EDITING LIFE

COMMITMENT TO A CURE

Investor Presentation

January 2021

FORWARD-LOOKING STATEMENTS

This presentation contains “forward-looking” statements that are based on our management’s current expectations and assumptions and on information currently available to management.

Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from those expressed or implied by the forward-looking statements.

Factors that may cause actual results to differ from those in any forward-looking statement, include the duration and severity of the COVID-19 pandemic and responsive measures; inconclusive clinical trial results or clinical trials failing to achieve one or more endpoints; early data not being repeated in ongoing or future clinical trials; failures to secure required regulatory approvals; disruptions from failures by third-parties on whom we rely in connection with our clinical trials; delays or negative determinations by regulatory authorities; changes or increases in oversight and regulation; increased competition; manufacturing delays problems; inability to achieve enrollment disagreements with our collaboration partners of collaboration partners to pursue product legal challenges or intellectual property disputes; disruptions to access to raw materials or starting material.

Further information on risks and factors that may affect company business and financial performance, is included in our annual report on form 20-F and the financial report (including the management report) for the year ended December 31, 2019 and subsequent filings Cellectis makes with the Securities and Exchange Commission from time to time.

Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in the forward-looking statements, even if new information becomes available in the future.

WRITING THE HISTORY OF ALLOGENEIC CAR T-CELLS

21 years

of expertise in gene editing

9 years

of experience in allogeneic CAR-T manufacturing

7 clinical trials

ongoing as of 2020;
3 Cellectis-sponsored
4 partnered

INVENTORS / PIONEERS OF GENE EDITING & ALLOGENEIC CAR T-CELLS

In 2012 . .

Mission to develop allogeneic CAR T-cells begins

In 2015 . .

First-in-man compassionate use of an allogeneic CAR-T product candidate occurs

ADVANTAGES OF ALLOGENEIC VS. AUTOLOGOUS CAR-T

Autologous process:

Manufacturing variability + several weeks before treatment is available

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

Allogeneic process:

