S-4 or Form S-8 or any similar successor forms thereto) (including but not limited to the registrations or offerings pursuant to Section 4.01), the Company will:

(i) promptly give to each Holder written notice thereof (in any event within five Business Days after the determination to pursue such offering); and

(ii) include in such registration and in any underwriting involved therein (if any), all the Registrable Securities specified in a written request or requests, made within 5 days after mailing or personal delivery of such written notice from the Company, by any of the Holders, except as set forth in Sections 4.02(b) and 4.02(f), with the securities which the Company at the time proposes to register or sell to permit the sale or other disposition by the Holders (in accordance with the intended method of distribution thereof) of the Registrable Securities to be so registered or sold, including, if necessary, by filing with the SEC a post-effective amendment or a supplement to the registration statement filed by the Company or the prospectus related thereto. There is no limitation on the number of such piggyback registrations pursuant to the preceding sentence which the Company is obligated to effect. No registration of Registrable Securities effected under this Section 4.02(a) shall relieve the Company of its obligations to effect Demand Registrations under Section 4.01 hereof.

(b) If the registration in this Section 4.02 involves an underwritten offering, the right of any Holder to include its Registrable Securities in a registration or offering pursuant to this Section 4.02 shall be conditioned upon such Holder's participation in the underwriting and the inclusion of such Holder's Registrable Securities in the underwriting to the extent provided herein. All Holders proposing to distribute their Registrable Securities through such underwriting shall (together with the Company) enter into an underwriting agreement in customary form with the underwriter or underwriters selected for such underwriting (i) in the case of a primary offering, by the Company or (ii) in the case of an offering pursuant to Section 4.01, pursuant to Section 4.01(c).

(c) The Company, subject to 4.03 and 4.06, may elect to include in any registration statement and offering pursuant to any Demand Registration by any Holder, (i) authorized but unissued shares of Company Shares or Company Shares held by the Company as treasury shares and (ii) any other Company Shares which are requested to be included in such registration pursuant to the exercise of piggyback registration rights granted by the Company after the date hereof and which are not inconsistent with the rights granted in, or otherwise conflict with the terms of, this Agreement ("**Additional**

Piggyback Rights"); *provided*, *however*, that such inclusion shall be permitted only to the extent that it is pursuant to, and subject to, the terms of the underwriting agreement or arrangements, if any, entered into by the Initiating Holders.

(d) If, at any time after giving written notice of its intention to register or sell any equity securities and prior to the effective date of the registration statement filed in connection with such registration or sale of such equity securities, the Company shall determine for any reason not to register or sell or to delay registration or sale of such equity securities, the Company may, at its election, give written notice of such determination to all Holders of record of Registrable Securities and (i) in the case of a determination not to register or sell, shall be relieved of its obligation to register or sell any Registrable Securities in connection with such abandoned registration or sale, without prejudice, however, to the rights of Holders under Section 4.01, and (ii) in the case of a determination to delay such registration or sale of its equity securities, shall be permitted to delay the registration or sale of such Registrable Securities for the same period as the delay in registering such other equity securities.

(e) Notwithstanding anything contained herein to the contrary, the Company shall, at the request of any Holder, file any prospectus supplement or post-effective amendments and otherwise take any action necessary to include therein all disclosure and language deemed necessary or advisable by such Holder if such disclosure or language was not included in the initial registration statement, or revise such disclosure or language if deemed necessary or advisable by such Holder including filing a prospectus supplement naming the Holders, partners, members and shareholders to the extent required by law.

Section 4.03. *Allocation of Securities Included in Registration Statement or Offering*

(a) Subject to subsection (e) of this Section 4.03, but notwithstanding any other provision of this Agreement, in connection with an underwritten offering initiated by a Demand Registration Request, if the Manager advises the Initiating Holders in writing that marketing factors require a limitation of the number of shares to be underwritten (such number, the "**Section 4.03(a) Sale Number**") within a price range acceptable to the Majority Participating Holders, the Initiating Holders shall so advise all Holders of Registrable Securities that would otherwise be underwritten pursuant hereto, and the Company shall use its reasonable best efforts to include in such registration or offering, as applicable, the number of shares of Registrable Securities in the registration and underwriting as follows:

(i) first, all Registrable Securities requested to be included in such registration or offering by the Holders thereof (including pursuant to the exercise of piggyback rights pursuant to Section 4.02); *provided*, *however*, that if such number of Registrable Securities exceeds the Section 4.03(a) Sale Number, the number of such Registrable Securities (not to exceed the Section 4.03(a) Sale Number) to be included in such registration shall be allocated among all such Holders requesting inclusion thereof in proportion, as nearly as practicable, to the respective amounts of Registrable Securities held by such Holders at the time of filing of the registration statement or the time of the offering, as applicable;

(ii) second, if by the withdrawal of Registrable Securities by a Participating Holder, a greater number of Registrable Securities held by other Holders, may be included in such registration or offering (up to the Section 4.03(a) Sale Number), then the Company shall offer to all Holders who have included Registrable Securities in the registration or offering the right to include additional Registrable Securities in the same proportions as set forth in Section 4.03(a)(i);

(iii) third, to the extent that the number of Registrable Securities to be included pursuant to clause (i) and (ii) of this Section 4.03(a) is less than the Section 4.03(a) Sale Number, and if the underwriter so agrees, any securities that the Company proposes to register or sell, up to the Section 4.03(a) Sale Number; and

(iv) fourth, to the extent that the number of securities to be included pursuant to clauses (i), (ii) and (iii) of this Section 4.03(a) is less than the Section 4.03(a) Sale Number, the remaining securities to be included in such registration or offering shall be allocated on a pro rata basis among all Persons requesting that securities be included in such registration or offering pursuant to the exercise of Additional Piggyback Rights (**"Piggyback Shares**"), based on the aggregate number of Piggyback Shares then owned by each Person requesting inclusion in relation to the aggregate number of Piggyback Shares owned by all Persons requesting inclusion, up to the Section 4.03(a) Sale Number.

(b) Subject to subsection (e) of this Section 4.03, but notwithstanding any other provision of this Agreement, in a registration involving an underwritten offering on behalf of the Company, which was initiated by the Company, if the managing underwriter determines that marketing factors require a limitation of the number of shares to be underwritten (such number, the "**Section 4.03(b) Sale Number**") the Company shall so advise all Holders whose securities would otherwise be registered and underwritten pursuant hereto, and the number of shares of Registrable Securities that may be included in the registration and underwriting shall be allocated as follows:

(i) first, all equity securities that the Company proposes to register for its own account;

(ii) second, to the extent that the number of securities to be included pursuant to clause (i) of this Section 4.03(b) is less than the Section 4.03(b) Sale Number, among all Holders in proportion, as nearly as practicable, to the respective amounts of Registrable Securities requested for inclusion in such registration by Holders pursuant to Section 4.02 up to the Section 4.03(b) Sale Number; and

(iii) third, to the extent that the number of securities to be included pursuant to clauses (i) and (ii) of this Section 4.03(b) is less than the Section 4.03(b) Sale Number, the remaining securities to be included in such registration shall be allocated on a pro rata basis among all Persons requesting that securities be included in such

registration pursuant to the exercise of Additional Piggyback Rights, based on the aggregate number of Piggyback Shares then owned by each Person requesting inclusion in relation to the aggregate number of Piggyback Shares owned by all Persons requesting inclusion, up to the Section 4.03(b) Sale Number.

(c) Subject to subsection (e) of this Section 4.03, if any registration pursuant to Section 4.02 involves an underwritten offering by any Person(s) (other than a Holder) to whom the Company has granted registration rights which are not inconsistent with the rights granted in, or otherwise conflict with the terms of, this Agreement, the managing underwriter (as selected by the Company or such other Person) shall advise the Company that, in its view, the number of securities requested to be included in such registration exceeds the number (the "**Section 4.03(c) Sale Number**") that can be sold in an orderly manner in such registration within a price range acceptable to the Company, the Company shall include shares in such registration as follows:

(i) first, the shares requested to be included in such registration shall be allocated on a pro rata basis among such Person(s) requesting the registration and all Holders requesting that Registrable Securities be included in such registration pursuant to the exercise of piggyback rights pursuant to Section 4.02, based on the aggregate number of securities or Registrable Securities, as applicable, then owned by each of the foregoing requesting inclusion in relation to the aggregate number of securities or Registrable Securities, as applicable, owned by all such Holders and Persons requesting inclusion, up to the Section 4.03(c) Sale Number;

(ii) second, to the extent that the number of securities to be included pursuant to clause (i) of this Section 4.03(c) is less than the Section 4.03(c) Sale Number, the remaining shares to be included in such registration shall be allocated on a pro rata basis among all Persons requesting that securities be included in such registration pursuant to the exercise of Additional Piggyback Rights, based on the aggregate number of Piggyback Shares then owned by each Person requesting inclusion in relation to the aggregate number of Piggyback Shares owned by all Persons requesting inclusion, up to the Section 4.03(c) Sale Number; and

(iii) third, to the extent that the number of securities to be included pursuant to clauses (i) and (ii) of this Section 4.03(c) is less than the Section 4.03(c) Sale Number, the remaining shares to be included in such registration shall be allocated to shares the Company proposes to register for its own account, up to the Section 4.03(c) Sale Number.

(d) If any Holder of Registrable Securities disapproves of the terms of the underwriting, or if, as a result of the proration provisions set forth in clauses (a), (b) or (c) of this Section 4.03, any Holder shall not be entitled to include all Registrable Securities in a registration or offering that such Holder has requested be included, such Holder may elect to withdraw such Holder's request to include Registrable Securities in such registration or offering or may reduce the number requested to be included; *provided*, *however*, that (x) such request must be made in writing, to the Company, Manager and, if applicable, the Initiating Holder(s), prior to the execution of the underwriting agreement

with respect to such registration and (y) such withdrawal or reduction shall be irrevocable and, after making such withdrawal or reduction, such Holder shall no longer have any right to include such withdrawn Registrable Securities in the registration as to which such withdrawal or reduction was made to the extent of the Registrable Securities so withdrawn or reduced.

Section 4.04. *Registration Procedures*. If and whenever the Company is required by the provisions of this Agreement to use its reasonable best efforts to effect or cause the registration of any Registrable Securities under the Securities Act as provided in this Agreement, the Company shall, as expeditiously as possible (but, in any event, within 60 days after a Demand Registration Request in the case of Section 4.04(a) below), in connection with the Registration of the Registrable Securities and, where applicable, a takedown off of a shelf registration statement:

(a) prepare and file with the SEC a registration statement on an appropriate registration form of the SEC for the disposition of such Registrable Securities in accordance with the intended method of disposition thereof, which registration form (i) shall be selected by the Company and (ii) shall, in the case of a shelf registration, be available for the sale of the Registrable Securities by the selling Holders thereof and such registration statement shall comply as to form in all material respects with the requirements of the applicable registration form and include all financial statements required by the SEC to be filed therewith, and the Company shall use its reasonable best efforts to cause such registration statement to become effective and remain continuously effective from the date such registration statement is declared effective until the earliest to occur (i) the first date as of which all of the Registrable Securities included in the registration statement have been sold or (ii) a period of 90 days in the case of an underwritten offering effected pursuant to a registration statement other than a shelf registration statement and a period of three years in the case of a shelf registration statement (*provided*, *however*, that before filing a registration statement or prospectus or any amendments or supplements thereto, or comparable statements under securities or state "blue sky" laws of any jurisdiction, or any free writing prospectus related thereto, the Company will furnish to one counsel for the Holders participating in the planned offering (selected by the Majority Participating Holders) and to one counsel for the Manager, if any, copies of all such documents proposed to be filed (including all exhibits thereto), which documents will be subject to the reasonable review and reasonable comment of such counsel (*provided* that the Company shall be under no obligation to make any changes suggested by the Holders), and the Company shall not file any registration statement or amendment thereto, any prospectus or supplement thereto or any free writing prospectus related thereto to which the Majority Participating Holders or the underwriters, if any, shall reasonably object);

(b) prepare and file with the SEC such amendments and supplements to such registration statement and the prospectus used in connection therewith as may be necessary to keep such registration statement continuously effective for the period set forth in Section 4.04(a) and to comply with the provisions of the Securities Act with respect to the sale or other disposition of all Registrable Securities covered by such registration statement in accordance with the intended methods of disposition by the

seller or sellers thereof set forth in such registration statement (and, in connection with any shelf registration statement, file one or more prospectus supplements covering Registrable Securities upon the request of one or more Holders wishing to offer or sell Registrable Securities whether in an underwritten offering or otherwise);

(c) in the event of any underwritten public offering, enter into and perform its obligations under an underwriting agreement, in usual and customary form, with the Manager of such offering;

(d) furnish, without charge, to each Participating Holder and each underwriter, if any, of the securities covered by such registration statement such number of copies of such registration statement, each amendment and supplement thereto (in each case including all exhibits), the prospectus included in such registration statement (including each preliminary prospectus and any summary prospectus), any other prospectus filed under Rule 424 under the Securities Act and each free writing prospectus utilized in connection therewith, in each case, in conformity with the requirements of the Securities Act, and other documents, as such seller and underwriter may reasonably request in order to facilitate the public sale or other disposition of the Registrable Securities owned by such seller (the Company hereby consenting to the use in accordance with all applicable law of each such registration statement (or amendment or post-effective amendment thereto) and each such prospectus (or preliminary prospectus or supplement thereto) or free writing prospectus by each such Participating Holder and the underwriters, if any, in connection with the offering and sale of the Registrable Securities covered by such registration statement or prospectus);

(e) use its reasonable best efforts to register or qualify the Registrable Securities covered by such registration statement under such other securities or state "blue sky" laws of such jurisdictions as any sellers of Registrable Securities or any managing underwriter, if any, shall reasonably request in writing, and do any and all other acts and things which may be reasonably necessary or advisable to enable such sellers or underwriter, if any, to consummate the disposition of the Registrable Securities in such jurisdictions (including keeping such registration or qualification in effect for so long as such registration statement remains in effect), except that in no event shall the Company be required to qualify to do business as a foreign corporation in any jurisdiction where it would not, but for the requirements of this paragraph (e), be required to be so qualified, to subject itself to taxation in any such jurisdiction or to consent to general service of process in any such jurisdiction;

