EDITING LIFE

Commitment To A Cure

Investor Presentation
August 2021

Forward-Looking Statements

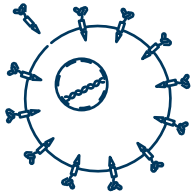
This presentation contains “forward-looking” statements within the meaning of applicable securities laws, including the Private Securities Litigation Reform Act of 1995. Forward-looking statements may be identified by words such as “at this time,” “anticipate,” “believe,” “expect,” “on track,” “plan,” “scheduled,” and “will,” or the negative of these and similar expressions.

These forward-looking statements, which are based on our management’s current expectations and assumptions and on information currently available to management, include statements about our research and development projects and priorities, our pre-clinical project development efforts, the timing and progress of clinical trials (including with respect to patient enrollment and follow-up), the timing of our presentation of data, the adequacy of our supply of clinical vials, the timing of completion of construction of our Raleigh, North Carolina manufacturing facility, and operational capabilities at our manufacturing facilities, and the sufficiency of cash to fund operations.

These forward-looking statements are made in light of information currently available to us and are subject to numerous risks and uncertainties, including with respect to the numerous risks associated with biopharmaceutical product candidate development as well as the duration and severity of the COVID-19 pandemic and governmental and regulatory measures implemented in response to the evolving situation.

With respect to our cash runway, our operating plans, including product development plans, may change as a result of various factors, including factors currently unknown to us. Furthermore, many other important factors, including those described in our Annual Report on Form 20-F and the financial report (including the management report) for the year ended December 31, 2020 and subsequent filings Cellectis makes with the Securities Exchange Commission from time to time, as well as other known and unknown risks and uncertainties may adversely affect such forward-looking statements and cause our actual results, performance or achievements to be materially different from those expressed or implied by the forward-looking statements. Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons why actual results could differ materially from those anticipated in the forward-looking statements, even if new information becomes available in the future.

Cellectis' Core Assets



Allogeneic CAR-T platform
Hematological malignancies and solid tumors

HSC platform
Genetic disorders (lead asset in sickle cell disease)

In-house manufacturing
Cells (GMP Raleigh) and starting materials (GMP Paris)

Strong partnerships
Platform validation and financial upside

Cellectis Key Highlights

8 clinical trials ongoing

8+ preclinical programs

sponsored by Cellectis or by its licensees

282 employees

& highly experienced management team and clinical development leadership

120+ patients dosed

under Cellectis and Cellectis licensees sponsored trials

2 proprietary in-house GMP manufacturing facilities

cellectis
EDITING LIFE

21 years expertise in gene editing

Pioneers in Allogeneic CAR-T

2 product platforms: allogeneic CAR-T &HSC****

278 granted patents

316 pending applications

$238M* of cash

runway into 2023

64.4% ownership in calyxt*****

Strong partnerships for UCART & gene editing development

$4bn of disclosed potential milestones

* As of June 30, 2021; $257M of consolidated cash, cash equivalents, current assets and restricted cash (Cellectis + Calyxt)
** As of June 30, 2021
*** NASDAQ:CLXT; Plant-based company
**** **CAR-T**, chimeric antigen receptor T cells**, HSC,** Hematopoietic stem cells

Cellectis CAR-T Partnerships With Industry Leaders

Up To $3.2B In Potential Milestone Payments Plus Royalties

Partner	License	Territory	Most Advanced Targets	Status	Potential economic impact to Cellectis
Servier / Allogene Therapeutics	**Exclusive license to CD19-directed allogeneic CAR T-cells**	Ex-US	**CD19**: ALLO-501 and ALLO-501A	Ph1	**Up To $410M In Development & Sales Milestones** + Low Double-Digit Royalties on Sales
	Sublicense by Servier to CD19-directed allogeneic CAR T-cells	US		Ph1	
Allogene Therapeutics	**Exclusive license to 15 allogeneic CAR T-cell targets**	Worldwide	**BCMA**: ALLO-715 and ALLO-605	Ph1	**Up To $2.8B In Development & Sales Milestones** + High Single-Digit Royalties on Sales
			CD70: ALLO-316	Ph1	

Pfizer — **Equity Investor**
6.5%* ownership in Cellectis

SANOFI — **Clinical & commercial partnership on alemtuzumab**

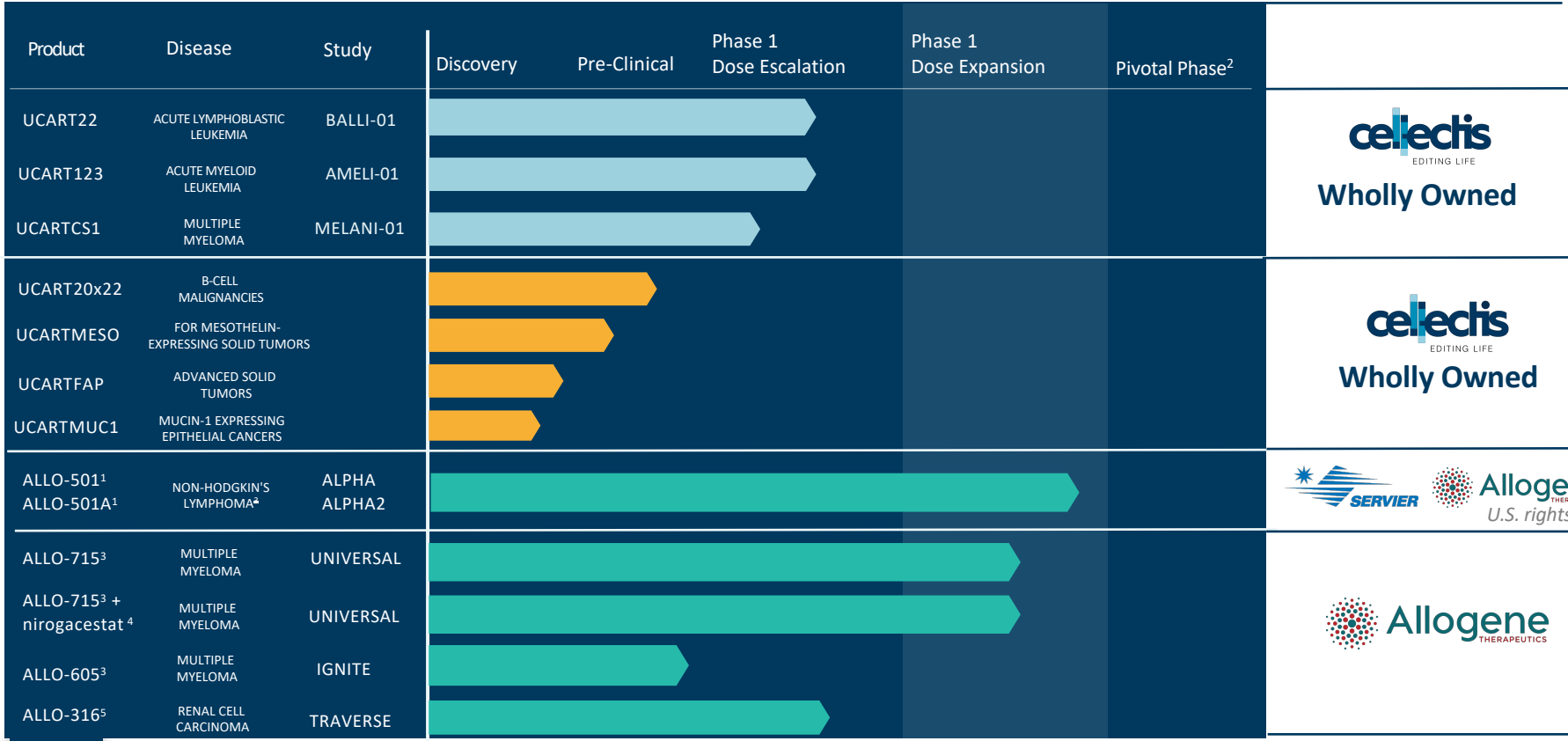
* As of March 31, 2021.