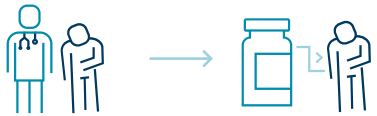
Consistent manufacturing + quality

Immediate treatment

HEALTHY DONOR APHERESIS

SCALABLE MANUFACTURING OF 100+ DOSES/BATCH

MASS PRODUCED ALLOGENEIC CAR-T THERAPIES



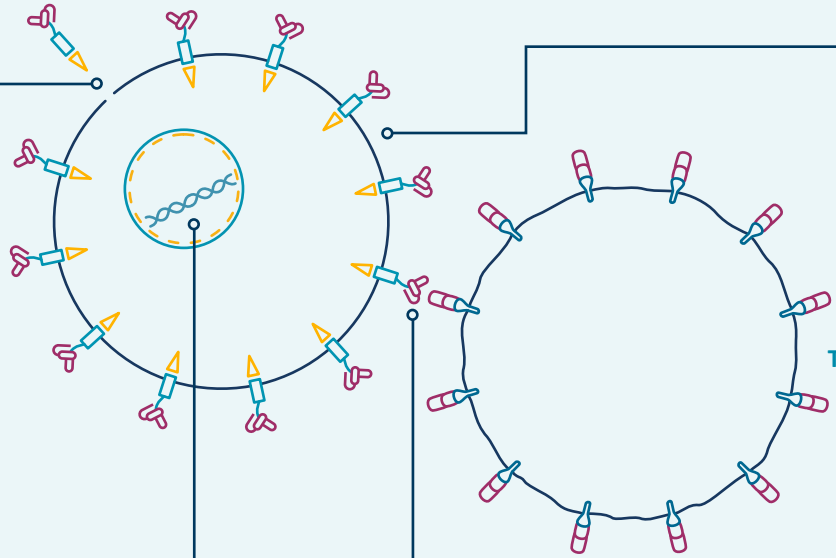
1. CANCER TREATMENT DECISION
2. OFF-THE-SHELF CAR-T THERAPY

- TIME SAVED
- COST EFFECTIVE
- MARKET ACCESS

UCARTs – ALLOGENEIC CAR T-CELLS THROUGH PRECISION GENE EDITING

RATIONAL
Engineering
via accurate insertion of best CAR

UCART
Universal Chimeric Antigen Receptor T-cell



EFFECTIVE
Persistence
via knock-out of CD52 or β2-microglobulin

TUMOR CELL

SAFE
Administration
Avoid GvHD via knock-out of T-Cell Receptor (TCR)

SMART
Action
CAR linked to suicide switch and other cell engineering features (e.g. PD-1 KO)

TALEN® GENE EDITING – ADVANTAGES

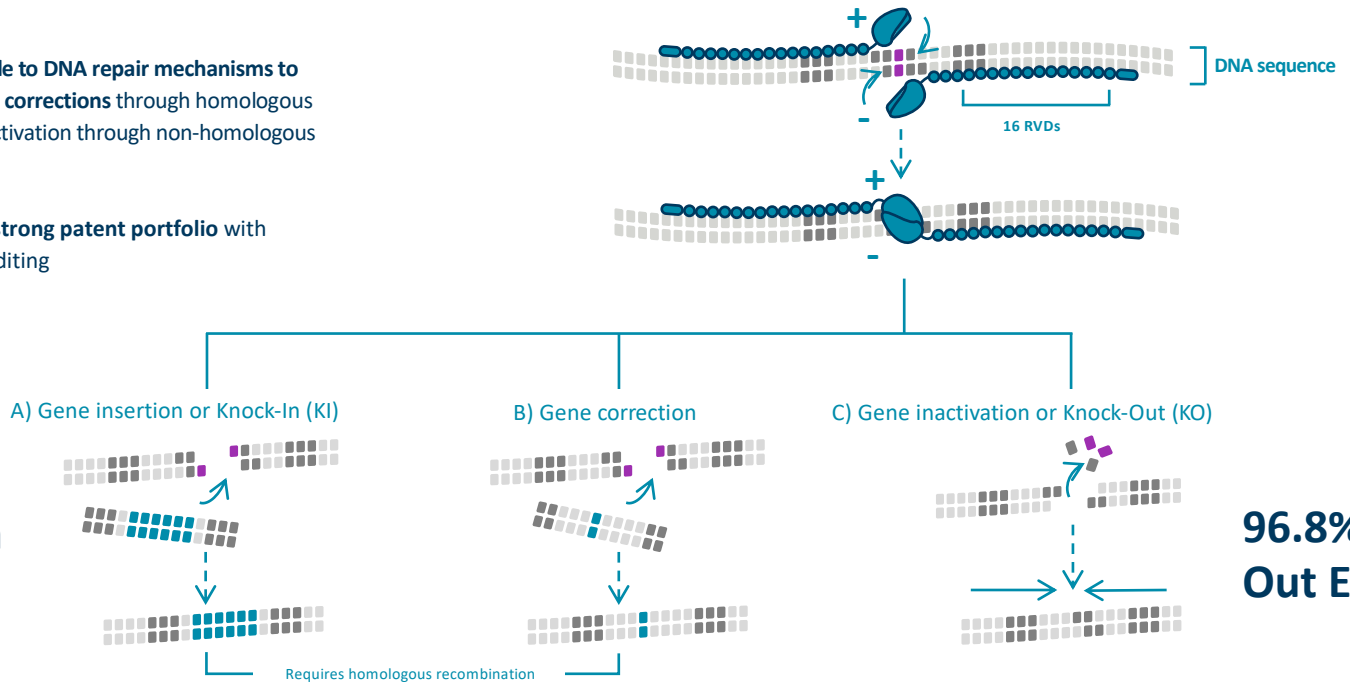
TALEN®:

Driven by protein/DNA interactions to work on potential off-site cleavage

Releases DNA ends **accessible to DNA repair mechanisms to perform gene insertions and corrections** through homologous recombination and gene inactivation through non-homologous end joining

Over 20 years of building a **strong patent portfolio** with umbrella patents on gene editing

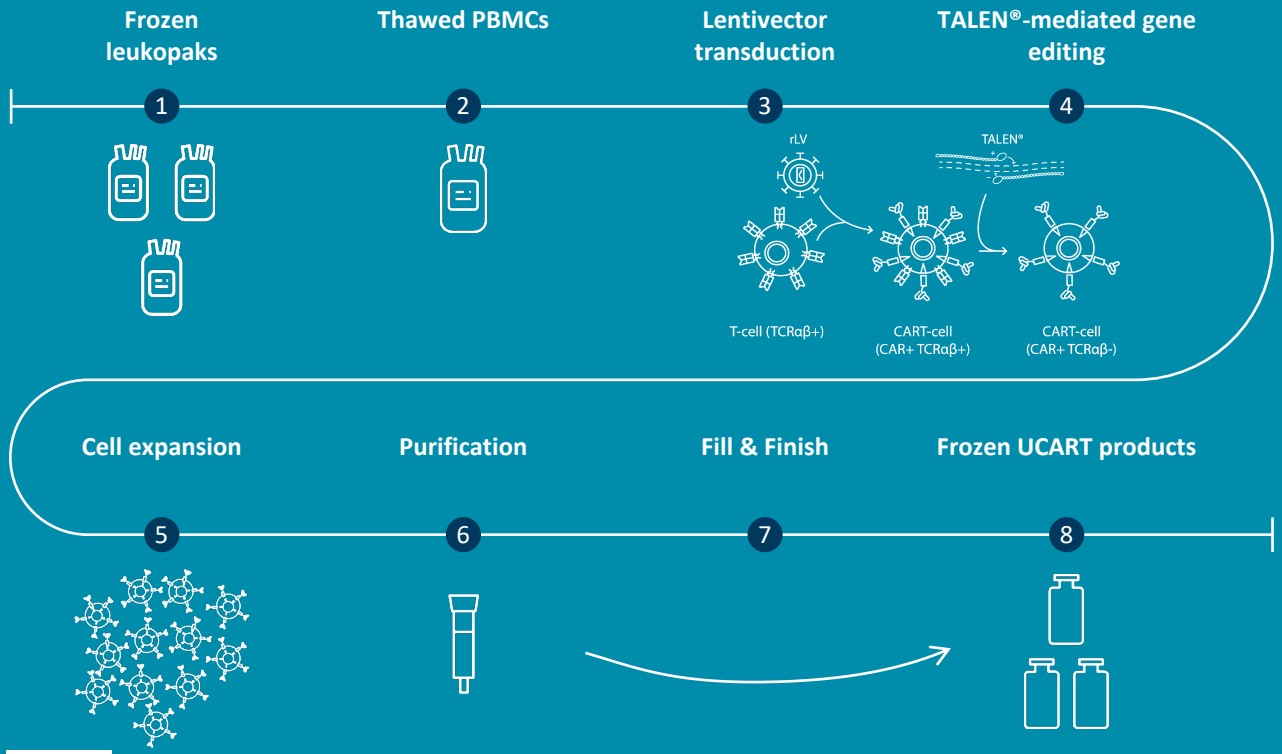
Our nucleases act like DNA scissors to edit genes at precise target sites:



>65% Knock-In Efficiency

96.8% Knock-Out Efficiency

UCART MANUFACTURING



- 9 years of experience in allogeneic CAR-T manufacturing
- Validated gene editing technology for cell manufacturing
- 4 UCART product candidates manufactured so far
- Full QC system in place
- 3 wholly controlled product candidates cleared for 3 clinical trials by the U.S. FDA