(f) promptly notify each Participating Holder and each managing underwriter, if any: (i) when the registration statement, any pre-effective amendment, the prospectus or any prospectus supplement related thereto, any post-effective amendment to the registration statement or any free writing prospectus has been filed and, with respect to the registration statement or any post-effective amendment, when the same has become effective; (ii) of any request by the SEC or state securities authority for amendments or supplements to the registration statement or the prospectus related thereto or for additional information; (iii) of the issuance by the SEC of any stop order suspending the effectiveness of the registration statement or the initiation of any proceedings for that

purpose; (iv) of the receipt by the Company of any notification with respect to the suspension of the qualification of any Registrable Securities for sale under the securities or state "blue sky" laws of any jurisdiction or the initiation of any proceeding for such purpose; (v) of the existence of any fact of which the Company becomes aware which results in the registration statement or any amendment thereto, the prospectus related thereto or any supplement thereto, any document incorporated therein by reference, any free writing prospectus or the information conveyed to any purchaser at the time of sale to such purchaser containing an untrue statement of a material fact or omitting to state a material fact required to be stated therein or necessary to make any statement therein not misleading; and (vi) if at any time the representations and warranties contemplated by any underwriting agreement, securities sale agreement, or other similar agreement, relating to the offering shall cease to be true and correct in all material respects; and, if the notification relates to an event described in clause (v), the Company shall promptly prepare and furnish to each such seller and each underwriter, if any, a reasonable number of copies of a prospectus supplemented or amended so that, as thereafter delivered to the purchasers of such Registrable Securities, such prospectus shall not include an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein in the light of the circumstances under which they were made not misleading;

(g) comply (and continue to comply) with all applicable rules and regulations of the SEC (including maintaining disclosure controls and procedures (as defined in Exchange Act Rule 13a-15(e)) and internal control over financial reporting (as defined in Exchange Act Rule 13a-15(f)) in accordance with the Exchange Act), and make generally available to its security holders, as soon as reasonably practicable after the effective date of the registration statement (and in any event within 45 days, or 90 days if it is a fiscal year, after the end of such 12 month period described hereafter), an earnings statement (which need not be audited) covering the period of at least 12 consecutive months beginning with the first day of the Company's first fiscal quarter after the effective date of the registration statement, which earnings statement shall satisfy the provisions of Section 11(a) of the Securities Act and Rule 158 thereunder;

(h) (i)(A) cause all such Registrable Securities covered by such registration statement to be listed on the principal securities exchange on which similar securities issued by the Company are then listed (if any), if the listing of such Registrable Securities is then permitted under the rules of such exchange, or (B) if no similar securities are then so listed, to cause all such Registrable Securities to be listed on a national securities exchange and, without limiting the generality of the foregoing, take all actions that may be required by the Company as the issuer of such Registrable Securities in order to facilitate the managing underwriter's arranging for the registration of at least two market makers as such with respect to such shares with FINRA, and (ii) comply (and continue to comply) with the requirements of any self-regulatory organization applicable to the Company, including all corporate governance requirements;

(i) provide and cause to be maintained a transfer agent and registrar for all such Registrable Securities covered by such registration statement not later than the effective date of such registration statement;

(j) enter into such customary agreements (including, if applicable, an underwriting agreement) and take such other actions as the Majority Participating Holders or the underwriters shall reasonably request in order to expedite or facilitate the disposition of such Registrable Securities (it being understood that the Holders of the Registrable Securities which are to be distributed by any underwriters shall be parties to any such underwriting agreement and may, at their option, require that the Company make to and for the benefit of such Holders the representations, warranties and covenants of the Company which are being made to and for the benefit of such underwriters);

(k) use its reasonable best efforts (i) to obtain an opinion from the Company's counsel and a comfort letter and updates thereof from the Company's independent public accountants who have certified the Company's financial statements included or incorporated by reference in such registration statement, in each case, in customary form and covering such matters as are customarily covered by such opinions and comfort letters (including, in the case of such comfort letter, events subsequent to the date of such financial statements) delivered to underwriters in underwritten public offerings, which opinion and letter shall be dated the dates such opinions and comfort letters are customarily dated and otherwise reasonably satisfactory to the underwriters, if any, and to the Majority Participating Holders, and (ii) furnish to each Holder participating in the offering and to each underwriter, if any, a copy of such opinion and letter addressed to such underwriter;

(l) deliver promptly to counsel for each Participating Holder and to each managing underwriter, if any, copies of all correspondence between the SEC and the Company, its counsel or auditors and all memoranda relating to discussions with the SEC or its staff with respect to the registration statement, and, upon receipt of such confidentiality agreements as the Company may reasonably request, make reasonably available for inspection by counsel for each Participating Holder, by counsel for any underwriter, participating in any disposition to be effected pursuant to such registration statement and by any accountant or other agent retained by any Participating Holder or any such underwriter, all pertinent financial and other records, pertinent corporate documents and properties of the Company, and cause all of the Company's officers, directors and employees to supply all information reasonably requested by any such counsel for a Participating Holder, counsel for an underwriter, accountant or agent in connection with such registration statement;

(m) use its reasonable best efforts to obtain the prompt withdrawal of any order suspending the effectiveness of the registration statement, or the prompt lifting of any suspension of the qualification of any of the Registrable Securities for sale in any jurisdiction;

(n) provide a CUSIP number for all Registrable Securities, not later than the effective date of the registration statement;

(o) use its best efforts to make available its employees and personnel for participation in "road shows" and other marketing efforts and otherwise provide reasonable assistance to the underwriters (taking into account the needs of the Company's businesses and the requirements of the marketing process) in marketing the Registrable Securities in any underwritten offering;

(p) prior to the filing of any document which is to be incorporated by reference into the registration statement or the prospectus (after the initial filing of such registration statement), and prior to the filing of any free writing prospectus, provide copies of such document to counsel for each Participating Holder and to each managing underwriter, if any, and make the Company's representatives reasonably available for discussion of such document and make such changes in such document concerning the Participating Holders prior to the filing thereof as counsel for the Participating Holders or underwriters may reasonably request;

(q) furnish to counsel for each Participating Holder and to each managing underwriter, without charge, at least one signed copy of the registration statement and any post-effective amendments or supplements thereto, including financial statements and schedules, all documents incorporated therein by reference, the prospectus contained in such registration statement (including each preliminary prospectus and any summary prospectus), any other prospectus filed under Rule 424 under the Securities Act and all exhibits (including those incorporated by reference) and any free writing prospectus utilized in connection therewith;

(r) cooperate with the Participating Holders and the managing underwriter, if any, to facilitate the timely preparation and delivery of certificates not bearing any restrictive legends representing the Registrable Securities to be sold, and cause such Registrable Securities to be issued in such denominations and registered in such names in accordance with the underwriting agreement at least three Business Days prior to any sale of Registrable Securities to the underwriters or, if not an underwritten offering, in accordance with the instructions of the Participating Holders at least three Business Days prior to any sale of Registrable Securities and instruct any transfer agent and registrar of Registrable Securities to release any stop transfer orders in respect thereof;

(s) cooperate with any due diligence investigation by any Manager, underwriter or Participating Holder and make available such documents and records of the Company and its Subsidiaries that they reasonably request (which, in the case of the Participating Holder, may be subject to the execution by the Participating Holder of a customary confidentiality agreement in a form which is reasonably satisfactory to the Company);

(t) take no direct or indirect action prohibited by Regulation M under the Exchange Act;

(u) take all such other commercially reasonable actions as are necessary or advisable in order to expedite or facilitate the disposition of such Registrable Securities;

(v) take all reasonable action to ensure that any free writing prospectus utilized in connection with any registration covered by Section 4.01 or 4.02 complies in all material respects with the Securities Act, is filed in accordance with the Securities Act

to the extent required thereby, is retained in accordance with the Securities Act to the extent required thereby and, when taken together with the related prospectus, will not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in light of the circumstances under which they were made, not misleading; and

(w) in connection with any underwritten offering, if at any time the information conveyed to a purchaser at the time of sale includes any untrue statement of a material fact or omits to state any material fact necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading, promptly file with the SEC such amendments or supplements to such information as may be necessary so that the statements as so amended or supplemented will not, in light of the circumstances, be misleading.

To the extent the Company is a well-known seasoned issuer (as defined in Rule 405 under the Securities Act) (a "**WKSI**") at the time any Demand Registration Request is submitted to the Company, and such Demand Registration Request requests that the Company file an automatic shelf registration statement (as defined in Rule 405 under the Securities Act) (an "**automatic shelf registration statement**") on Form S-3, the Company shall file an automatic shelf registration statement which covers those Registrable Securities which are requested to be registered. The Company shall use its reasonable best efforts to remain a WKSI (and not become an ineligible issuer (as defined in Rule 405 under the Securities Act)) during the period during which the Registrable Securities remain Registrable Securities. If the Company does not pay the filing fee covering the Registrable Securities at the time the automatic shelf registration statement is filed, the Company agrees to pay such fee at such time or times as the Registrable Securities are to be sold. If the automatic shelf registration statement has been outstanding for at least three years, at the end of the third year the Company shall refile a new automatic shelf registration statement covering the Registrable Securities. If at any time when the Company is required to re-evaluate its WKSI status the Company determines that it is not a WKSI, the Company shall use its reasonable best efforts to refile the shelf registration statement on Form S-3 and, if such form is not available, Form S-1 and keep such registration statement effective during the period during which such registration statement is required to be kept effective.

If the Company files any shelf registration statement for the benefit of the holders of any of its securities other than the Holders, the Company agrees that it shall include in such registration statement such disclosures as may be required by Rule 430B under the Securities Act (referring to the unnamed selling security holders in a generic manner by identifying the initial offering of the securities to the Holders) in order to ensure that the Holders may be added to such shelf registration statement at a later time through the filing of a prospectus supplement rather than a post-effective amendment.

It shall be a condition precedent to the obligations of the Company to take any action pursuant to Sections 4.01, 4.02 or 4.04 that each Participating Holder shall furnish to the Company such information regarding themselves, the Registrable Securities held by them, and the intended method of disposition of such securities as the Company may from time to time reasonably request so long as such information is necessary for the Company to consummate such registration and shall be used only in connection with such registration.

If any such registration statement or comparable statement under state "blue sky" laws refers to any Holder by name or otherwise as the Holder of any securities of the Company, then such Holder shall have the right to require (i) the insertion therein of language, in form and substance satisfactory to such Holder and the Company, to the effect that the holding by such Holder of such securities is not to be construed as a recommendation by such Holder of the investment quality of the Company's securities covered thereby and that such holding does not imply that such Holder will assist in meeting any future financial requirements of the Company, or (ii) in the event that such reference to such Holder by name or otherwise is not in the judgment of the Company, as advised by counsel, required by the Securities Act or any similar federal statute or any state "blue sky" or securities law then in force, the deletion of the reference to such Holder.

Section 4.05. *Registration Expenses*. All Expenses incurred in connection with any registration, filing, qualification or compliance pursuant to Article 4 shall be borne by the Company, whether or not a registration statement becomes effective. All underwriting discounts and all selling commissions relating to securities registered by the Holders shall be borne by the holders of such securities pro rata in accordance with the number of shares sold in the offering by such Participating Holder.

Section 4.06. *Certain Limitations on Registration Rights*. In the case of any registration under Section 4.01 pursuant to an underwritten offering, or, in the case of a registration under Section 4.02, all securities to be included in such registration shall be subject to the underwriting agreement and no Person may participate in such registration or offering unless such Person (i) agrees to sell such Person's securities on the basis provided therein and completes and executes all reasonable questionnaires, and other documents (including custody agreements and powers of attorney) which must be executed in connection therewith; *provided*, *however*, that all such documents shall be consistent with the provisions hereof, and (ii) provides such other information to the Company or the underwriter as may be necessary to register such Person's securities.

Section 4.07. *Limitations on Sale or Distribution of Other Securities*.

(a) Each Holder and Non-Cellectis Holder agrees, (i) to the extent requested in writing by a managing underwriter, if any, of any registration effected pursuant to Section 4.01, not to sell, transfer or otherwise dispose of, including any sale pursuant to Rule 144 under the Securities Act, any Company Shares, or any other equity security of the Company or any security convertible into or exchangeable or exercisable for any equity security of the Company (other than as part of such underwritten public offering) during the time period reasonably requested by the managing underwriter, not to exceed 90 days, and (ii) to the extent requested in writing by a managing underwriter of any underwritten public offering effected by the Company for its own account, not to sell any Company Shares (other than as part of such underwritten public offering) during the time

period reasonably requested by the managing underwriter, which period shall not exceed 90 days; and, if so requested, each Holder and Non-Cellectis Holder agrees to enter into a customary lock-up agreement with such managing underwriter.

(b) The Company hereby agrees that, if it shall previously have received a request for registration pursuant to Section 4.01 or 4.02, and if such previous registration shall not have been withdrawn or abandoned, the Company shall not sell, transfer, or otherwise dispose of, any Company Shares, or any other equity security of the Company or any security convertible into or exchangeable or exercisable for any equity security of the Company (other than as part of such underwritten public offering, a registration on Form S-4 or Form S-8 or any successor or similar form which is (x) then in effect or (y) shall become effective upon the conversion, exchange or exercise of any then outstanding Company Shares Equivalent), until a period of 90 days shall have elapsed from the effective date of such previous registration; and the Company shall (i) so provide in any registration rights agreements hereafter entered into with respect to any of its securities and (ii) use its reasonable best efforts to cause each holder of any equity security or any security convertible into or exchangeable or exercisable for any equity security of the Company purchased from the Company at any time other than in a public offering to so agree.

Section 4.08. *No Required Sale*. Nothing in this Agreement shall be deemed to create an independent obligation on the part of any Holder to sell any Registrable Securities pursuant to any effective registration statement.

Section 4.09. *Indemnification*.