Cellectis Gene Editing Partnerships With Industry Leaders

Leveraging Our TALEN® Platform In Alternative Cellular Approaches

Partner	License	Territory	Most Advanced Targets	Status	Potential economic impact to Cellectis
IOVANCE BIOTHERAPEUTICS	**Research collaboration and exclusive license agreement to use specific TALEN® technology to develop gene-edited tumor infiltrating lymphocytes**	**Worldwide**	**Undisclosed**	**Pre-IND**	**Undisclosed development & sales milestones** + Royalties on Sales
Cytovia Therapeutics	**Research collaboration and license agreement to develop TALEN® gene-edited iPSC-derived NK and CAR-NK cells**	**Worldwide**	**Solid and liquid tumor targets**	**Pre-IND**	**$15M upfront equity and up to $760M of development, regulatory, and sales milestones** + Single Digit % Royalties on Sales

Cellectis' Allogeneic CAR-T Cell Pipeline



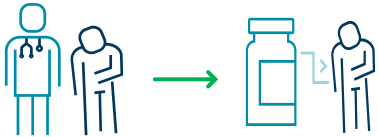
1 ALLO-501 and ALLO-501A are exclusively licensed to Servier and under a joint clinical development program between Servier and Allogene. The ALPHA and ALPHA2 studies target Diffuse Large B-Cell Lymphoma (DLBCL) and Follicular Lymphoma (FL) indications, which are subtypes of NHL.
2 Phase 3 may not be required if Phase 2 is registrational.
3 ALLO-715 and ALLO-605 target BCMA which is a licensed target from Cellectis. ALLO-715 and ALLO-605 utilize TALEN® gene-editing technology pioneered and owned by Cellectis. Allogene has an exclusive license to the Cellectis technology for allogeneic products directed at the BCMA target. Allogene holds global development and commercial rights for this investigational candidate.
4 Allogene sponsored trial in combination with SpringWorks Therapeutics.
5 ALLO-316 targets CD70 which is a licensed target from Cellectis. ALLO-316 utilize TALEN® gene-editing technology pioneered and owned by Cellectis. Allogene has an exclusive license to the Cellectis technology for allogeneic products directed at the CD70 target. Allogene holds global development and commercial rights for this investigational candidate.

Cellectis Clinical-Stage UCART Programs

Potential Advantages of Allogenic Approach Over Autologous

"Off-the-shelf" availability

Available to patients immediately after treatment decision



1. CANCER TREATMENT DECISION
2. ALLOGENEIC UCART CAR-T THERAPY

Dosing flexibility
Possibility of redosing

Autologous process:

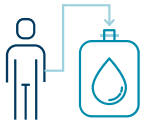
Available after several weeks of manufacturing

1. CANCER TREATMENT DECISION
2. CANCER PATIENT APHERESIS
3. MANUFACTURING OF A SINGLE PATIENT PRODUCT
4. INDIVIDUAL CAR-T THERAPY

Scalable manufacturing

Reduced manufacturing cost:
100+ doses from one engineering run

T cells from healthy donors



Potency and variability may improve by starting with healthy donor T cells

Mass produced

Lower pricing potential compatible with standard gross margins

ALLO-501 Clinical Proof-of-Concept from First Licensed Allogeneic CAR-T

Safety – Primary Objective

- **0%** No dose-limiting toxicities OR Graft vs Host Disease (GVHD) observed
- **2%** Immune Effector Cell-Associated Neurotoxicity Syndrome (ICANS)
- **0%** Grade 3+ Cytokine Release Syndrome (CRS)
- **24%** Grade 3+ infection

Infection rates similar to that observed in autologous CAR T trials

Efficacy – Secondary Objective

- **75%** ORR in CAR-T naïve patients (N=32)
  - **50%** CR Rate
- **36%** 6-month CR Rate in LBCL
  - **24%** 6-month CR Rate in FL
- **15+ months** longest ongoing CRs

Allogene plans to move to the phase 2 pivotal ALPHA2 trial with ALLO-501A at the end of 2021 (pending regulatory feedback).

ALPHA data cut off date: April 19, 2021

Consolidation dosing showed early promise with 75% ORR and 63% CR among patients (n=8) treated in consolidation cohorts across ALPHA studies*

Data Source: ASCO 2021 Conference Presentation

* Includes ALLO-501/ALLO-501A (which eliminates the rituximab recognition domains in ALLO-501).