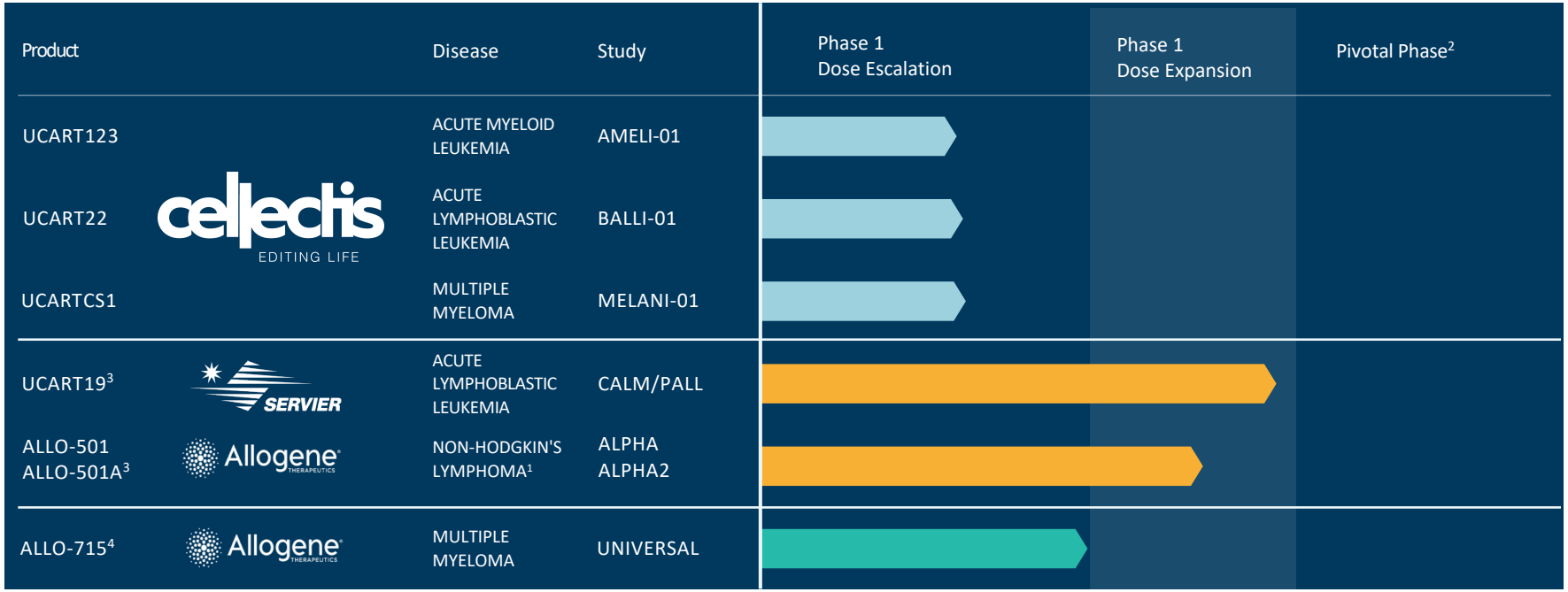
PARTNERSHIPS WITH INDUSTRY LEADERS

Up to $3.2B in potential milestone payments plus royalties

Partner	License	Geography	Most Advanced Targets	Status	Economics to Cellectis
SERVIER → Allogene THERAPEUTICS	Exclusive license to **CD19-directed allogeneic CAR T-Cells**	Ex-US	UCART19 (Anti-CD19)	Ph1	**Up To $410M In Development & Sales Milestones** + Low Double-Digit Royalties on Sales
	Sublicensed by Servier to **CD19-directed allogeneic CAR T-Cells**	US	ALLO-501 ALLO-501A (Anti-CD19)	Ph1	
Allogene THERAPEUTICS	Exclusive license to **15 allogeneic CAR T-Cell targets**	Global	ALLO-715 (Anti-BCMA)	Ph1	**Up To $2.8B In Development & Sales Milestones** + High Single-Digit Royalties on Sales
			ALLO-316 (Anti-CD70)	Pre-IND	
IOVANCE BIOTHERAPEUTICS	Exclusive license agreement to use specific **TALEN®** technology to **develop gene-edited TILs**	Global	Undisclosed	Pre-IND	**Undisclosed Development & Sales Milestones** + Royalties on Sales

cellectis EDITING LIFE

PIPELINE: INNOVATIVE CANCER THERAPIES FOR UNMET NEEDS



Cellectis and its partners are also working on a number of other preclinical targets