(a) In the event of any registration and/or offering of any securities of the Company under the Securities Act pursuant to this Article 4, the Company will, and hereby agrees to, and hereby does, indemnify and hold harmless, to the fullest extent permitted by law, each Holder, its directors, officers, fiduciaries, employees, shareholders, members or general and limited partners (and the directors, officers, fiduciaries, employees, shareholders, members or general and limited partners thereof), any underwriter (as defined in the Securities Act) for such Holder and each Person, if any, who controls such Holder or underwriter within the meaning of the Securities Act or Exchange Act, from and against any and all losses, claims, damages or liabilities, joint or several, actions or proceedings (whether commenced or threatened) and expenses (including reasonable fees of counsel and any amounts paid in any settlement effected with the Company's consent, which consent shall not be unreasonably withheld or delayed) to which each such indemnified party may become subject under the Securities Act or otherwise in respect thereof (collectively, "**Claims**"), insofar as such Claims arise out of or are based upon (i) any untrue statement or alleged untrue statement of a material fact contained in any registration statement under which such securities were registered under the Securities Act or the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, (ii) any untrue statement or alleged untrue statement of a material fact contained in any preliminary or final prospectus or any amendment or supplement thereto, together with the documents incorporated by reference therein, or any free

writing prospectus utilized in connection therewith, or the omission or alleged omission to state therein a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading, (iii) any untrue statement or alleged untrue statement of a material fact in the information conveyed by the Company to any purchaser at the time of the sale to such purchaser, or the omission or alleged omission to state therein a material fact required to be stated therein, or (iv) any violation by the Company of any federal, state or common law rule or regulation applicable to the Company and relating to action required of or inaction by the Company in connection with any such registration, and the Company will reimburse any such indemnified party for any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such Claim as such expenses are incurred; *provided*, *however*, that the Company shall not be liable to any such indemnified party in any such case to the extent such Claim arises out of or is based upon any untrue statement or alleged untrue statement of a material fact or omission or alleged omission of a material fact made in such registration statement or amendment thereof or supplement thereto or in any such prospectus or any preliminary or final prospectus or free writing prospectus in reliance upon and in conformity with written information furnished to the Company by or on behalf of such indemnified party specifically for use therein. Such indemnity and reimbursement of expenses shall remain in full force and effect regardless of any investigation made by or on behalf of such indemnified party and shall survive the transfer of such securities by such seller.

(b) Each Participating Holder shall, severally and not jointly, indemnify and hold harmless (in the same manner and to the same extent as set forth in paragraph (a) of this Section 4.09) to the extent permitted by law the Company, its officers and directors, each Person controlling the Company within the meaning of the Securities Act, each underwriter (within the meaning of the Securities Act) of the Company's securities covered by such a registration statement, any Person who controls such underwriter, and any other Holder selling securities in such registration statement and each of its directors, officers, partners or agents or any Person who controls such Holder with respect to any untrue statement or alleged untrue statement of any material fact in, or omission or alleged omission of any material fact from, such registration statement, any preliminary or final prospectus contained therein, or any amendment or supplement thereto, or any free writing prospectus utilized in connection therewith, if such statement or alleged statement or omission or alleged omission was made in reliance upon and in conformity with written information furnished to the Company or its representatives by or on behalf of such Participating Holder, specifically for use therein and reimburse such indemnified party for any legal or other expenses reasonably incurred in connection with investigating or defending any such Claim as such expenses are incurred; *provided*, *however*, that the aggregate amount which any such Participating Holder shall be required to pay pursuant to this Sections 4.09(b), 4.09(c) and 4.09(e) shall in no case be greater than the amount of the net proceeds actually received by such Participating Holder upon the sale of the Registrable Securities pursuant to the registration statement giving rise to such Claim. The Company and each Participating Holder hereby acknowledge and agree that, unless otherwise expressly agreed to in writing by such Participating Holders to the contrary, for all purposes of this Agreement, the only information furnished or to be furnished to the Company for use in any such registration statement, preliminary or final prospectus or

amendment or supplement thereto or any free writing prospectus are statements specifically relating to (a) the beneficial ownership of Company Shares by such Participating Holder and its Affiliates and (b) the name and address of such Participating Holder. Such indemnity and reimbursement of expenses shall remain in full force and effect regardless of any investigation made by or on behalf of such indemnified party and shall survive the transfer of such securities by such Holder.

(c) Indemnification similar to that specified in the preceding paragraphs (a) and (b) of this Section 4.09 (with appropriate modifications) shall be given by the Company and each Participating Holder with respect to any required registration or other qualification of securities under any applicable securities and state "blue sky" laws.

(d) Any Person entitled to indemnification under this Agreement shall notify promptly the indemnifying party in writing of the commencement of any action or proceeding with respect to which a claim for indemnification may be made pursuant to this Section 4.09, but the failure of any indemnified party to provide such notice shall not relieve the indemnifying party of its obligations under the preceding paragraphs of this Section 4.09, except to the extent the indemnifying party is materially and actually prejudiced thereby and shall not relieve the indemnifying party from any liability which it may have to any indemnified party otherwise than under this Article 4. In case any action or proceeding is brought against an indemnified party, the indemnifying party shall be entitled to (x) participate in such action or proceeding and (y) unless, in the reasonable opinion of outside counsel to the indemnified party, a conflict of interest between such indemnified and indemnifying parties may exist in respect of such claim, assume the defense thereof jointly with any other indemnifying party similarly notified, with counsel reasonably satisfactory to such indemnified party. The indemnifying party shall promptly notify the indemnified party of its decision to assume the defense of such action or proceeding. If, and after, the indemnified party has received such notice from the indemnifying party, the indemnifying party shall not be liable to such indemnified party for any legal or other expenses subsequently incurred by such indemnified party in connection with the defense of such action or proceeding other than reasonable costs of investigation; *provided*, *however*, that (i) if the indemnifying party fails to take reasonable steps necessary to defend diligently the action or proceeding within 20 days after receiving notice from such indemnified party that the indemnified party believes it has failed to do so; (ii) if such indemnified party who is a defendant in any action or proceeding which is also brought against the indemnifying party reasonably shall have concluded that there may be one or more legal or equitable defenses available to such indemnified party which are not available to the indemnifying party or which may conflict with those available to another indemnified party with respect to such Claim; or (iii) if representation of both parties by the same counsel is otherwise inappropriate under applicable standards of professional conduct, then, in any such case, the indemnified party shall have the right to assume or continue its own defense as set forth above (but with no more than one firm of counsel for all indemnified parties in each jurisdiction, except to the extent any indemnified party or parties reasonably shall have made a conclusion described in clause (ii) or (iii) above) and the indemnifying party shall be liable for any expenses therefor. No indemnifying party shall, without the written consent of the indemnified party, effect the settlement or compromise of, or consent to the entry

of any judgment with respect to, any pending or threatened action or claim in respect of which indemnification or contribution may be sought hereunder (whether or not the indemnified party is an actual or potential party to such action or claim), unless such settlement or compromise (i) includes an unconditional release of such indemnified party from all liability on any claims that are the subject matter of such action or claim and (ii) does not include a statement as to, or an admission of, fault, culpability or a failure to act by or on behalf of an indemnified party. The indemnity obligations contained in Sections 4.09(a) and 4.09(b) shall not apply to amounts paid in settlement of any such loss, claim, damage, liability or action if such settlement is effected without the consent of the indemnified party which consent shall not be unreasonably withheld.

(e) If for any reason the foregoing indemnity is held by a court of competent jurisdiction to be unavailable to an indemnified party under Section 4.09(a), (b) or (c), then each applicable indemnifying party shall contribute to the amount paid or payable to such indemnified party as a result of any Claim in such proportion as is appropriate to reflect the relative fault of the indemnifying party, on the one hand, and the indemnified party, on the other hand, with respect to such Claim as well as any other relevant equitable considerations. The relative fault shall be determined by a court of law by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the indemnifying party or the indemnified party and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such untrue statement or omission. If, however, the allocation provided in the second preceding sentence is not permitted by applicable law, then each indemnifying party shall contribute to the amount paid or payable by such indemnified party in such proportion as is appropriate to reflect not only such relative faults but also the relative benefits of the indemnifying party and the indemnified party as well as any other relevant equitable considerations. The parties hereto agree that it would not be just and equitable if any contribution pursuant to this Section 4.09(e) were to be determined by pro rata allocation or by any other method of allocation which does not take account of the equitable considerations referred to in the preceding sentences of this Section 4.09(e). The amount paid or payable in respect of any Claim shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such Claim. No Person guilty of fraudulent misrepresentation (within the meaning of Section 11 (f) of the Securities Act) shall be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation. Notwithstanding anything in this Section 4.09(e) to the contrary, no indemnifying party (other than the Company) shall be required pursuant to this Section 4.09(e) to contribute any amount greater than the amount of the net proceeds actually received by such indemnifying party upon the sale of the Registrable Securities pursuant to the registration statement giving rise to such Claim, less the amount of any indemnification payment made by such indemnifying party pursuant to Sections 4.09(b) and 4.09(c).

(f) The indemnity and contribution agreements contained herein shall be in addition to any other rights to indemnification or contribution which any indemnified party may have pursuant to law or contract (except as set forth in subsection (h) below) and shall remain operative and in full force and effect regardless of any investigation

made or omitted by or on behalf of any indemnified party and shall survive the transfer of the Registrable Securities by any such party and the completion of any offering of Registrable Securities in a registration statement.

(g) The indemnification and contribution required by this Section 4.09 shall be made by periodic payments of the amount thereof during the course of the investigation or defense, as and when bills are received or expense, loss, damage or liability is incurred; *provided*, *however*, that the recipient thereof hereby undertakes to repay such payments if and to the extent it shall be determined by a court of competent jurisdiction that such recipient is not entitled to such payment hereunder.

(h) If a customary underwriting agreement shall be entered into in connection with any registration pursuant to Section 4.01 or 4.02, the indemnity, contribution and related provisions set forth therein shall supersede the indemnification and contribution provisions set forth in this Section 4.09.

Section 4.10. *Underwritten Offerings*.

(a) *Requested Underwritten Offerings*. If the Initiating Holders request an underwritten offering pursuant to a registration under Section 4.01 (pursuant to a request for a registration statement to be filed in connection with a specific underwritten offering or a request for a shelf takedown in the form of an underwritten offering), the Company shall enter into a customary underwriting agreement with the underwriters. Such underwriting agreement shall (i) be satisfactory in form and substance to the Majority Participating Holders, (ii) contain terms not inconsistent with the provisions of this Agreement and (iii) contain such representations and warranties by, and such other agreements on the part of, the Company and such other terms as are generally prevailing in agreements of that type, including indemnities and contribution agreements on substantially the same terms as those contained herein (it being understood that an underwriting agreement in substantially the form of the underwriting agreement for the IPO shall be deemed to satisfy the foregoing requirements). Any Participating Holder shall be a party to such underwriting agreement and may, at its option, require that any or all of the representations and warranties by, and the other agreements on the part of, the Company to and for the benefit of such underwriters shall also be made to and for the benefit of such Participating Holder and that any or all of the conditions precedent to the obligations of such underwriters under such underwriting agreement be conditions precedent to the obligations of such Participating Holder; *provided*, *however*, that the Company shall not be required to make any representations or warranties with respect to written information specifically provided by a Participating Holder for inclusion in the registration statement (as set forth in the penultimate sentence of Section 4.09(b) of this Agreement). Each such Participating Holder shall not be required to make any representations or warranties to or agreements with the Company or the underwriters other than customary representations, warranties or agreements regarding such Participating Holder, its ownership of, and title to, the Registrable Securities, any written information specifically provided by such Participating Holder for inclusion in the registration statement and its intended method of distribution; and any liability of such Participating Holder to the Company, any underwriter or other Person under such underwriting agreement shall be

limited to the amount of the net proceeds received by such Holder upon the sale of the Registrable Securities pursuant to the registration statement and shall be limited to liability for written information specifically provided by such Participating Holder (as set forth in the penultimate sentence of Section 4.09(b) of this Agreement).

(b) *Piggyback Underwritten Offerings*. In the case of a registration pursuant to Section 4.02 which involves an underwritten offering, the Company shall enter into an underwriting agreement in connection therewith and all of the Participating Holders' Registrable Securities to be included in such registration shall be subject to such underwriting agreement. Any Participating Holder may, at its option, require that any or all of the representations and warranties by, and the other agreements on the part of, the Company to and for the benefit of such underwriters shall also be made to and for the benefit of such Participating Holder and that any or all of the conditions precedent to the obligations of such underwriters under such underwriting agreement be conditions precedent to the obligations of such Participating Holder; *provided*, *however*, that the Company shall not be required to make any representations or warranties with respect to written information specifically provided by a Participating Holder for inclusion in the registration statement. Each such Participating Holder shall not be required to make any representations or warranties to or agreements with the Company or the underwriters other than customary representations, warranties or agreements regarding such Participating Holder, its ownership of, and title to, the Registrable Securities, any written information specifically provided by such Participating Holder for inclusion in the registration statement (as set forth in the penultimate sentence of Section 4.09(b) of this Agreement) and its intended method of distribution; and any liability of such Participating Holder to any underwriter or other Person under such underwriting agreement shall be limited to the amount of the net proceeds received by such Participating Holder upon the sale of the Registrable Securities pursuant to the registration statement and shall be limited to liability for written information specifically provided by such Participating Holder (as set forth in the penultimate sentence of Section 4.09(b) of this Agreement).

Section 4.11. *Adjustments Affecting Registrable Securities*. The provisions of this Article 4 shall apply, to the full extent set forth herein with respect to the Registrable Securities, to any and all shares of capital stock of the Company or any successor or assign of the Company (whether by merger, share exchange, consolidation, sale of assets or otherwise) or any Subsidiary of the Company which may be issued in respect of, in exchange for or in substitution of, Registrable Securities and shall be appropriately adjusted for any stock dividends, splits, reverse splits, combinations, recapitalizations and the like occurring after the date hereof.

Section 4.12. *Rule 144 and Rule 144A*. If the Company shall have filed a registration statement pursuant to the requirements of Section 12 of the Exchange Act or a registration statement pursuant to the requirements of the Securities Act in respect of the Company Shares or Company Shares Equivalents, the Company covenants that (i) so long as it remains subject to the reporting provisions of the Exchange Act, it will timely file the reports required to be filed by it under the Securities Act or the Exchange Act (including, but not limited to, the reports under Sections 13 and 15(d) of the Exchange Act referred to in subparagraph (c)(1) of Rule 144 under the Securities Act, as such Rule

may be amended ("**Rule 144**")) or, if the Company is not required to file such reports, it will, upon the request of any Holder, make publicly available other information so long as necessary to permit sales by such Holder under Rule 144, Rule 144A under the Securities Act, as such Rule may be amended ("**Rule 144A**"), or any similar rules or regulations hereafter adopted by the SEC, and (ii) it will take such further action as any Holder may reasonably request, all to the extent required from time to time to enable such Holder to sell Registrable Securities without registration under the Securities Act within the limitation of the exemptions provided by (A) Rule 144, (B) Rule 144A or (C) any similar rule or regulation hereafter adopted by the SEC. Upon the request of any Holder of Registrable Securities, the Company will deliver to such Holder a written statement by the Company that it has complied with the reporting requirements of Rule 144, the Securities Act and the Exchange Act (at any time after it has become subject to such reporting requirements), or that it qualifies as a registrant whose securities may be resold pursuant to Form S-3 (at any time after it so qualifies), a copy of the most recent annual or quarterly report of the Company and such other reports and documents so filed by the Company and such other information as may be reasonably requested in availing any Holder of any rule or regulation of the SEC which permits the selling of any such securities without registration or pursuant to such form.