The ALPHA study targets Large B-Cell Lymphoma (LBCL) and Follicular Lymphoma (FL) indications, which are subtypes of NHL. The ALPHA trial utilizes ALLO-647, Allogene's anti-CD52 monoclonal antibody as a part of its lymphodepletion regimen

ALLO-715: First Allogeneic BCMA CAR-T in Multiple Myeloma

Safety – Primary Objective

- **0%** Graft vs Host Disease (GVHD)
- **0%** Immune Effector Cell-Associated Neurotoxicity Syndrome (ICANS)
- **0%** Cytokine release syndrome (CRS) ≥ grade 3
- Infection rates consistent with other studies in advanced myeloma; 16% Infection events ≥ grade 3
- **19%** Grade ≥ 3 serious adverse events

One grade 5 event (3%) related to progressive disease and conditioning occurred in the cyclophosphamide and alemtuzumab cohort

Efficacy – Secondary Objective

- **60%** Overall Response Rate in the DL3 cohort (N=10) with FCA Lymphodepletion
  - with **40%** VGPR**
- **5** of the **6** VGPR+ patients have been assessed for MRD status and all were MRD negative*

The UNIVERSAL trial utilizes ALLO-647, Allogene's anti-CD52 monoclonal antibody as a part of its lymphodepletion regimen

Data Source: ASH 2020 Conference Presentation - Data Cutoff: October 30, 2020
ALLO-715 utilizes TALEN® gene-editing technology pioneered and owned by Cellectis. Allogene has an exclusive license to the Cellectis technology for allogeneic products directed at BCMA and holds all global development and commercial rights for these investigational candidates.
* VGPR+= sCR (stringent complete response), CR (complete response), or VGPR (very good partial response); DL3 = Dose Level 3 (320M CAR T+ cells); FCA/CA = Fludarabine, Cyclophosphamide and Alemtuzumab; MRD assessment completed in VGPR patients across all dose and lymphodepletion levels

UCART22 – BALLI-01 Trial Design

Open label dose-escalation and dose-expansion study to evaluate the safety, expansion, persistence and clinical activity of UCART22 in patients with relapsed or refractory CD22^{+} B-cell Acute Lymphoblastic Leukemia

Dose Escalation
Arm FC: fludarabine (F) + cyclophosphamide (C)
Arm FCA: fludarabine + cyclophosphamide + alemtuzumab (A)

Up to 30 pts; mTPI design; 2-4 pts/cohort

Determine MTD and/or RP2D

Dose Expansion
LD regimen: FC or FCA

Up to 53 pts; binomial exact study design; LD regimen: FC or FCA

OBJECTIVES

- **PRIMARY/SECONDARY:**
  - Safety & tolerability
  - MTD/RP2D
  - Response (NCCN criteria; investigator assessed)
- **EXPLORATORY**
  - UCART22 expansion and persistence, VCN and chimerism in WB and BM
  - Immune reconstitution

KEY ELIGIBILITY CRITERIA

- Patient aged 15 years and ≤70 years
- Adequate organ function
- ECOG PS ≤1
- B-ALL blast CD22 expression ≥70%
- Received ≥1 standard chemotherapy regimen and ≥1 salvage regimen

DOSE LEVELS

DL-1	*1 ×10^{4} cells/kg*
DL1	1 ×10^{5} cells/kg
DL2	1 ×10^{6} cells/kg
DL3	5 ×10^{6} cells/kg

F: 30 mg/m2/d x4d; C: 1 g/m2/d x3 d;
F: 30 mg/m2/d x3 d; C: 500 mg/m2/d x3 d
A: 20 mg x 3d

NCT04150497

UCART22 – Initial Anti-Leukemic Activity of Wholly-Controlled UCART

Preliminary data from **5** patients who received UCART22 at DL1 or DL2 after FC lymphodepletion regimen

Median prior lines of therapy: **3**

Median bone marrow blasts: **35%** prior to lymphodepletion

Efficacy – Secondary Objective

2 Patients at DL1 achieved **CRi[2] at Day 28;** of which one patient attained **CR at Day 42** and proceeded to HSCT after receiving *inotuzumab*

1 Patient at DL2 achieved bone marrow blast reduction (**60% at screening to 13% at Day 28**)

Safety – Primary Objective

0 **Patients reported DLT, GvHD, AESI, ICANS, or Treatment related SAE[1]**

Enrollment into cohorts with FCA[3] lymphodepletion regimen is ongoing

Data Source: ASH 2020 Conference Presentation

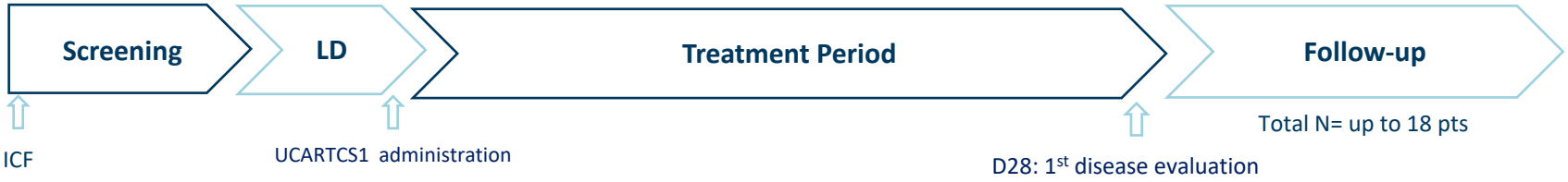
[1] DLT: Dose Limiting Toxicity; GvHD: Graft versus Host Disease; AESI: adverse event of special interest; ICANS: immune effector cell-associated neurotoxicity syndrome; SAE: Serious Adverse Event

[2] CR: Complete Remission; CRi: Complete Remission with incomplete hematologic recovery

[3] FCA: Fludarabine, Cyclophosphamide and Alemtuzumab

UCARTCS1– MELANI-01 Study Schema

Phase I, Open Label Dose-Escalation Study to Evaluate the Safety, Expansion, Persistence and Clinical Activity of UCARTCS1A, Administered in Patients with Relapsed/Refractory Multiple Myeloma



OBJECTIVES

Primary and Secondary

- Safety and tolerability
- MTD and Efficacy

Exploratory Objectives

- CS1 expression on MM cells
- UCARTCS1A expansion and persistence
- Changes in serum biomarkers; immune cell reconstitution