1 The ALPHA study targets Diffuse Large B-Cell Lymphoma (DLBCL) and Follicular Lymphoma (FL) indications, which are subtypes of NHL
2 We expect the pivotal phase to be the last clinical phase before commercialization
3 UCART19/ALLO-501 is exclusively licensed to Servier and under a joint clinical development program between Servier and Allogene
4 BCMA is a licensed target from Cellectis. 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 the BCMA target. Allogene holds global development and commercial rights for this investigational candidate.

CLINICAL TRIAL: DESIGN OF PHASE 1 DOSE ESCALATION STUDIES

Primary Objectives:

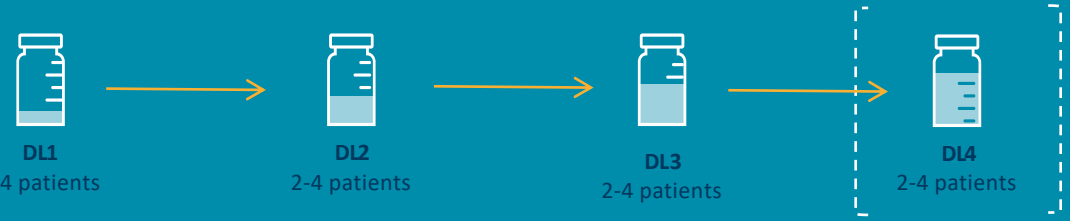
Safety and Identification of Optimal Dose

Secondary Objectives:

Efficacy and Correlative Studies

Dose Escalation:

Optimal dose definition



DL: Dose Level

ALLO-501*: CELLECTIS-LICENSED ALLOGENEIC CAR-T

Safety – Primary Objective

0%	Graft vs Host Disease
0%	ICANS (Immune Effector Cell-Associated Neurotoxicity Syndrome)
5%	Grade 3 Cytokine Release Syndrome
9%	Grade 3 Infection
5%	Grade 3 Infusion Reaction

Efficacy – Secondary Objective

63% Overall Response Rate

37% Complete Response Rate

75% ORR in CAR-T naïve patients (N=16)

44% Complete Response Rate

Re-dosing one patient with ALLO-501 and ALLO-647 resulted in an ongoing CR

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

Data Source: ASCO 2020 Conference Presentation

The ALPHA study targets Diffuse Large B-Cell Lymphoma (DLBCL) and Follicular Lymphoma (FL) indications, which are subtypes of NHL.

* Cellectis granted to Servier an expanded exclusive worldwide license to develop and commercialize all next generation gene-edited allogeneic CAR T-cell products targeting CD19, including rights to ALLO-501. ALLO-501 is under a joint clinical development program between Servier and Allogene. Allogene is the sponsor of the ALLO-501 ALPHA study

UCART22: Initial Anti-Leukemic Activity in BALLI-01 Phase 1 in R/R B-ALL

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

Safety – Primary Objective

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

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**)