Section 4.13. *Limitations on Subsequent Registration Rights*. From and after the effective date of the first registration statement filed by the Company for the offering of its securities to the general public, the Company may, without the prior written consent of the Holders or the Non-Cellectis Holders, enter into any agreement with any holder or prospective holder of any securities of the Company which provides such holder or prospective holder of securities of the Company comparable, but not more favorable or conflicting (including conflicting with any priorities set forth in Section 4.03), information and registration rights granted to the Holders hereby.

ARTICLE 5

TRANSFERS OF SHARES

Section 5.01. *Rights and Obligations of Permitted Transferees*.

(a) Any Permitted Transferee of a Holder may elect to become party to this Agreement and, upon execution and delivery of a customary joinder agreement, shall be considered a Party hereto and be treated as a Holder for all purposes of this Agreement.

(b) Notwithstanding the foregoing, Section 5.01(a) shall not apply to any Transfer of Company Shares to a Permitted Transferee completed pursuant to (i) a registration statement, (ii) an underwritten registered public offering or (iii) a bona fide sale pursuant to a brokers' transaction, transaction directly with a market maker or riskless principal transaction in each case in accordance with Rule 144 under the Securities Act (including block trades), in each case for which the transferor does not have knowledge that such Company Shares are being transferred to a Permitted Transferee.

ARTICLE 6

GENERAL PROVISIONS

Section 6.01. *Further Assurances*. The Parties shall take all Necessary Action in order to give full effect to this Agreement and every provision hereof. Each of the Company, the Holders and the Non-Cellectis Holders shall take or cause to be taken all lawful action necessary to ensure at all times that the Company's Governing Documents are not at any time inconsistent with the provisions of this Agreement. In addition, each Party shall do and perform or cause to be done and performed all such further acts and things and shall execute and deliver all such other agreements, certificates, instruments, and documents as any other Party reasonably may request in order to carry out the intent and accomplish the purposes of this Agreement.

Section 6.02. *Assignment; Benefit*. The rights and obligations hereunder of the Parties shall not be assigned without the prior written consent of Cellectis, Calyxt and any Permitted Transferee who becomes a Party pursuant to Article 5, except in connection with a transfer of Company Shares in compliance with Article 5. In addition, the registration rights set forth in Article 4 may only be assigned in connection with a transfer of at least 10% of the then outstanding Company Shares. Any assignment of rights or obligations in violation of this Section 6.02 shall be null and void. This Agreement shall be binding upon and shall inure to the benefit of the Parties, and their respective successors and permitted assigns.

Section 6.03. *Pledges*. Upon the request of Cellectis to pledge, hypothecate or grant security interests in any or all of the Company Shares held by it, including to banks or financial institutions as collateral or security for loans, advances or extensions of credit, the Company agrees to cooperate with Cellectis in taking action reasonably necessary to consummate any such pledge, hypothecation or grant, including delivery of letter agreements to lenders in form and substance reasonably satisfactory to such lenders (which may include agreements by the Company in respect of the exercise of remedies by such lenders) and instructing the transfer agent to transfer any such Company Shares subject to the pledge, hypothecation or grant into the facilities of The Depository Trust Company without restricted legends.

Section 6.04. *Termination*. This Agreement shall terminate on the date on which Cellectis and its Affiliates no longer Beneficially Own, in the aggregate, a number of Company Shares equal to at least 10% of the then outstanding Company Shares, unless Cellectis has made a transfer of Company Shares to a Person satisfying the definition of Permitted Transferee who has become a party to this Agreement, in which case this Agreement shall terminate on the date on which such Person no longer Beneficially Owns in the aggregate a number of Company Shares equal to at least 10% of the then outstanding Company Shares.

Section 6.05. *Severability*. In the event that any provision of this Agreement shall be invalid, illegal or unenforceable, such provision shall be construed by limiting it so as to be valid, legal and enforceable to the maximum extent provided by law and the validity, legality and enforceability of the remaining provisions of this Agreement shall not in any way be affected or impaired thereby.

Section 6.06. *Entire Agreement*. This Agreement, the Governing Documents and the other agreements referenced herein and therein constitute the entire agreement among the Parties with respect to the subject matter hereof, and supersede any prior agreement or understanding among them with respect to the matters referred to herein.

Section 6.07. *Amendment*. The provisions of this Agreement, including the provisions of this sentence, may not be amended, modified or supplemented, and waivers or consents to departures from the provisions of this Agreement may not be given without the written consent of the Company and holders of a majority of the Registrable Securities; *provided*, *however*, that in no event shall the obligations of any holder of Registrable Securities be increased or the rights of any Holder be adversely affected (without similarly increasing or adversely affecting the rights of all Holders), except upon the written consent of such Holder. Notwithstanding the foregoing, a waiver or consent to depart from the provisions hereof with respect to a matter that relates exclusively to the rights of Holders of Registrable Securities whose securities are being sold pursuant to a registration statement and that does not directly or indirectly affect the rights of other Holders of Registrable Securities may be given by holders of at least a majority of the Registrable Securities being sold by such Holders pursuant to such registration statement.

Section 6.08. This Agreement may not be amended, modified, supplemented, waived or terminated (other than pursuant to Section 6.04) except with the written consent of Cellectis; *provided* that, any amendment, modification, supplement, waiver or termination that adversely affects the rights of the Company under this Agreement, imposes additional obligations on the Company, or amends or modifies Section 3.01, Section 3.02, Article 6, and any corresponding definitions in Article 1, will require both (i) the written consent of Cellectis and (ii) the written consent of the Company with the approval of the "independent directors" of the Company.

Section 6.09. *Waiver*. Except as set forth in Section 6.08, no waiver of any breach of any of the terms of this Agreement shall be effective unless such waiver is expressly made in writing and executed and delivered by the Party against whom such waiver is claimed. Waiver by any Party of any breach or default by any other Party of any of the terms of this Agreement shall not operate as a waiver of any other breach or default, whether similar to or different from the breach or default waived. No waiver of any provision of this Agreement shall be implied from any course of dealing between the Parties or from any failure by any Party to assert its or his or her rights hereunder on any occasion or series of occasions.

Section 6.10. *Counterparts*. This Agreement may be executed in any number of separate counterparts each of which when so executed shall be deemed to be an original and all of which together shall constitute one and the same agreement.

Section 6.11. *Notices*. Unless otherwise specified herein, all notices, consents, approvals, reports, designations, requests, waivers, elections and other communications

authorized or required to be given pursuant to this Agreement shall be in writing and shall be given, made or delivered (and shall be deemed to have been duly given, made or delivered upon receipt) by personal hand-delivery, by facsimile transmission, by electronic mail, by mailing the same in a sealed envelope, registered first-class mail, postage prepaid, return receipt requested, or by air courier guaranteeing overnight delivery, addressed as follows:

If to Calyxt, Inc., to:

Calyxt, Inc.
600 County Road D West
Suite 8
New Brighton, MN 55112
Attention: Joseph Saluri, General Counsel
E-mail: joseph.saluri@calyxt.com

If to Cellectis S.A., to:

Cellectis S.A.
8, rue de la Croix Jarry
75013 Paris, France
Attention: Marie-Bleuenn Terrier, General Counsel
Facsimile: +33 (0)1 81 69 16 06
E-mail: marie-bleuenn.terrier@cellectis.com

Section 6.12. *Governing Law*. This Agreement is governed by and will be construed in accordance with the laws of the State of Delaware, excluding any conflict-of-laws rule or principle (whether of Delaware or any other jurisdiction) that might refer the governance or the construction of this Agreement to the law of another jurisdiction.

Section 6.13. *Jurisdiction*. Each of the Parties (a) consents to submit itself to the personal jurisdiction of the Court of Chancery of the State of Delaware in the event any dispute arises out of this Agreement, (b) agrees that it will not attempt to deny or defeat such personal jurisdiction by motion or other request for leave from such court and (c) agrees that it will not bring any action relating to this Agreement or any of the transactions contemplated by this Agreement in any court other than the Court of Chancery of the State of Delaware. Each Party hereby agrees that, to the fullest extent permitted by law, service of any process, summons, notice or document by U.S. registered mail to the respective addresses set forth in Section 6.11 shall be effective service of process for any suit or proceeding in connection with this Agreement.

Section 6.14. *Waiver of Jury Trial*. EACH OF THE PARTIES HEREBY IRREVOCABLY WAIVES ALL RIGHT TO TRIAL BY JURY IN ANY ACTION, PROCEEDING OR COUNTERCLAIM (WHETHER BASED ON CONTRACT, TORT OR OTHERWISE) ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE ACTIONS OF THE PARTIES IN THE NEGOTIATION, ADMINISTRATION, PERFORMANCE AND ENFORCEMENT THEREOF. The Company or any Holder may file an original counterpart or a copy of this Section 6.14 with any court as written evidence of the consent of any of the Parties to the waiver of their rights to trial by jury.

Section 6.15. *Specific Performance*. It is hereby agreed and acknowledged that it will be impossible to measure the money damages that would be suffered if the Parties fail to comply with any of the obligations imposed on them by this Agreement and that, in the event of any such failure, an aggrieved Party will be irreparably damaged and will not have an adequate remedy at law. Each Party shall, therefore, be entitled (in addition to any other remedy to which such Party may be entitled at law or in equity) to seek injunctive relief, including specific performance, to enforce such obligations, without the posting of any bond, and if any action should be brought in equity to enforce any of the provisions of this Agreement, none of the Parties shall raise the defense that there is an adequate remedy at law.

Section 6.16. *Adjustments*. All references in this Agreement to Company Shares shall be appropriately adjusted for any stock dividends, splits, reverse splits, combinations, reclassifications, recapitalizations, reorganizations and the like occurring after the date hereof.

Section 6.17. *No Third Party Beneficiaries*. This Agreement is not intended to confer upon any Person, except for the Parties, any rights or remedies hereunder.

* * *

IN WITNESS WHEREOF, the parties set forth below have duly executed this Agreement as of the day and year first above written.

CALYXT, INC.

By: /s/ Federico A. Tripodi
Name: Federico A. Tripodi
Title: Chief Executive Officer

CELLECTIS S.A.

By: /s/ André Choulika
Name: André Choulika
Title: Chief Executive Officer

By: /s/ André Choulika
Name: André Choulika

By: /s/ Philippe Dumont
Name: Philippe Dumont

By: /s/ Alain Godard
Name: Alain Godard

By: /s/ Anna Ewa Kozicz-Stankiewicz
Name: Anna Ewa Kozicz-Stankiewicz

By: /s/ Laurent Arthaud
Name: Laurent Arthaud

By: /s/ Federico A. Tripodi
Name: Federico A. Tripodi

By: /s/ Bryan W. J. Corkal
Name: Bryan W. J. Corkal

By: /s/ Dan Voytas
Name: Dan Voytas

By: /s/ Feng Zhang
Name: Feng Zhang

By: /s/ Manoj Sahoo
Name: Manoj Sahoo

By: /s/ Glenn Bowers
Name: Glenn Bowers

By: /s/ Michel Arbadji
Name: Michel Arbadji

By: /s/ Joseph B. Saluri
Name: Joseph B. Saluri

Schedule A

Directors:
André Choulika
Philipe Dumont
Alain Godard
Anna Ewa Kozicz-Stankiewicz
Laurent Arthaud

Executive Officers:
Federico A. Tripodi
Bryan W. J. Corkal
Dan Voytas
Feng Zhang
Manoj Sahoo
Glenn Bowers
Michel Arbadji
Joseph B. Saluri

Exhibit 4.31

LICENSE AGREEMENT

This LICENSE AGREEMENT (this "**Agreement**"), dated as of July 25, 2017 (the "**Effective Date**"), is entered into by and between Cellectis S.A., a corporation existing and registered under the laws of France, located at 8 rue de la Croix Jarry, 75013 Paris, France ("**Cellectis**"), and Calyxt, Inc., a corporation existing and registered under the laws of Delaware, located at 600 County Road D West, Suite 8, New Brighton, MN 55112, USA ("**Calyxt**") (each a "**Party**" and collectively, the "**Parties**").

W I T N E S S E T H:

WHEREAS, Cellectis owns or otherwise controls certain Intellectual Property Rights and desires to grant to Calyxt, and Calyxt desires to receive from Cellectis, a license to use and otherwise exploit such Intellectual Property Rights, in each case upon the terms and conditions set forth herein.

NOW, THEREFORE, in consideration of the mutual covenants and agreements hereinafter set forth and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

ARTICLE 1
DEFINITIONS

Section 1.01. *Definitions*. (a) For purposes of this Agreement, the following terms shall have the following meanings:

"**Affiliate**" means, with respect to any Person, any other Person directly or indirectly controlling, controlled by, or under common control with such other Person, whether now or in the future. For purposes of this definition, (i) "**control**" when used with respect to any Person means the power to direct the management and policies of such Person, directly or indirectly, whether through the ownership of voting securities, by contract or otherwise, and the terms "**controlling**" and "**controlled**" have correlative meanings and (ii) neither Cellectis nor any of its Subsidiaries shall be considered to be an Affiliate of Calyxt or any of its Subsidiaries (and vice versa).

"**Applicable Law**" means, with respect to any Person, any transnational, domestic or foreign federal, state or local law (statutory, common or otherwise), constitution, treaty, convention, ordinance, code, rule, regulation, order, injunction, judgment, decree, ruling or other similar requirement enacted, adopted, promulgated or applied by a Governmental Authority that is binding upon or applicable to such Person, as amended unless expressly specified otherwise.

"**Bare Sublicense**" means any sublicense granted by Calyxt to any third party of rights to some or all of the Licensed Cellectis Patents pursuant to Section 2.03, without any Calyxt Licensed Product developed by or in collaboration with Calyxt.

"**Bare Sublicense Revenue**" means any and all consideration, payments and revenue (including the fair market value of any non-cash consideration) received by Calyxt pursuant to any Bare Sublicense.

"**Business Day**" means a day, other than Saturday, Sunday or other day on which commercial banks in Paris, France are authorized or required by Applicable Law to close.

"**Calyxt Field**" means the field of researching, developing and commercializing agricultural and food products, including, but not limited to traits, seeds, proteins, oils, carbohydrates, food, and food and animal feed ingredients, excluding any application in connection with animals and animal cells.

"Calyxt Improvement" means any improvements, modifications, refinements to, enhancements, derivatives or combinations of, any Licensed Cellectis IP made by Calyxt or any of its Affiliates after the Effective Date and all Intellectual Property Rights in any of the foregoing.

"**Calyxt Improvement Patents**" means any Patents owned or controlled by Calyxt or any of its Affiliates Covering any Calyxt Improvements.