KEY ELIGIBILITY CRITERIA

- Patients with confirmed MM (IMWG criteria) relapsed after prior MM therapy
- ECOG PS <2
- No prior investigational drug or CAR therapy targeting CS1
- Adequate organ function

DOSE LEVELS

DL-1	*3 ×10^5 cells/kg*
DL1	1 ×10^6 cells/kg
DL2	3 ×10^6 cells/kg
DL3	9 ×10^6 cells/kg

F: 30 mg/m2/d x4d; C: 1 g/m2/d x3 d

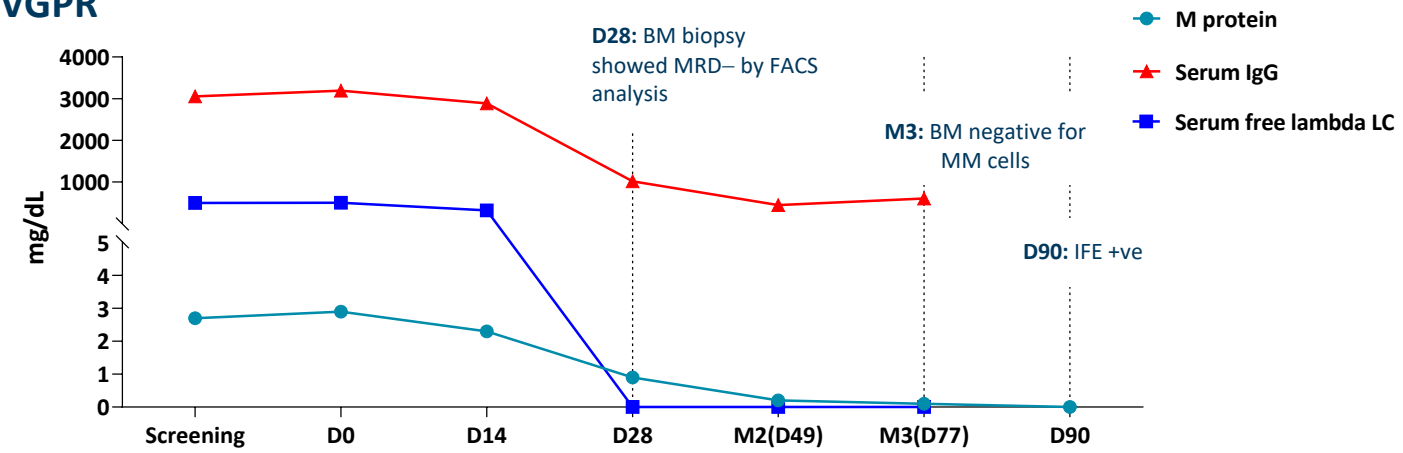
NCT04142619

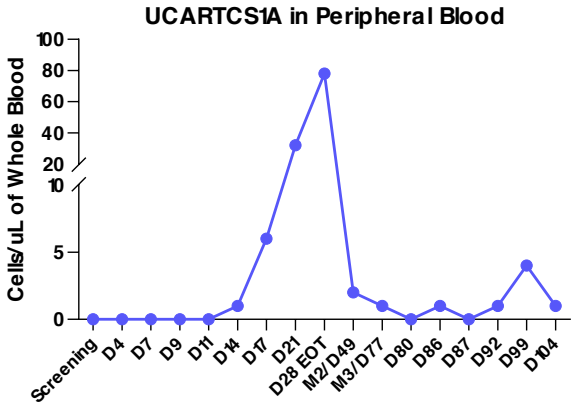
*Lymphodepletion: Fludarabine 30mg/m2/day, Day -5 to -2; Cyclophosphamide 1g/m^2/day, Day -4 to -2.

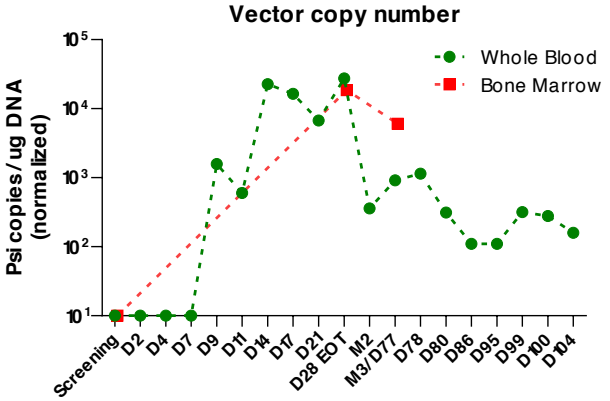
CS1, CD2 subset-1 (also CD319/SLAMF7); D, day; DL, dose level; ECOG PS, Eastern Cooperative Oncology Group performance status; ICF, informed consent form; IMWG, International Myeloma Working Group; LD, lymphodepletion; LTFU, long-term follow-up; MM, multiple myeloma; MTD, maximum tolerated dose; RRMM, relapsed/refractory multiple myeloma; Y, year.

Clinical Activity Correlated with UCARTCS1A Expansion and Persistence

MRD-Neg VGPR







D, day; EOT, end of treatment; M, month; BM, bone marrow; MRD, minimal residual disease; MM, multiple myeloma; FACS, fluorescent activated cell sorting; VGPR, very good partial response

UCART123 – AMELI-01 Trial Design

Phase I, Open Label Dose-escalation And Dose-expansion Study To Evaluate The Safety, Expansion, Persistence And Clinical Activity Of UCART123 In Patients With Relapsed/Refractory Acute Myeloid Leukemia

Dose Escalation
Arm FC: fludarabine (F) + cyclophosphamide (C)
Arm FCA: fludarabine + cyclophosphamide + alemtuzumab

Up to 28 pts; mTPI design; 2-4 pts/cohort

Determine MTD and/or RP2D

Dose Expansion

18-37 pts; Simon's two-stage design

OBJECTIVES

Primary and Secondary
- Safety & tolerability
- Establish MTD and identify RP2D
- Efficacy

Exploratory Objectives
- UCART123 expansion, trafficking, and persistence
- Profile cytokine, chemokine, growth factor, and C-reactive protein levels post-infusion