"**Calyxt Licensed Products**" means any and all products (i) the creation, generation, development, making or use of which is, in whole or in part, Covered by a Licensed Cellectis Patent, or (ii) which is created, generated, bred or made by use of a process Covered by a Licensed Cellectis Patent. For sake of clarity, any plant or seed which contains one or more modifications made using a process Covered by any of the Licensed Cellectis Patents, as well as any progeny of such plant or seed, any part of such plant or seed, and any product derived from such plant or seed (such as, for example, meal and oil derived from any soybean), is a Calyxt Licensed Product.

"**Cellectis Improvement**" means any improvements, modifications or refinements to, or enhancements or derivatives of any Licensed Cellectis IP made by Cellectis or any of its Affiliates after the Effective Date and all Intellectual Property Rights in any of the foregoing.

"**Confidential Information**" means any and all non-public, proprietary or other confidential information disclosed by a Party ("**disclosing party**") to the other Party ("**receiving party**") and includes all information licensed hereunder without the need for any further notice or marking, excluding any information that: (i) the receiving party independently develops without reference to the disclosed information; (ii) the receiving party independently receives on a non-confidential and authorized basis from a source other than the disclosing party; (iii) becomes public knowledge through no fault of the receiving party; or (iv) is in the public domain at the time the receiving party receives the disclosed information.

"**Cover**" means, with respect to any product, service or process, and any Intellectual Property Right, that the manufacture, use, offer for sale, sale, distribution, importation, development or other commercialization of such product, service or process would, but for any ownership of or license under such Intellectual Property Right, constitute an infringement, misappropriation or other violation of any of such Intellectual Property Right. "**Covered**" and "**Covering**" have correlative meanings.

"**Exclusively Licensed Cellectis Patents**" means any and all Licensed Cellectis Patents exclusively related to the Calyxt Field for which Calyxt is granted exclusive rights under the Calyxt License.

"**Governmental Authority**" means any transnational, domestic or foreign federal, state or local governmental, regulatory or administrative authority, department, court, agency or official, including any political subdivision thereof.

"**Intellectual Property Rights**" means any and all intellectual property rights or similar proprietary rights throughout the world, including all (i) national and multinational statutory invention registrations and similar statutory rights, patents and patent applications, including all provisionals, non-provisionals, divisionals, continuations, continuations-in-part, reissues, renewals, reexaminations, extensions, supplemental protection certificates and the equivalents of any of the foregoing in any jurisdiction, and all inventions disclosed in any of the foregoing ("**Patents**"); (ii) trademarks, service marks, certification marks, logos, trade names, trade dress, domain names and other indications of origin, including all registrations and applications for registration of, and all goodwill associated with, any of the foregoing ("**Trademarks**"); (iii) copyrights and registrations and applications for registration thereof, including all derivative works, moral rights, renewals, extensions, reversions or restorations associated with such copyrights, regardless of the medium of fixation or means of expression; (iv) trade secrets, know-how and other confidential or proprietary information (including processes, techniques and research and development information); and (v) mask works, industrial designs (whether or not registered), database rights, publicity rights and privacy rights.

"**Licensable**" means, with respect to any Intellectual Property Right, that a Person has the power and authority to grant a license (or sublicense, as the case may be), on the applicable terms and conditions of this Agreement, to such Intellectual Property Right without any of the following: (i) the consent of any third party (unless such consent can be obtained without providing any additional consideration to such third party); (ii) impairing such Person's existing rights in respect of such Intellectual Property Right (it being understood that the grant of any license hereunder, in and of itself, shall not be construed as an impairment of any of such Person's rights); (iii) imposing any additional obligations on such Person under any preexisting agreement relating to such Intellectual Property Right; and/or (iv) the payment of royalties or other consideration on or after the Effective Date by such Person to any third party under any preexisting agreement relating to such Intellectual Property Right (other than to the University of Minnesota pursuant to the UMinn License). For the avoidance of doubt, in no event shall any Intellectual Property Right be "**Licensable**" if any of the foregoing conditions in clauses (i)-(iv) apply.

"**Licensed Cellectis IP**" means the (i) Licensed Cellectis Patents; and (ii) Other Licensed Intellectual Property Rights.

"**Licensed Cellectis Patents**" means any and all Patents that are: (i) related to the Calyxt Field; (ii) necessary for Calyxt to operate in the Calyxt Field; and (iii) Licensable by Cellectis and existing as of the Effective Date.

"**Licensed TALEN Mark**" means the trademark "TALEN" and all registrations and applications for registration thereof, in each case as owned by Cellectis as of the Effective Date, including the registration set forth on Schedule A.

"**Net Sales**" means, with respect to any Calyxt Licensed Product, the gross amount invoiced by Calyxt or any of its sublicensees for any such Calyxt Licensed Product, in each case less (i) all trade, quantity, and cash discounts actually allowed; (ii) all credits and allowances actually granted due to rejections, returns, billing errors, and retroactive price reductions; (iii) applicable duties; (iv) all credits or allowances given or made for uncollectible amounts and for which a provision is made in Calyxt's financial statements; (v) the commodity price for seed and grain; and (vi) applicable excise, sale and use taxes. Net Sales shall also include the fair market value of all other consideration received as consideration for the sale or disposition of any Calyxt Licensed Product, whether such consideration is in cash, payment in kind, exchange or another form. Net Sales shall be determined by using generally accepted accounting principles consistently applied.

"Non-Exclusive Field" means the field of researching, developing and commercializing a modified or mutated I-CreI homing endonuclease that is a homodimer, heterodimer or single chain endonuclease, but solely to the extent the foregoing falls within the Calyxt Field.

"Other Licensed Intellectual Property Rights" means any and all know-how and other Intellectual Property Rights (excluding any Patents and Trademarks) that are (i) related to the Calyxt Field; (ii) necessary for Calyxt to operate in the Calyxt Field; and (iii) Licensable by Cellectis and existing as of the Effective Date.

"Patent-Related Expenses" means costs and expenses (including out-of-pocket attorneys' fees, patent agent fees and governmental filing fees) that Cellectis or any of its Affiliates incurs in prosecuting and maintaining the Licensed Cellectis Patents which are exclusively and solely related to the Calyxt Field.

"**Person**" means an individual, corporation, partnership, limited liability company, association, trust or other entity or organization, including a Governmental Authority.

"**Royalty Term**" means, with respect to any Calyxt Licensed Product in any jurisdiction, the period commencing on the Effective Date and ending upon the expiration of the last-to-expire Valid Claim Covering such Calyxt Licensed Product in such jurisdiction.

"**Sublicense Revenue Term**" means the period commencing on the Effective Date and ending upon the expiration of the last-to-expire Valid Claim.

"**Subsidiary**" means, with respect to any Person, any entity of which securities or other ownership interests having ordinary voting power to elect a majority of the board of directors or other Persons performing similar functions are at the time directly or indirectly owned by such Person.

"**UMinn License**" means the Exclusive Patent License Agreement between the University of Minnesota and Cellectis dated as of January 10, 2011 (as amended, including by the First Amendment to the Exclusive Patent License Agreement, dated as of May 24, 2012, Second Amendment to the Exclusive Patent License Agreement, dated as of April 1, 2014, and Third Amendment to the Exclusive Patent License Agreement, dated as of December 16, 2015).

"**University of Minnesota**" means the Regents of the University of Minnesota.

"**Valid Claim**" means any (i) claim in any unexpired and issued Patent included in the Licensed Cellectis Patents that has not been (A) disclaimed, revoked or held invalid or unenforceable by a decision of a court or other Governmental Authority of competent jurisdiction from which no appeal (other than an appeal to the highest appellate court of such jurisdiction) can be taken, or with respect to which an appeal is not taken within the time allowed for appeal, or (B) irretrievably abandoned, disclaimed or admitted to be invalid or unenforceable by Cellectis through reissue, disclaimer or otherwise, or (ii) pending claim in a pending Patent application included in the Licensed Cellectis Patents that has not been abandoned or finally rejected without the possibility of appeal or refiling.

(b) Each of the following terms is defined in the Section set forth opposite such term:

Term	Section
Agreement	Preamble
Calyxt	Preamble
Calyxt License	2.01
Calyxt TM License	2.02
Cellectis	Preamble
Controlling Party	9.02
Effective Date	Preamble
Indemnified Party	8.03
Indemnifying Party	8.03
Infringement	9.02
Losses	8.01
Necessary Third Party License	5.02
Negotiation Period	2.06
Non-Controlling Party	9.02
Option Period	2.06
Parties	Preamble
Party	Preamble
Remainder	9.02
Third Party Claim	8.03
UMinn IP	2.04

Section 1.02. *Other Definitional and Interpretative Provisions*. The words "hereof", "herein" and "hereunder" and words of like import used in this Agreement shall refer to this Agreement as a whole and not to any particular provision of this Agreement. The captions herein are included for convenience of reference only and shall be ignored in the construction or interpretation hereof. References to Articles, Sections and Schedules are to Articles, Sections and Schedules of this Agreement unless otherwise specified. All Schedules annexed hereto or referred to herein are hereby incorporated in and made a part of this Agreement as if set forth in full herein. Any capitalized terms used in any Schedule but not otherwise defined therein, shall have the meaning as defined in this Agreement. Any singular term in this Agreement shall be deemed to include the plural, and any plural term the singular. Whenever the words "include", "includes" or "including" are used in this Agreement, they shall be deemed to be followed by the words "without limitation", whether or not they are in fact followed by those words or words of like import. "Writing", "written" and comparable terms refer to printing, typing and other means of reproducing words (including electronic media) in a visible form. References to any agreement or contract are to that agreement or contract as amended, modified or supplemented from time to time in accordance with the terms hereof and thereof. References to any Person include the successors and permitted assigns of that Person. References from or through any date mean, unless otherwise specified, from and including or through and including, respectively. References to "law", "laws" or to a particular statute or law shall be deemed also to include any and all Applicable Law.

ARTICLE 2
GRANT OF LICENSE

Section 2.01. *Calyxt License.* Subject to the terms and conditions of this Agreement, Cellectis hereby grants to Calyxt an exclusive (except as otherwise provided herein and subject to existing licenses granted by Cellectis to third parties prior to the Effective Date) worldwide, perpetual license, with the right to sublicense (in accordance with Section 2.03) under the Licensed Cellectis IP to use, have used, make, have made, sell, have sold, offer for sale, export, import and otherwise exploit any and all Calyxt Licensed Products within the Calyxt Field (the "**Calyxt License**"). Notwithstanding the foregoing, the Calyxt License shall be non-exclusive solely in the Non-Exclusive Field, such that the rights as set forth above in this Section 2.01 are granted to Calyxt on a non-exclusive basis in the Non-Exclusive Field under the Calyxt License.

Section 2.02. *Trademark License Grant*. Subject to the terms and conditions of this Agreement, Cellectis hereby grants to Calyxt a worldwide, non-exclusive, sublicensable (in accordance with Section 2.03), royalty-free and fully paid-up, non-transferable (except as set forth in Section 11.01) license under the Licensed TALEN Mark to use, make, have made, sell, offer for sale, import and otherwise exploit any and all Calyxt Licensed Products within the Calyxt Field (the "**Calyxt TM License**").

Section 2.03. *Sublicense Rights.* The Calyxt License and the Calyxt TM License include the right of Calyxt to grant sublicenses to any Person; *provided* that (a) any such sublicense shall be in writing and automatically terminate upon any termination of this Agreement (it being understood that any such sublicense shall include express terms and conditions to effect such automatic termination); (b) sublicensees of the Calyxt License shall not be permitted to grant further sublicenses thereunder with respect to any UMinn IP (as defined below); (c) Calyxt shall cause each of its sublicensees to abide by all applicable terms and conditions of this Agreement, enforce such terms and conditions and the provisions of any sublicense against each such sublicensee; and (d) Calyxt shall remain responsible and liable to Cellectis for the performance of each such sublicensee's obligations and for all acts or omissions of such sublicensee as if they were acts of Calyxt under this Agreement.

Section 2.04. *UMinn License.* The Parties acknowledge and agree that Calyxt has received a copy of the UMinn License and certain Licensed Cellectis IP is owned by the University of Minnesota ("**UMinn IP**") and the Calyxt License with respect to the UMinn IP is granted as a sublicense under, and subject to the terms and conditions of, the UMinn License. Accordingly, in exercising its rights under the Calyxt License, Calyxt shall comply with any and all terms and conditions of the UMinn License as they would apply to Calyxt as a sublicensee with respect to any UMinn IP. Without limiting the generality of the foregoing, promptly following receipt of written notice thereof, Calyxt shall reimburse Cellectis for any and all payments made by Cellectis to the University of Minnesota pursuant to Sections 11.6.4 (Milestone Payments), 11.11 (Annual Fee), and 11.12 (Commercialization Fee) of the UMinn License, but solely to the extent that any such payments are required as a result of the applicable activities of Calyxt hereunder or thereunder. Calyxt shall not be liable to the University of Minnesota for any other payments other than those as specifically set forth in the previous sentence. Without the prior written consent of Calyxt, Cellectis shall not (A) terminate the UMinn License, or (B) amend or waive any rights under the UMinn License in any manner that would reasonably be expected to have a material adverse effect on any of Calyxt's rights under this Agreement. In addition, Calyxt shall provide, and shall cause its sublicensees to provide, to Cellectis all reports, information and other assistance in connection with Calyxt's and its sublicensees' activities pursuant to this Agreement that are reasonably required to enable Calyxt to comply with its obligations under the UMinn License.

Section 2.05. *Calyxt Improvements.* (a) As between the Parties, any and all Calyxt Improvements shall be solely and exclusively owned by Calyxt.

(b) Subject to the terms and conditions of this Agreement, Calyxt, on behalf of itself and its Affiliates, hereby grants to Cellectis and its Affiliates an exclusive, perpetual, worldwide, sublicensable, non-transferable (except as set forth in Section 11.01), royalty-free and fully paid-up license to use and otherwise exploit Calyxt Improvements for any purpose outside of the Calyxt Field. On a continuing basis during the term of this Agreement, Calyxt shall promptly make available to Cellectis all Calyxt Improvements then in existence that are necessary or reasonably useful for the commercialization of such Calyxt Improvements by Cellectis outside of the Calyxt Field, and provide Cellectis with all reasonable assistance to enable Cellectis to understand and use such Calyxt Improvement. Calyxt shall use commercially reasonable efforts to identify and disclose all Calyxt Improvements based on facts known to Calyxt, as well as in response to specific requests made by Cellectis.

Section 2.06. *Calyxt Option on Cellectis Improvements*. Solely during the period in which Cellectis and its Affiliates own, in the aggregate, a number of Calyxt common shares equal to at least fifty percent (50%) of the then outstanding common shares of Calyxt, Cellectis shall promptly disclose to Calyxt all Cellectis Improvements then in existence that are necessary or reasonably useful for the commercialization of such Cellectis Improvements by Calyxt in the Calyxt Field, and provide Calyxt an option to obtain a license within the Calyxt Field. Calyxt may exercise its option by sending a written notice to Cellectis within thirty (30) days after it has the knowledge of such Cellectis Improvements (the "**Option Period**"). If Calyxt has exercised its option within the Option Period to obtain such a license, then for a period of thirty (30) days after Cellectis receives such notice from Calyxt (the "**Negotiation Period**"), the Parties shall, in good faith, negotiate the terms and conditions of a definitive agreement pursuant to which Cellectis would grant Calyxt a royalty-bearing license with respect to such Cellectis Improvement; *provided* that if Calyxt does not exercise its option within the Option Period, or if the Parties do not agree on the terms and conditions of such a definitive agreement for such license within the Negotiation Period, Cellectis shall be free to grant any third party any license or other rights with respect to such Cellectis Improvement.

Section 2.07. *No Other Licenses*. Except as expressly provided in this Agreement, no other licenses are granted to either Party under this Agreement. Each Party acknowledges and agrees that (a) any use by Calyxt or any of its sublicensees of the Licensed Cellectis IP outside the scope of the Calyxt License or the Licensed TALEN Mark outside the scope of the Calyxt TM License is expressly prohibited and (b) any use by Cellectis or any of its sublicensees of the Calyxt Improvements outside the scope of the licenses granted to Cellectis or any of its sublicensees pursuant to Section 2.05 is expressly prohibited.

ARTICLE 3
LICENSED TALEN MARK; QUALITY CONTROL

Section 3.01. *Quality Control*. Cellectis reserves the right to practice reasonable quality control with regard to the use of the Licensed TALEN Mark by Calyxt or any of its sublicensees and Calyxt shall, and shall cause its sublicensees to, adhere to such quality, appearance, reputational, distinctiveness and other standards with respect to the use of the Licensed TALEN Mark and with respect to the goods and services sold or rendered under the Licensed TALEN Mark as Cellectis may require from time to time. Calyxt hereby acknowledges the validity of the Licensed TALEN Mark and Cellectis' exclusive right, title, and interest in and to the Licensed TALEN Mark, subject to the license granted hereunder. Calyxt shall, and shall cause its sublicensees to, (a) not take any action or make any statement which would reasonably be expected to damage the reputation or goodwill associated with Cellectis, any of its Affiliates, or the Licensed TALEN Mark, or to prejudice, infringe or impair the rights of Cellectis with respect to the Licensed TALEN Mark and (b) comply with all Applicable Law governing the use of the Licensed TALEN Mark, including all services performed under the Licensed TALEN Mark and all goods to which the Licensed TALEN Mark is applied. At Calyxt's sole expense, Calyxt shall supply, and shall cause its sublicensees to supply, Cellectis with specimens of all uses of the Licensed TALEN Mark upon the reasonable request of Cellectis.

Section 3.02. *Reservation of Rights; Ownership*. (a) Calyxt, on behalf of itself and its sublicensees, acknowledges and agrees that (i) Cellectis is the sole and exclusive owner of all right, title and interest in and to the Licensed TALEN Mark; (ii) Cellectis shall have the sole and exclusive right to prosecute and maintain the Licensed TALEN Mark; and (iii) neither Calyxt nor any of its sublicensees has acquired, and shall not acquire, any right, title or interest in or to the Licensed TALEN Mark other than the rights expressly set forth in this Agreement. Calyxt shall cooperate with Cellectis in taking all appropriate measures for the protection of the Licensed TALEN Mark.

(b) Calyxt shall not, and shall cause its sublicensees not to, (i) challenge the validity, enforceability or ownership of the Licensed TALEN Mark or claim adversely or assist in any claim adverse to Cellectis concerning any right, title or interest in the Licensed TALEN Mark; (ii) do or permit any act which may directly or indirectly impair or prejudice Cellectis' title to the Licensed TALEN Mark or be detrimental to the reputation and goodwill of Cellectis or any of its Affiliates, including any act which might assist or give rise to any application to remove or de-register any of the Licensed TALEN Mark; or (iii) register or attempt to register any trademarks for any words, names, graphics, or other source identifiers that are identical or confusingly similar to the Licensed TALEN Mark. All use of the Licensed TALEN Mark by Calyxt and any of its sublicensees, and all goodwill associated with such use, shall inure to the benefit of Cellectis.

Section 3.03. *Trademark Notice*. In connection with the use of the Licensed TALEN Mark, Calyxt and its sublicensees shall mark each use with the registered trademark symbol, "®," or such other trademark notice symbol as designated by Cellectis.

ARTICLE 4
COMMERCIALIZATION

Section 4.01 *Commercialization and Performance Milestones*. Calyxt shall use its commercially reasonable efforts, and shall require all sublicensees to use commercially reasonable efforts, in each case consistent with sound and reasonable business practices and judgment, to commercialize the Licensed Cellectis Patents in the Calyxt Field and to manufacture, offer to sell and sell Calyxt Licensed Products as soon as practicable and to maximize sales thereof.

Section 4.02 *Covenants Regarding the Manufacture of Licensed Products*. Calyxt hereby covenants and agrees, and shall require all sublicensees to covenant and agree, that (a) the manufacture, use, sale, or transfer of Calyxt Licensed Products shall comply with all Applicable Laws, including all federal export laws and regulations; and (b) it will make commercially reasonable efforts such that the Calyxt Licensed Products shall not be defective in design or manufacture. Calyxt hereby further covenants and agrees that, pursuant to 35 United States Code Section 204, it shall, and it shall cause each sublicensee, to substantially manufacture in the United States of America all products embodying or produced through the use of an invention that is subject to the rights of the federal government of the United States of America.

Section 4.03 *Export and Regulatory Compliance*. Calyxt understands that the Arms Export Control Act (AECA), including its implementing International Traffic In Arms Regulations (ITAR) and the Export Administration Act (EAA), including its Export Administration Regulations (EAR), are some (but not all) of the laws and regulations that comprise the U.S. export laws and regulations. Calyxt further understands that the U.S. export laws and regulations include (but are not limited to): (i) ITAR and EAR product/service/data-specific requirements; (ii) ITAR and EAR ultimate destination-specific requirements; (iii) LIAR and EAR end user-specific requirements; (iv) Foreign Corrupt Practices Act; and (v) antiboycott laws and regulations. Calyxt shall comply with all then-current applicable export laws and regulations of the U.S. Government (and other applicable U.S. laws and regulations) pertaining to the Calyxt Licensed Products (including any associated products, items, articles, computer software, media, services, technical data, and other information). Calyxt certifies that it shall not, directly or indirectly, export (including any deemed export), nor re-export (including any deemed re-export) the Calyxt Licensed Products (including any associated products, items, articles, computer software, media, services, technical data, and other information) in violation of U.S. export laws and regulations or other applicable U.S. laws and regulations. Calyxt shall include an appropriate provision in its agreements with its authorized sublicensees to assure that these parties comply with all then-current applicable U.S. export laws and regulations and other applicable U.S. laws and regulations.

Section 4.04 *Commercialization Reports*. As requested by Cellectis in writing, no more than once per year, Calyxt shall deliver to Cellectis written reports of Calyxt's and its sublicensees' efforts and plans to commercialize the Licensed Cellectis Patents in the Calyxt Field and to manufacture, offer to sell, or sell Calyxt Licensed Products.

Section 4.05 *Use of Cellectis and University of Minnesota Names and Trademarks*. Except for the Licensed TALEN Mark, no provision of this Agreement grants Calyxt or any of its sublicensees any right or license to use the name, logo, or any marks owned by or associated with Cellectis, the University of Minnesota or the names, or identities of any member of the faculty, staff, or student body of the University of Minnesota. Calyxt shall not use and shall not permit any of its sublicensees to use any such logos, marks, names, or identities without the prior written approval of Cellectis or the University of Minnesota, as applicable.

Section 4.06 *Governmental Markings*.

(a) Calyxt and its sublicensees may mark all Calyxt Licensed Products in a manner consistent with their current patent marking practices for their own products and Applicable Laws. Where marking is to be performed but the Calyxt Licensed Product cannot be marked, the patent notice shall be placed on associated tags, labels, packaging, or accompanying documentation (either electronic or paper) as appropriate.

(b) Calyxt and its sublicensees are solely responsible for obtaining all necessary approvals from Governmental Authorities for the development, production, distribution, sale, and use of any Calyxt Licensed Product, at Calyxt's expense, including, without limitation, any safety studies. Calyxt is solely responsible for including with the Calyxt Licensed Product any warning labels, packaging and instructions as to the use and the quality control for such Calyxt Licensed Product.

(c) Calyxt agrees to register this Agreement with any foreign Governmental Authority that requires such registration, and Calyxt shall pay all costs and legal fees in connection with such registration. Calyxt shall comply with all foreign laws affecting this Agreement or the sale of Calyxt Licensed Products.

ARTICLE 5
ROYALTIES AND BARE SUBLICENSE REVENUE

Section 5.01. *Royalties and Bare Sublicense Revenue.* As consideration for the Calyxt License, Calyxt shall pay to Cellectis the following amounts during the following periods:

(a) With respect to each Calyxt Licensed Product in any jurisdiction, three percent (3%) of all Net Sales of such Calyxt Licensed Product in such jurisdiction during the Royalty Term for such Calyxt Licensed Product; and

(b) thirty percent (30%) of all Bare Sublicense Revenue during the Sublicense Revenue Term.

Section 5.02. *Royalty Stacking for Third Party Rights.* (a) If Calyxt is presently required, or in the future is required, to secure a royalty-bearing or fee-bearing license under any patent to use, make, have made, sell, offer for sale or import any Calyxt Licensed Product in the Calyxt Field in any jurisdiction (a "**Necessary Third Party License**"), then, during the period in which Calyxt is required to make royalty payments to the licensor under such Necessary Third Party License, Calyxt shall have the right to reduce the royalty rate contemplated in Section 5.01(a) with respect to the Net Sales of such Calyxt Licensed Product in such jurisdiction by an amount equal to one quarter (1/4) of the royalty rate payable to such licensor pursuant to such Necessary Third Party License; *provided* that, in no event shall the royalty rate contemplated in Section 5.01(a) with respect to any Net Sales of any Calyxt Licensed Product be reduced to less than two percent (2%). If such Necessary Third Party License includes a royalty stacking provision of like intent to this Section 5.02, the royalty rate reduction provided for in this Section 5.02 will be calculated as if such provision in such Necessary Third Party License were absent. For the avoidance of doubt, and notwithstanding anything in this Agreement to the contrary, in no event shall any agreement to which Calyxt is a party as of or prior to the Effective Date be deemed a Necessary Third Party License under this Agreement.

(b) Without limiting Section 5.02(a), and by way of example only:

(i) If, after the Effective Date, Calyxt is required to enter into a Necessary Third Party License, pursuant to which Calyxt is required to pay the licensor thereunder a royalty of two percent (2%) of the net sales of a Calyxt Licensed Product in a jurisdiction, then, during the period in which such royalty is required to be paid, the royalty rate contemplated in Section 5.01(a) with respect to the Net Sales of such Calyxt Licensed Product in such jurisdiction would equal two and one half percent (2.5%).

(ii) If, after the Effective Date, Calyxt is required to enter into a Necessary Third Party License, pursuant to which Calyxt is required to pay the licensor thereunder a royalty of eight percent (8%) of the net sales of a Calyxt Licensed Product in a jurisdiction, then, during the period in which such royalty is required to be paid, the royalty rate contemplated in Section 5.01(a) with respect to the Net Sales of such Calyxt Licensed Product in such jurisdiction would equal two percent (2%).

Section 5.03. *Reimbursement of Patent-Related Expenses*. Commencing on the Effective Date, Calyxt shall pay all invoices issued by Cellectis or any of its Affiliates for any Patent-Related Expenses under this Agreement within thirty (30) days of its receipt of each such invoice.

Section 5.04. *Reporting; Audit Rights.* Calyxt shall render to Cellectis, on a calendar quarterly basis, commencing with the first calendar quarter after the Effective Date, a detailed written report of the royalties and Bare Sublicense Revenue due to Cellectis. Such report shall be accompanied by a remittance of such royalties and Bare Sublicense Revenue as shown to be due hereunder. Each report shall be rendered within thirty (30) days following the end of each calendar quarterly period. Calyxt shall keep books and records in sufficient detail to enable the royalty payments and Bare Sublicense Revenue due hereunder to be adequately determined. Once per calendar year, upon reasonable written notice, Cellectis or any third party owner of Patent rights included in the Licensed Cellectis IP shall have the right at its sole cost and expense to cause a nationally recognized independent certified public accountant reasonably acceptable to Calyxt to examine and inspect such books and records during Calyxt's normal business hours, but only to the extent necessary to verify the computation of royalties and Bare Sublicense Revenue payable hereunder. Such books and records shall be deemed Confidential Information of Calyxt hereunder, and such nationally recognized independent certified public accountant shall disclose to Cellectis or such third party only the royalties and Bare Sublicense Revenue payable and the percentage under/overpayment by Calyxt. In the event that such examination determines that Calyxt has underpaid royalties and Bare Sublicense Revenue by more than three percent (3%), Calyxt shall reimburse Cellectis for its reasonable costs in conducting such examination. At Calyxt's expense, Calyxt shall also provide Cellectis with all reasonably requested cooperation in connection with complying with any audit regarding the activities of Calyxt hereunder that is conducted by or on behalf of the University of Minnesota pursuant to the UMinn License.

Section 5.05. *Method of Payment*. Each payment by Calyxt hereunder shall be made by electronic transfer in immediately available funds, at Cellectis' election, via either a bank wire transfer or any other means of electronic funds transfer to a bank account specified in writing by Cellectis to Calyxt. Cellectis may change such account by written notice at least five (5) Business Days before any payment is due. All royalties and Bare Sublicense Revenue of Calyxt

shall be computed and paid in U.S. dollars. For the purposes of determining the amount of any royalties or Bare Sublicense Revenue due for any relevant calendar quarter, the amount of Net Sales or Bare Sublicense Revenue in any foreign currency shall be converted into U.S. dollars in a manner consistent with Calyxt's customary practices used to prepare its audited financial reports. No more than once per calendar year, upon written request of Cellectis, Calyxt shall provide Cellectis with a written explanation of such customary practices of Calyxt.