KEY ELIGIBILITY CRITERIA

- Patients with relapsed or primary refractory AML (>5% bone marrow blasts)
- Patients with CD123+ blast cells
- PS of ≤1 and adequate organ function
- Identified donor and transplant strategy prior to LD (dose-escalation)

DOSE LEVELS

DL-1	1.25×10^5 cells/kg
DL1	2.5×10^5 cells/kg
DL2	6.25×10^5 cells/kg
DL3	3.30×10^6 cells/kg
DL4	5.05×10^6 cells/kg

F: 30 mg/m2/d x 4d; C: 750 g/m2/d x 3d;
F: 30 mg/m2/d x 4d; C: 750 g/m2/d x3 d; A: 12 mg/d x4d

NCT04106076

MTD, maximum tolerated dose; RP2D, recommended phase 2 dose; DL, dose level; PS, performance status; mTPI, modified toxicity probability interval; LD, lymphodepletion

Cellectis Next-Generation UCART Programs

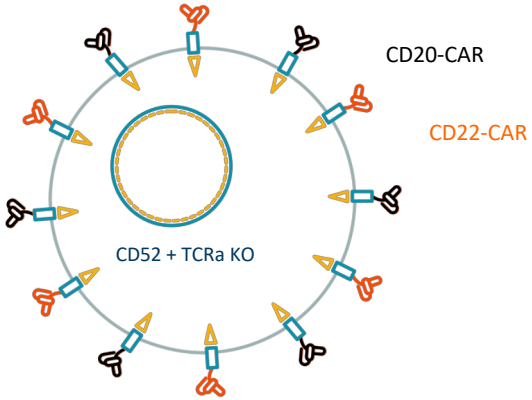
UCART 20x22 First Dual-Targeted Allogeneic CAR-T Cell Product Candidate

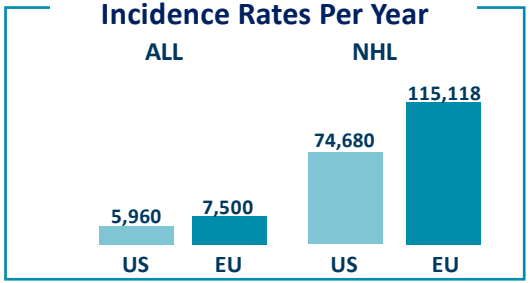
Differentiated Targets Beyond CD19

- 2 validated targets
- Reduced target escape potential
- Improved cell killing w strengthened synapses

Accelerate Development

- Robust pre-clinical results
- Accelerated clinical development
- Improvement of UCART22
- Manufacturing readiness
- Clear regulatory path
- IND filing projection: 2022





Large Patient Population

- Lymphoma, and CD-19 relapses
- > 200,000 patients (US&EU)

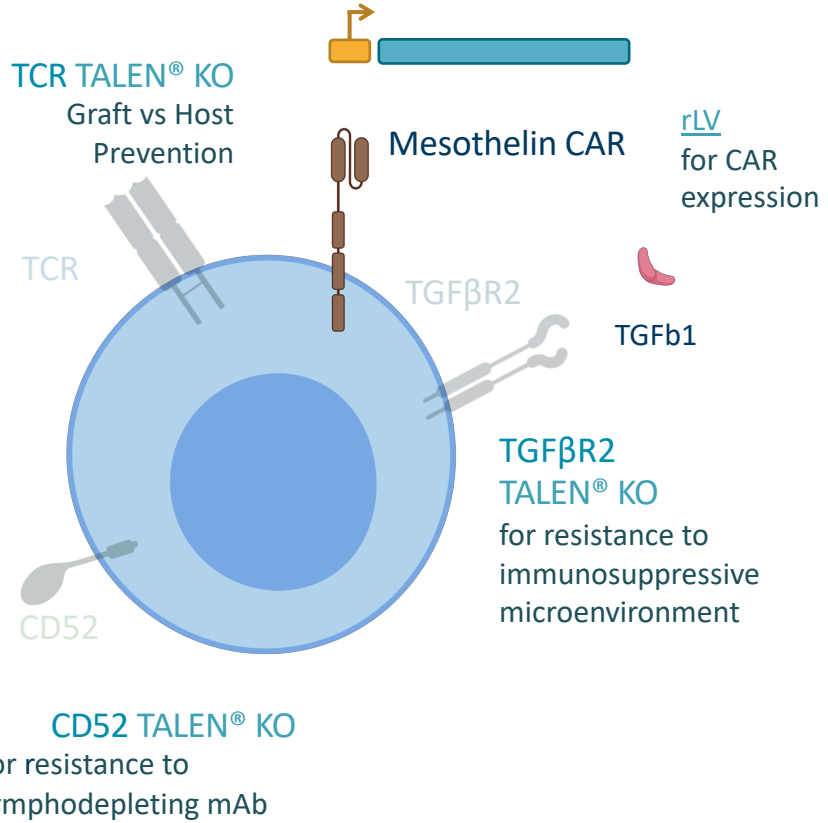
CD20 expressed in >90% NHL

CD22 expressed in >90 HNL and 90% B-ALL

UCARTMESO: Allogeneic CAR-T Cell Product Candidate in Solid Tumors

Mesothelin is An Attractive Solid Tumor Target

- Tumor-associated antigen broadly overexpressed on various malignant tumor cells
- One of the most studied targets for solid tumor treatment
- Promising preliminary clinical results with mesothelin-targeted agents

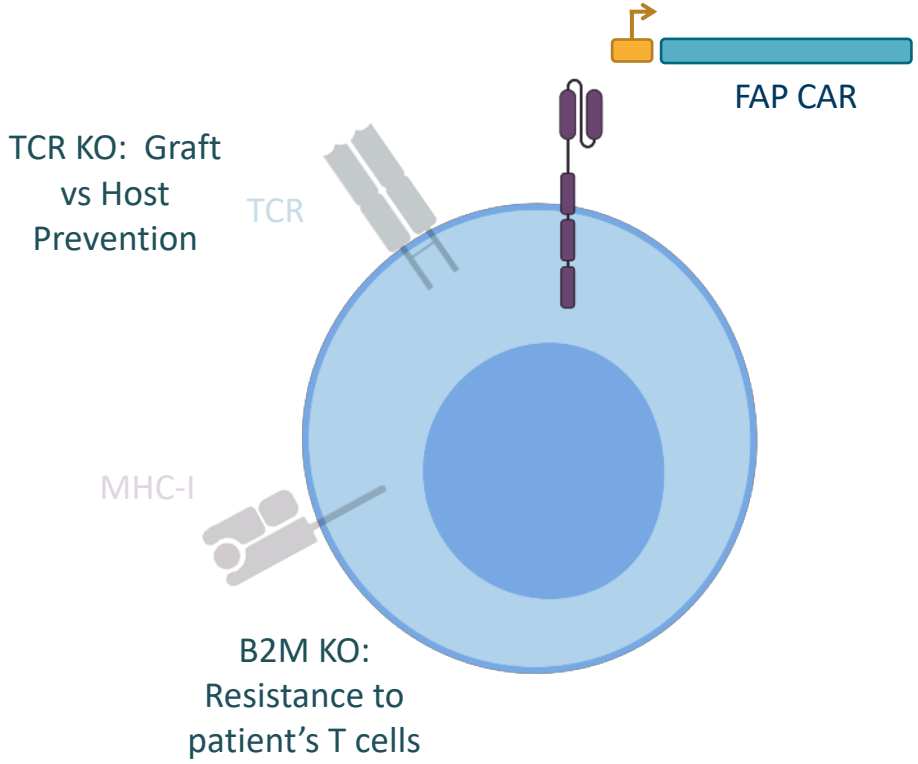


UCARTMESO product candidate is under early stage of pre-clinical development

UCARTFAP: Targeting Cancer Associated Fibroblasts (CAFs) Using Anti-FAP CAR T-cells

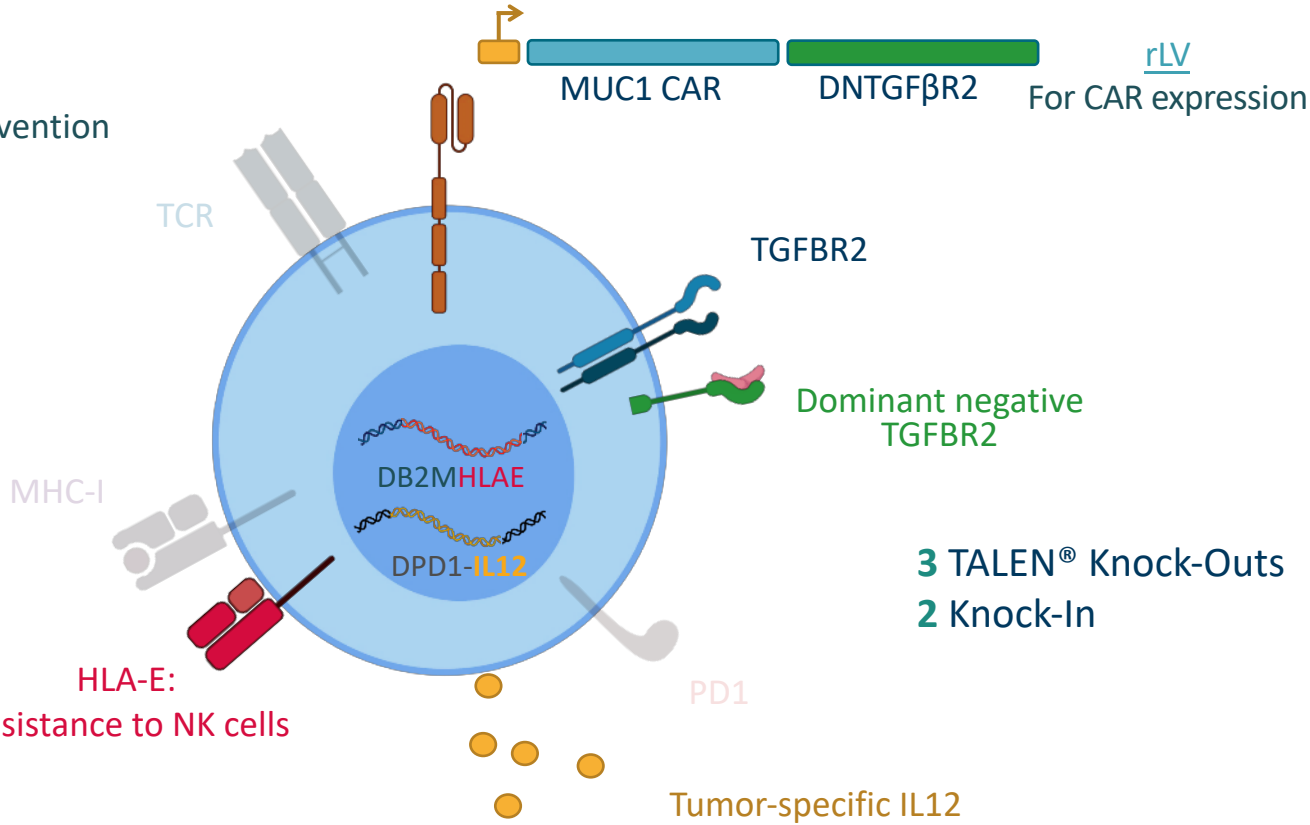
CAFs Play a Central Role For T-cell Exclusion And Immune Suppression In Solid Tumors

- Specific to tumor microenvironment
- Unique surface protein (FAP protein)
- High potential candidate for CAR T-cell therapy