Section 5.06. *Withholding Taxes.* To the extent either Party is required by Applicable Law to withhold or deduct any amounts from any payments to be made under this Agreement, such Party shall be entitled to withhold or deduct such amounts and such amounts shall be treated for all purposes of this Agreement as having been paid to the Party in respect of which such deduction and withholding were made. Each Party shall (in consultation and cooperation with the other) use commercially reasonable efforts to attempt to lawfully mitigate, reduce or avoid such withholdings or deductions. Promptly after the execution of this Agreement, Cellectis shall provide to Calyxt a valid Form W-8BEN-E establishing Cellectis' right to a zero percent rate of withholding tax with respect to the amounts payable by Calyxt under this Article 5 under Article 12 of the United States – France income tax treaty.

ARTICLE 6
REPRESENTATIONS AND WARRANTIES; DISCLAIMERS; LIMITATION OF LIABILITY

Section 6.01. *Mutual Representations and Warranties*. As of the Effective Date, each Party hereby represents and warrants to the other Party that (a) the execution, delivery and performance by such Party of this Agreement are within such Party's corporate powers and have been duly authorized by all necessary corporate action on the part of such Party and (b) this Agreement constitutes a valid and binding agreement of such Party enforceable against such Party in accordance with its terms (subject to applicable bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium and other laws affecting creditors' rights generally and general principles of equity).

Section 6.02. *Disclaimers and Limitation of Liability*. EXCEPT FOR THE REPRESENTATIONS AND WARRANTIES IN SECTION 6.01, ALL LICENSES AND RIGHTS GRANTED HEREIN ARE MADE ON AN "AS IS" BASIS, AND THE PARTIES EACH HEREBY DISCLAIM ANY EXPRESS OR IMPLIED REPRESENTATIONS OR WARRANTIES OF ANY KIND, INCLUDING WITHOUT LIMITATION, THOSE REGARDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OF NON-INFRINGEMENT. NOTWITHSTANDING ANYTHING IN THIS AGREEMENT TO THE CONTRARY, CALYXT ACKNOWLEDGES AND AGREES THAT ALL RIGHTS GRANTED TO CALYXT UNDER THIS AGREEMENT ARE SUBJECT IN ALL RESPECTS TO ANY AND ALL LICENSES OR OTHER RIGHTS GRANTED BY CELLECTIS OR ANY OF ITS AFFILIATES TO ANY THIRD PARTIES WITH RESPECT TO ANY LICENSED CELLECTIS IP AS OF OR PRIOR TO THE EFFECTIVE DATE. TO THE EXTENT PERMITTED BY APPLICABLE LAW, NEITHER PARTY SHALL BE LIABLE UNDER

ANY LEGAL OR EQUITABLE THEORY FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND ARISING OUT OF OR OTHERWISE RELATED TO THIS AGREEMENT, EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Section 6.03. *University of Minnesota Disclaimer; Limitation of Liability; and Release.*

(a) Calyxt acknowledges and agrees that the disclaimer, remedy limitation and damages cap provisions applicable to and exclusion of representations and warranties by the University Minnesota, set forth in Sections 10.2, 11.1 and 11.2 of the UMinn License shall apply with respect to Calyxt's rights and remedies under this Agreement and such Sections are hereby incorporated by reference herein, *mutatis mutandis.*

(b) Calyxt, on behalf of itself and its Affiliates and its and their respective employees, hereby releases the University of Minnesota, Cellectis and their respective regents, employees and agents forever from any and all suits, actions, claims, liabilities, demands, damages, losses, and expenses (including reasonable attorneys' and investigative expenses) relating to or arising out of the manufacture, use, lease, sale, or other disposition of any Calyxt Licensed Product.

ARTICLE 7
CONFIDENTIALITY

Section 7.01. *Confidentiality*. (a) The receiving party shall keep confidential the disclosing party's Confidential Information, and shall not use any of the disclosing party's Confidential Information for any purpose other than the exercise of the receiving party's rights, or as otherwise permitted, under this Agreement. The receiving party shall preserve the confidentiality of the disclosing party's Confidential Information as it would customarily take to preserve the confidentiality of its own similar type of confidential information and shall not disclose the disclosing party's Confidential Information to any third party without the prior written consent of the disclosing party, except as expressly permitted hereunder. The receiving party may disclose the Confidential Information to (i) any of its employees, agents, independent contractors and sublicensees who need it in connection with this Agreement and are bound in writing by restrictions regarding disclosure and use of the Confidential Information comparable to and no less restrictive than those set forth herein or (ii) the extent it is in response to a valid order of a court or other Governmental Authority or to otherwise comply with Applicable Law; *provided* that, in the case of clause (ii), the receiving party shall first provide written notice to the disclosing party and reasonably cooperate with the disclosing party to obtain a protective order or other measures preserving the confidential treatment of such Confidential Information and requiring that the information or documents so disclosed be used only for the purposes for which the order was issued or is otherwise required by Applicable Law.

(b) The terms and conditions of this Agreement shall be deemed Confidential Information for the purposes of this Agreement; *provided* that each Party may disclose the terms and conditions of this Agreement: (i) in confidence, to its accountants, banks and present and prospective financing sources and their advisors; (ii) in connection with the enforcement of this Agreement or rights under

this Agreement; (iii) in confidence, in connection with an actual or proposed merger, acquisition or similar transaction involving such Party; (iv) in confidence, to its Affiliates; (v) in confidence, to its third party independent contractors who have a need to know, solely in connection with their provision of services to such Party; (vi) as required by applicable securities laws or the rules of any stock exchange on which securities of such Party are traded or any other Applicable Law; or (vii) as mutually agreed upon by the Parties in writing.

ARTICLE 8
INDEMNIFICATION

Section 8.01. *Indemnification by Calyxt*. Calyxt shall defend Cellectis and its Affiliates and their respective officers, directors, employees, contractors, customers and agents against any action, suit, proceeding or other claim, and indemnify and hold each of them harmless from any and all damages, liabilities, expenses, and other losses (including reasonable attorneys' fees and court costs) ("**Losses**") to the extent arising from any (a) breach of this Agreement by Calyxt; (b) breach of the UMinn License caused by any activities of Calyxt or its sublicensees; (c) use, making, having made, sale, offer for sale, importation or any other exploitation of any Calyxt Licensed Products or any exploitation of the Licensed Cellectis IP by Calyxt or any of its sublicensees; (d) gross negligence or willful misconduct by Calyxt; and/or (e) violation of Applicable Law by Calyxt.

Section 8.02. *Indemnification by Cellectis*. Cellectis shall defend Calyxt and its Affiliates and their respective officers, directors, employees, and agents against any action, suit, proceeding or other claim, and indemnify and hold each of them harmless from any and all Losses to the extent arising from any (a) breach of this Agreement by Cellectis; (b) gross negligence or willful misconduct by Cellectis; and/or (c) violation of Applicable Law by Cellectis.

Section 8.03. *Third Party Claim Procedures*. (a) The Party seeking indemnification under Section 8.01 or 8.02 (the "**Indemnified Party**") shall give prompt notice in writing to the Party against whom indemnity is to be sought (the "**Indemnifying Party**") of the assertion of any claim or the commencement of any action, suit, proceeding or other claim by any third party ("**Third Party Claim**") in respect of which indemnity may be sought under such Section. Such notice shall set forth in reasonable detail such Third Party Claim and the basis for indemnification (taking into account the information then available to the Indemnified Party). The failure to so notify the Indemnifying Party shall not relieve the Indemnifying Party of its obligations hereunder, except to the extent such failure shall have actually prejudiced the Indemnifying Party.

(b) The Indemnifying Party shall be entitled to participate in the defense of any Third Party Claim and, subject to the limitations set forth in this Section, shall be entitled to control and appoint lead counsel for such defense, in each case at its own expense; *provided* that prior to assuming control of such defense, the Indemnifying Party must acknowledge that it would have an indemnity obligation for the Losses resulting from such Third Party Claim as provided under this Article 8.

(c) The Indemnifying Party shall not be entitled to assume or maintain control of the defense of any Third Party Claim and shall pay the fees and expenses of counsel retained by the Indemnified Party if (i) the Indemnifying Party does not deliver the acknowledgment referred to in Section 8.03(b) within thirty (30) days of receipt of notice of the Third Party Claim pursuant to Section 8.03(a); (ii) the Third Party Claim relates to or arises in connection with any criminal action, proceeding or claim; (iii) the Third Party Claim seeks an injunction or equitable relief against the Indemnified Party or any of its Affiliates; or (iv) the Indemnifying Party has failed or is failing to prosecute or defend vigorously the Third Party Claim.

(d) If the Indemnifying Party shall assume the control of the defense of any Third Party Claim in accordance with the provisions of this Section 8.03, the Indemnifying Party shall obtain the prior written consent of the Indemnified Party before entering into any settlement of such Third Party Claim.

(e) In circumstances where the Indemnifying Party is controlling the defense of a Third Party Claim in accordance with paragraphs (b) and (c) above, the Indemnified Party shall be entitled to participate in the defense of any Third Party Claim and to employ separate counsel of its choice for such purpose, in which case the fees and expenses of such separate counsel shall be borne by the Indemnified Party; *provided* that in such event the Indemnifying Party shall pay the fees and expenses of such separate counsel (i) incurred by the Indemnified Party prior to the date the Indemnifying Party assumes control of the defense of the Third Party Claim or (ii) if representation of both the Indemnifying Party and the Indemnified Party by the same counsel would create a conflict of interest.

(f) Each Party shall cooperate, and cause their respective Affiliates to cooperate, in the defense or prosecution of any Third Party Claim and shall furnish or cause to be furnished such records, information and testimony, and attend such conferences, discovery proceedings, hearings, trials or appeals, as may be reasonably requested in connection therewith.

Section 8.04. *Direct Claim Procedures*. In the event that an Indemnified Party has a claim for indemnity under Section 8.01 or 8.02 against an Indemnifying Party that does not involve a Third Party Claim, the Indemnified Party shall give prompt notice in writing of such claim to the Indemnifying Party. Such notice shall set forth in reasonable detail such claim and the basis for indemnification (taking into account the information then available to the Indemnified Party). The failure to so notify the Indemnifying Party shall not relieve the Indemnifying Party of its obligations hereunder, except to the extent such failure shall have actually prejudiced the Indemnifying Party.

ARTICLE 9
PROSECUTION, MAINTENANCE; LITIGATION

Section 9.01. *Prosecution and Maintenance*. (a) As between the Parties, Cellectis shall have the sole and exclusive right to prosecute and maintain the Licensed Cellectis IP and Licensed TALEN Mark (it being understood that, and Calyxt acknowledges and agrees that, pursuant to the UMinn License, the University of Minnesota has the sole and exclusive right to

prosecute and maintain the UMinn IP). Subject to any rights granted to any third parties prior to the date hereof with respect to any Exclusively Licensed Cellectis Patents, Cellectis shall (i) keep Calyxt reasonably informed of all steps to be taken in connection with the prosecution and maintenance of the Exclusively Licensed Cellectis Patents, and (ii) consider in good faith (or, in the case of any Exclusively Licensed Cellectis Patents being prosecuted by the University of Minnesota, use commercially reasonable efforts to cause the University of Minnesota to consider in good faith) all reasonable comments and suggestions by Calyxt regarding such matters, including in respect of any actions, decisions, applications, amendments, submissions or correspondence related thereto. Notwithstanding the foregoing, subject to any rights granted to any third parties prior to the date hereof with respect to any Exclusively Licensed Cellectis Patents, in the event that Cellectis elects to abandon or otherwise cease prosecuting and maintaining any Exclusively Licensed Cellectis Patent (excluding the Patents licensed to Cellectis under the UMinn License), prior to any such abandonment, Calyxt shall have the option to acquire at no cost any such Exclusively Licensed Cellectis Patent and assume the responsibility for the prosecution and maintenance of such Exclusively Licensed Cellectis Patent (it being understood that, in the event that Calyxt exercises such option to acquire such Exclusively Licensed Cellectis Patent, (A) Cellectis shall execute and deliver any documents and perform any other acts, in each case as may be reasonably necessary to effect the foregoing and (B) effective as of Calyxt acquiring ownership of such Exclusively Licensed Cellectis Patent, such Exclusively Licensed Cellectis Patent shall thereafter be automatically deemed to be licensed to Cellectis under the licenses granted to Cellectis pursuant to Section 2.05).

(b) As between the Parties, Calyxt shall have the sole and exclusive right to prosecute and maintain all Intellectual Property Rights owned or otherwise controlled by Calyxt or any of its Affiliates, including all Intellectual Property Rights in or to any Calyxt Improvements. To the extent that any Calyxt Improvement Patents relate to any subject matter outside of the Calyxt Field, Calyxt shall (i) keep Cellectis reasonably informed of all steps to be taken in connection with the prosecution and maintenance of such Calyxt Improvement Patents, and (ii) consider in good faith all reasonable comments and suggestions by Cellectis regarding such matters, including in respect of any actions, decisions, applications, amendments, submissions or correspondence related thereto. Notwithstanding the foregoing, in the event that Calyxt elects to abandon or otherwise cease prosecuting or maintaining any such Calyxt Improvement Patent related to any subject matter outside of the Calyxt Field, prior to any such abandonment, Cellectis shall have the option to acquire at no cost any such Calyxt Improvement Patent and assume the responsibility for the prosecution and maintenance of such Calyxt Improvement Patent (it being understood that, in the event that Cellectis exercises such option to acquire such Calyxt Improvement Patent, (x) Calyxt shall execute and deliver any documents and perform any other acts, in each case as may be reasonably necessary to effect the foregoing and (y) effective as of Cellectis acquiring ownership of such Calyxt Improvement Patent, such Calyxt Improvement Patent shall thereafter be automatically deemed to be licensed to Calyxt under the Calyxt License).

Section 9.02. *Litigation*. (a) If either Party becomes aware of any actual or threatened infringement or other violation by any third party of any Licensed Cellectis Patent or Calyxt Improvement Patent, or any challenge to any Licensed Cellectis Patent or Calyxt Improvement Patent by any third party, then such Party shall promptly notify the other Party in writing thereof.