UCARTFAP product candidate is under early stage of pre-clinical development

UCARTMUC1 – Next-Gen Product Candidate with Multiple Edits



UCARTMUC1 product candidate is under early stage of pre-clinical development

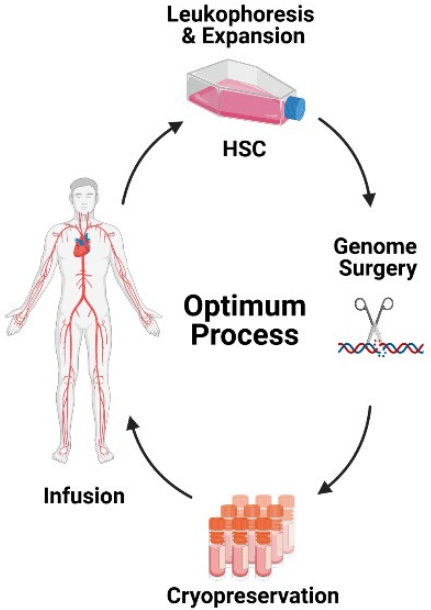
GENE THERAPY

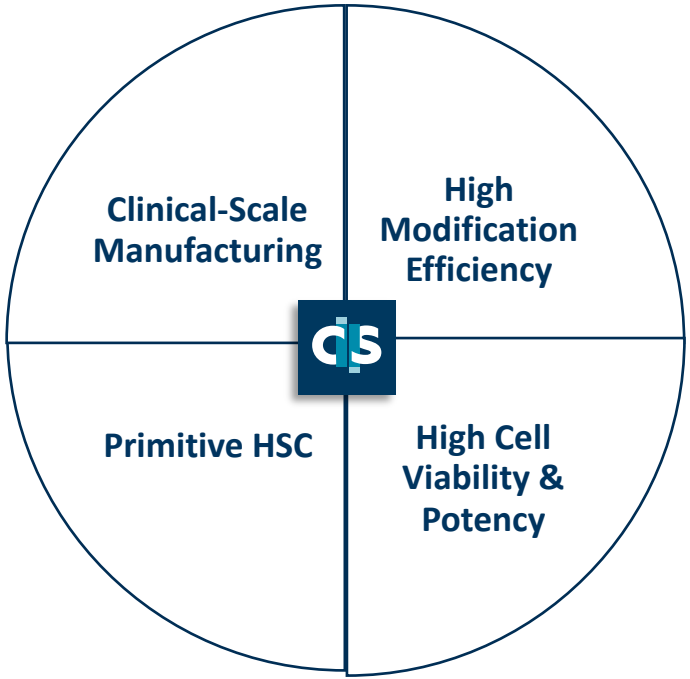
Hematopoietic Stem Cell Platform

.HEAL by cellectis

HSC Genome Surgery Platform

.HEAL





- **75-96% modification efficiency** in multiple loci
- **>80% cell viability** & preserve differentiation potential
- **>4-fold increase** in primitive HSC
- **Clinical-scale manufacturing** without affecting key parameters

.HEAL by cellectis

Sickle Cell Anemia

.HEAL

Genetic origin

Normal HBB (β)

GAG

Glutamate (HbA)

Sickle HBB (β^s)

GTG

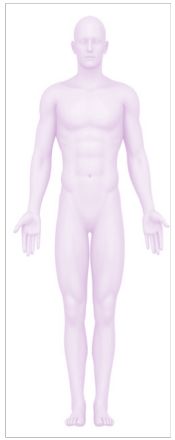
Valine (HbS)

HbA

HbS

Normal RBC

Gene therapy treatment



.HEAL

Sickle HBB β^s

GTG

TALEN®

Eliminate

GAG

DNA template

Corrected HBB β

GAG

Repair

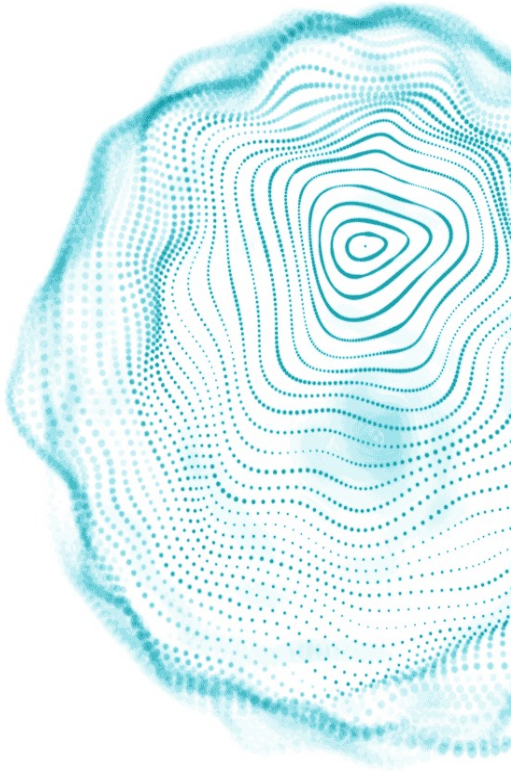
.HEAL by cellectis

.HEAL Gene Surgery To Cure Sickle Cell Disease – TALGlobin01

SCA HBB surgery repairs hemoglobin and brings i
back to its physiological level

- Highly efficient correction of sickle HBB gene
- Hemoglobin rescued to therapeutic level
- Selection free process
- Low β^0 collateral effect mitigates potential toxicity

TALGlobin01 is on track to move forward to clinical development



.HEAL Pipeline – Fully-owned By Cellectis

HSC Genome Surgery For Multiple Genetic Diseases

Indications	Cell Type	Candidate	Target	Discovery	Preclinical	IND-enabling
Sickle Cell Anemia	CD34+	TALGlobin-01	HBB			
Lysosomal Storage Disease	CD34+	TalX-05	Undisclosed			
Primary Immunodeficiency	T-Cell	TalX-03	STAT3			
Primary Immunodeficiency	CD34+	TalX-02	RAG1			

Cellectis In-House GMP Manufacturing Facilities

Fully Integrated cGMP Platform



Raleigh, North Carolina

UCART – Clinical & Commercial

82,000 sq ft. facility

- ✓ Cell therapy manufacturing suites
- ✓ QC labs
- ✓ Warehouse
- ✓ Cryogenic Storage rooms