(b) Cellectis shall have the first right, but not the obligation, at its expense and using counsel of its choice, to enforce any Licensed Cellectis Patent against any Person or defend any challenge with respect to any such Licensed Cellectis Patent. Cellectis shall have sole and exclusive control of any decisions or other aspects of any such enforcement or defense; *provided* that if Cellectis elects to not (i) enforce any Exclusively Licensed Cellectis Patent against any infringement or other violation of the exclusive rights granted to Calyxt under the Calyxt License or (ii) defend any such Exclusively Licensed Cellectis Patent from any challenge that would be reasonably expected to have a material adverse effect on Calyxt's exclusive rights under the Calyxt License, then in either case (but only to the extent that prior to the date hereof Cellectis has not granted any third party any right to enforce or defend any such Exclusively Licensed Cellectis Patent), Cellectis shall promptly provide Calyxt with written notice of such election and, following receipt of such notice, Calyxt may, at its sole option and expense, enforce its rights under or defend any challenge to such Exclusively Licensed Cellectis Patent, as applicable.

(c) Calyxt shall have the first right, but not the obligation, at its expense and using counsel of its choice, to enforce any Calyxt Improvement Patent against any Person or defend any challenge with respect to any such Calyxt Improvement Patent. Calyxt shall have sole and exclusive control of any decisions or other aspects of any such enforcement or defense; *provided* that if Calyxt elects to not (i) enforce any such Calyxt Improvement Patent against any infringement or other violation thereof outside of the Calyxt Field or (ii) defend any such Calyxt Improvement Patent from any challenge that would be reasonably expected to have a material adverse effect on Cellectis' rights under the licenses granted to Cellectis pursuant to Section 2.05, then in either case, Calyxt shall promptly provide Cellectis with written notice of such election and, following receipt of such notice, Cellectis may, at its sole option and expense, enforce its rights under or defend any challenge to such Calyxt Improvement Patent, as applicable.

(d) The Party controlling any enforcement or defense under Section 9.02(b) or 9.02(c) (the "***Controlling Party***") shall keep the other Party (the "***Non-Controlling Party***") reasonably and regularly informed of the status and progress of such enforcement or defense efforts, and shall reasonably consider the Non-Controlling Party's comments on any such efforts. The Non-Controlling Party shall provide the Controlling Party with all reasonable assistance in the enforcement or defense of any Exclusively Licensed Cellectis Patents or Calyxt Improvement Patents, as applicable, as the Controlling Party may reasonably request, including by signing or executing any necessary documents and consenting to it being named a party to any applicable proceedings. The Non-Controlling Party shall have the right to be represented in any enforcement or defense of any Exclusively Licensed Cellectis Patents or Calyxt Improvement Patents, as applicable, by counsel of its choice and at its own expense. Neither Party shall settle any action, suit, proceeding or other claim involving any Exclusively Licensed Cellectis Patent or Calyxt Improvement Patent in any manner without the prior written consent of the other Party, such consent not to be unreasonably withheld.

(e) Any recoveries resulting from an action, suit, proceeding or other claim brought by a Party under Section 9.02(b) or 9.02(c) shall be first applied against payment of each Party's costs and expenses in connection therewith. Any such recoveries in excess of such costs and expenses (the "**Remainder**") shall be retained by the Controlling Party; *provided* that if Calyxt is the Controlling Party, the Remainder with respect to any enforcement of the Exclusively Licensed Cellectis Patents shall be included in Net Sales and Bare Sublicense Revenue, as applicable, for purposes of calculating royalties and payments owed to Cellectis hereunder.

(f) For the avoidance of doubt, as between the Parties, (i) Cellectis shall have the sole and exclusive right, but not the obligation, to bring and control any legal action in connection with any actual, alleged, or threatened infringement of any Licensed Cellectis Patents (A) outside of the Calyxt Field and (B) within the Non-Exclusive Field, in each case at Cellectis' own expense as it reasonably determines appropriate and (ii) Calyxt shall have the sole and exclusive right, but not the obligation, to bring and control any legal action in connection with any actual, alleged, or threatened infringement of any Calyxt Improvement Patents within the Calyxt Field at its own expense as it reasonably determines appropriate.

ARTICLE 10
TERM AND TERMINATION

Section 10.01. *Term.* This Agreement shall remain in full force and effect in perpetuity unless earlier terminated, in whole or in part, pursuant to Section 10.02 or 10.03.

Section 10.02. *Mutual Agreement.* This Agreement may be terminated in its entirety at any time upon the mutual written agreement of the Parties.

Section 10.03. *For Cause.* Either Party may, by written notice to the other Party, immediately terminate this Agreement (a) if such other Party is in material breach of any provision of this Agreement (it being understood that if such breach is capable of being cured, such other Party shall have the right to cure such breach within sixty (60) days of receiving written notice thereof) and (b) upon the bankruptcy, dissolution or winding up of such other Party, or the making or seeking to make or arrange an assignment for the benefit of creditors of such other Party, or the initiation of proceedings in voluntary or involuntary bankruptcy, or the appointment of a receiver or trustee of such other Party's property that is not discharged within ninety (90) days.

Section 10.04. *Survival*. Notwithstanding anything in this Agreement to the contrary, Sections 2.05(a), 2.07, 3.02, 5.04, 6.02, 6.03, 9.02(f) and 10.04, and Articles 7, 8 and 11 shall survive any expiration or termination of this Agreement.

ARTICLE 11
MISCELLANEOUS

Section 11.01. *Assignment.* Neither this Agreement nor any rights or obligations hereunder may be assigned or otherwise transferred by either Party, in whole or in part, whether voluntarily or by operation of Applicable Law, without the prior written consent of the other Party; *provided* that either Party may, without the consent of the other Party, assign or otherwise transfer this Agreement to (a) any of its Affiliates or (b) any successor to all or substantially all of the assets or business of such Party to which this Agreement relates. Any attempted assignment or transfer in contravention of this Section 11.01 shall be void *ab initio*.

Section 11.02. *Notices.* All notices, requests and other communications to either Party hereunder shall be in writing (including facsimile transmission and electronic mail transmission, so long as a receipt of such electronic mail is requested and received) and shall be given,

if to Cellectis, to:

Cellectis S.A.
8 rue de la Croix Jarry
75013 Paris, France
Attention: Marie-Bleuenn Terrier
E-mail: marie-bleuenn.terrier@cellectis.com

if to Calyxt, to:

Calyxt, Inc.
600 County Road D West, Suite 8
New Brighton, MN 55112
Attention: Federico A. Tripodi
E-mail: Federico.tripodi@calyxt.com

or such other address or facsimile number as such Party may hereafter specify for the purpose by notice to the other Party. All such notices, requests and other communications shall be deemed received on the date of receipt by the recipient thereof if received prior to 5:00 p.m. in the place of receipt and such day is a Business Day in the place of receipt. Otherwise, any such notice, request or communication shall be deemed not to have been received until the next succeeding Business Day in the place of receipt.

Section 11.03. *Amendments and Waivers*. (a) Any provision of this Agreement may be amended or waived if, but only if, such amendment or waiver is in writing and is signed, in the case of an amendment, by each Party, or in the case of a waiver, by the Party against whom the waiver is to be effective.

(b) No failure or delay by any Party in exercising any right, power or privilege hereunder shall operate as a waiver thereof nor shall any single or partial exercise thereof preclude any other or further exercise thereof or the exercise of any other right, power or privilege. The rights and remedies herein provided shall be cumulative and not exclusive of any rights or remedies provided by Applicable Law.

Section 11.04. *Expenses*. Except as otherwise provided herein, all costs and expenses incurred in connection with this Agreement shall be paid by the Party incurring such cost or expense.

Section 11.05. *Governing Law*. This Agreement shall be governed by and construed in accordance with the laws of France

Section 11.06. *Jurisdiction*. The Parties agree that any suit, action or proceeding seeking to enforce any provision of, or based on any matter arising out of or in connection with, this Agreement or the transactions contemplated hereby shall be brought in a court of competent jurisdiction sitting in Paris, France and each of the Parties hereby irrevocably consents to the exclusive jurisdiction of such court (and of the appropriate appellate courts therefrom) in any such suit, action or proceeding and irrevocably waives, to the fullest extent permitted by law, any objection that it may now or hereafter have to the laying of the venue of any such suit, action or proceeding in any such court or that any such suit, action or proceeding brought in any such court has been brought in an inconvenient forum. Process in any such suit, action or proceeding may be served on any Party anywhere in the world, whether within or without the jurisdiction of any such court. Without limiting the foregoing, each Party agrees that service of process on such Party as provided in Section 11.02 shall be deemed effective service of process on such Party.

Section 11.07. *WAIVER OF JURY TRIAL*. EACH OF THE PARTIES HEREBY IRREVOCABLY WAIVES ANY AND ALL RIGHT TO TRIAL BY JURY IN ANY LEGAL PROCEEDING ARISING OUT OF OR RELATED TO THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY.

Section 11.08. *Counterparts; Effectiveness; Third Party Beneficiaries*. This Agreement may be signed in any number of counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument. This Agreement shall become effective when each Party shall have received a counterpart hereof signed by the other Parties. Until and unless each Party has received a counterpart hereof signed by the other Party, this Agreement shall have no effect and neither Party shall have any right or obligation hereunder (whether by virtue of any other oral or written agreement or other communication). No provision of this Agreement is intended to confer any rights, benefits, remedies, obligations, or liabilities hereunder upon any Person other than the Parties and their respective successors and assigns; *provided* that the University of Minnesota shall be a third party beneficiary of Section 6.03.

Section 11.09. *Entire Agreement*. This Agreement constitutes the entire agreement between the Parties with respect to the subject matter hereof and thereof and supersedes all prior agreements and understandings, both oral and written, between the Parties with respect to the subject matter hereof and thereof.

Section 11.10. *Relationship of the Parties.* Nothing contained in this Agreement is intended or shall be deemed to make either Party the agent, employee, partner or joint venturer of the other Party or be deemed to provide such Party with the power or authority to act on behalf of the other Party or to bind the other Party to any contract, agreement or arrangement with any other individual or entity.

Section 11.11. *Severability.* If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction or other Governmental Authority to be invalid, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions of this Agreement shall remain in full force and effect and shall in no way be affected, impaired or invalidated so long as the economic or legal substance of the transactions contemplated hereby is not affected in any manner materially adverse to either Party. Upon such a determination, the Parties shall negotiate in good faith to modify this Agreement so as to effect the original intent of the Parties as closely as possible in an acceptable manner in order that the transactions contemplated hereby be consummated as originally contemplated to the fullest extent possible.

Section 11.12. *Specific Performance.* The Parties agree that irreparable damage would occur if any provision of this Agreement were not performed in accordance with the terms hereof and that the Parties shall be entitled to an injunction or injunctions to prevent breaches of this Agreement or to enforce specifically the performance of the terms and provisions hereof in any court set forth in Section 11.06, in addition to any other remedy to which they are entitled at law or in equity.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, the Parties have caused this Agreement to be duly executed as of the date first written above.

CELLECTIS S.A.

By: /s/ André Choulika
Name: André Choulika
Title: Chief Executive Officer

CALYXT, INC.

By: /s/ Federico Tripodi
Name: Federico Tripodi
Title: Chief Executive Officer

Schedule A

Licensed TALEN Mark

Mark	Serial No.	Registration No.	Filing Date	Registration Date	Country
TALEN	79/107519	4,729,507	October 27, 2011	May 5, 2015	U.S.

Exhibit 8.1

Subsidiaries of Cellectis S.A.

Name of Subsidiary	State or Other Jurisdiction of Incorporation
Cellectis, Inc.	Delaware
Calyxt, Inc.	Delaware
Cellectis Biologics, Inc.	Delaware

Exhibit 12.1

Certification by the Principal Executive Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, André Choulika, certify that:

1. I have reviewed this annual report on Form 20-F of Cellectis S.A.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this report;

4. The Company's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the Company and have:

    (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    (c) Evaluated the effectiveness of the Company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    (d) Disclosed in this report any change in the Company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting; and

5. The Company's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Company's auditors and the audit committee of the Company's board of directors (or persons performing the equivalent functions):

    (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; and

    (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

Date: March 11, 2019

/s/ André Choulika
Name: André Choulika
Title: Chief Executive Officer *(Principal Executive Officer)*

Exhibit 12.2

Certification by the Principal Financial Officer pursuant to
Securities Exchange Act Rules 13a-14(a) and 15d-14(a)
as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Eric Dutang, certify that:

1. I have reviewed this annual report on Form 20-F of Cellectis S.A.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Company as of, and for, the periods presented in this report;

4. The Company's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the Company and have:

    (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    (c) Evaluated the effectiveness of the Company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    (d) Disclosed in this report any change in the Company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting; and

5. The Company's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Company's auditors and the audit committee of the Company's board of directors (or persons performing the equivalent functions):

    (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; and

    (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

Date: March 11, 2019

/s/ Eric Dutang
Name: Eric Dutang
Title: Chief Financial Officer *(Principal Financial Officer)*

EXHIBIT 13.1

Certification by the Principal Executive Officer pursuant to
18 U.S.C. Section 1350, as adopted pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the Annual Report of Cellectis S.A. (the "Company") on Form 20-F for the fiscal year ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, André Choulika, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 11, 2019

/s/ André Choulika
Name: André Choulika
Title: Chief Executive Officer *(Principal Executive Officer)*

A signed original of this written statement has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

EXHIBIT 13.2

Certification by the Principal Financial Officer pursuant to
18 U.S.C. Section 1350, as adopted pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the Annual Report of Cellectis S.A. (the "Company") on Form 20-F for the fiscal year ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Eric Dutang, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 11, 2019

/s/ Eric Dutang

Name: Eric Dutang
Title: Chief Financial Officer (*Principal Financial Officer*)

A signed original of this written statement has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

Exhibit 15.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statement (Form S-8 No. 333-204205) pertaining to the 2015 Stock Option Plan and the 2015 Free Share Plan of Cellectis S.A.;

(2) Registration Statement (Form S-8 No 333-214884) pertaining to the 2016 Stock Option Plan of Cellectis S.A.;

(3) Registration Statement (Form S-8 No 333-222482) pertaining to the 2017 Stock Option Plan of Cellectis S.A., the Summary of BSA Plan and the Free Share 2018 Plan of Cellectis S.A.;

(4) Registration Statement (Form S-8 No 333-227717) pertaining to the 2018 Stock Option Plan of Cellectis S.A., the Summary of BSA Plan and the Second Free Share 2018 Plan of Cellectis S.A.; and

(5) Registration Statement (Form F-3 No. 333-217086) of Cellectis S.A.;

of our reports dated March 11, 2019, with respect to the consolidated financial statements of Cellectis S.A. and the effectiveness of internal control over financial reporting of Cellectis S.A., included in this annual report (Form 20-F) of Cellectis S.A. for the year ended December 31, 2018.

/s/ ERNST & YOUNG et Autres

Paris La Défense, France

March 11, 2019