Paris, France

Starting Materials – Clinical

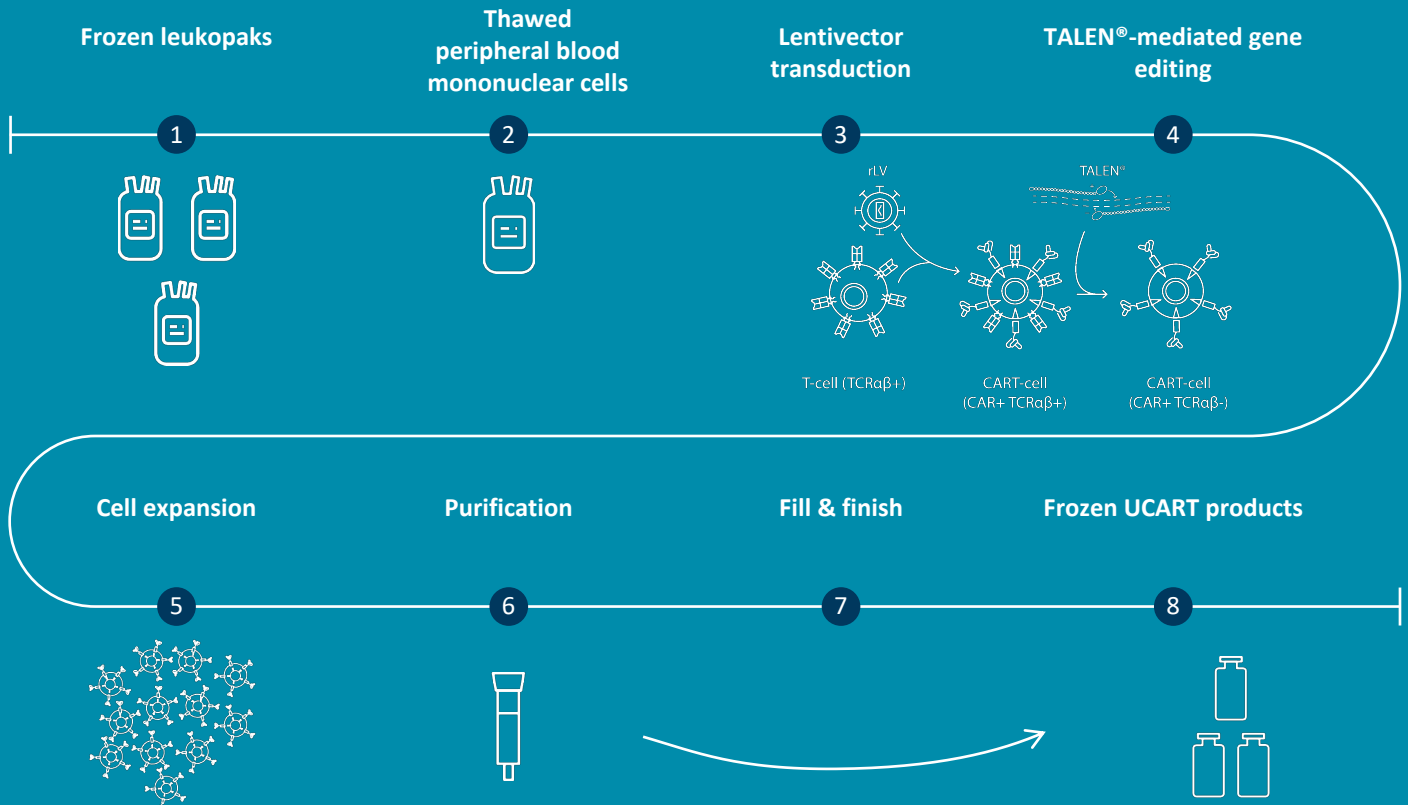
14,000 sq ft. facility

- ✓ Nucleic acid & vector manufacturing suites
- ✓ QC labs
- ✓ Warehouse
- ✓ Cryogenic Storage rooms

In-house GMP manufacturing with commercial capabilities

UCART Manufacturing

9 years of experience in allogeneic CAR-T manufacturing



Cellectis Upcoming Milestones

Upcoming Expected Milestones

Clinical Validation

- Enrollment of patients in phase 1 studies to establish optimal dose and lymphodepletion regimen for UCART22, CS1 and 123
- Initiation of a potentially pivotal trial of ALLO-501A (licensed) expected by end 2021
- Enrollment of patients in phase 1 studies for ALLO-715, ALLO-605 and ALLO-316 (licensed)

Next Wholly-controlled Candidate Products In The Clinic

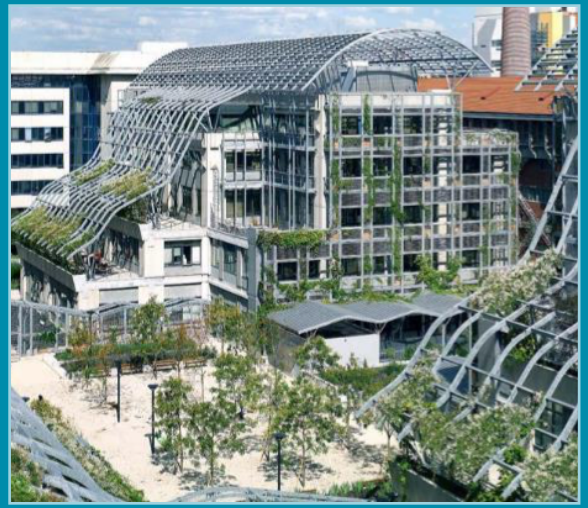
- UCART20x22 in non-Hodgkin lymphomas
- UCARTMESO in mesothelioma and other solid tumors
- TALGlobin01 gene repair in sickle cell disease

Internal Manufacturing

- Releases of the first mRNAs, viral vectors and UCARTs manufactured in-house

THANK YOU

Reach us at: investor@cellectis.com



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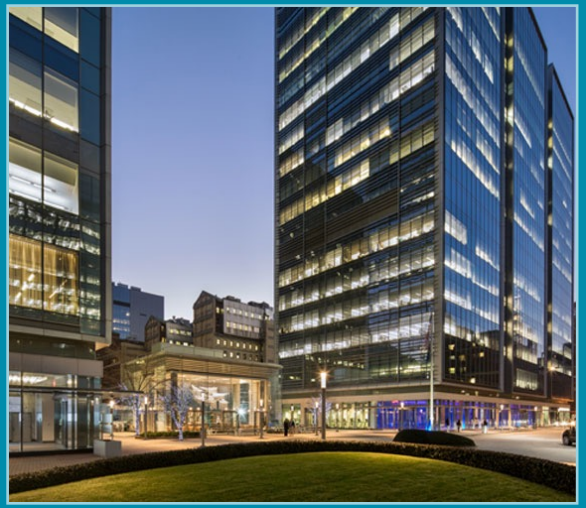

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