Enrollment into DL2 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

UCART22 IN ACUTE LYMPHOBLASTIC LEUKEMIA

ALL Incidence Rates & Survival Data

6,150

Estimated new cases of ALL in the US for 2020

20%

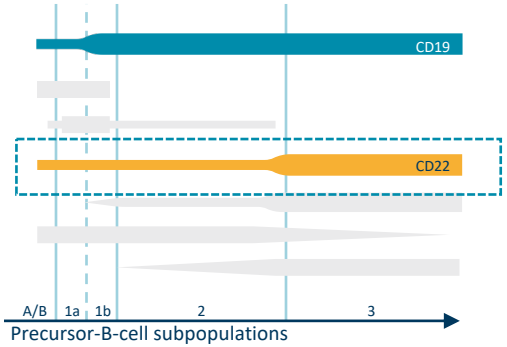
5-year OS in adults

<6

Months median disease-free survival in R/R pediatric patients

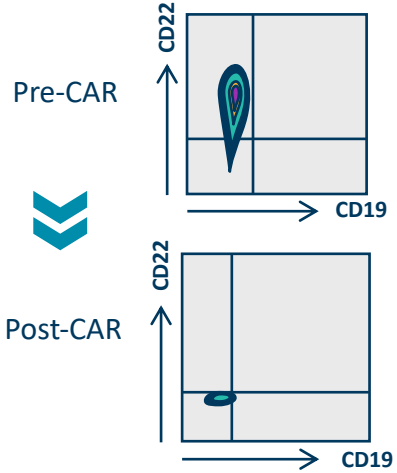
CD22 Expression in B-cells

Flow cytometric analysis of B-cell differentiation



CD22 is expressed in >95% B-ALL cells

Treatment potential for CD19-negative patients



Relapses following CD19-directed CAR T-cell therapy can show loss of CD19 antigen but **persistent expression of CD22**

Anti-CD22 CAR T-cells can induce remissions in **CD19 negative B-cells**

Cellectis Trial Recruitment Sites

Weill Cornell Medicine

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center
Making Cancer History®

THE UNIVERSITY OF CHICAGO MEDICINE

UCLA Health

UCART123 IN ACUTE MYELOID LEUKEMIA

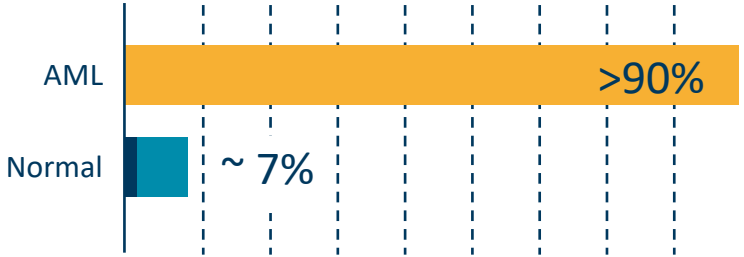
AML Incidence Rates & Survival Data

19,940
Estimated new cases of AML in the US for 2020

27%
5-year OS in adults

6%
5-year OS in adults >55 years old

High CD123 expression on malignant cells



Limited CD123 expression on healthy cells

- CD123 is expressed >90% on malignant cells in AML
- Total bone marrow cells ~ 7% CD123 positive
- Only ~ 1% expresses the antigen at high levels

Also expressed on BPDCN and Hodgkin's lymphoma

Cellectis Trial Recruitment Sites

MOFFITT CANCER CENTER
THE UNIVERSITY OF TEXAS MD Anderson Cancer Center Making Cancer History®
Dana-Farber Cancer Institute
Weill Cornell Medicine
NMC Northwestern Medical Center

UCARTCS1 IN MULTIPLE MYELOMA

MM Incidence Rates & Survival Data

32,270
Estimated new cases of MM in the US for 2020

43-83
Months is median OS for stages 2-3

50%
5-year OS in adults

High expression on malignant cells

>95%
expression in MM cells

→ CS1 expression is **high and uniform** on MM cells

Treatment alternative to BCMA-targeted therapies

→ **Many BCMA-targeted cell therapies show relapses** after 12-14 months of treatment

→ Elotuzumab, a CS1-targeting antibody, (in combination with lenalidomide and dexamethasone in R/R MM patients) shows:
5% CR rate and 45% partial remissions

Cellectis Trial Recruitment Sites

Weill Cornell Medicine

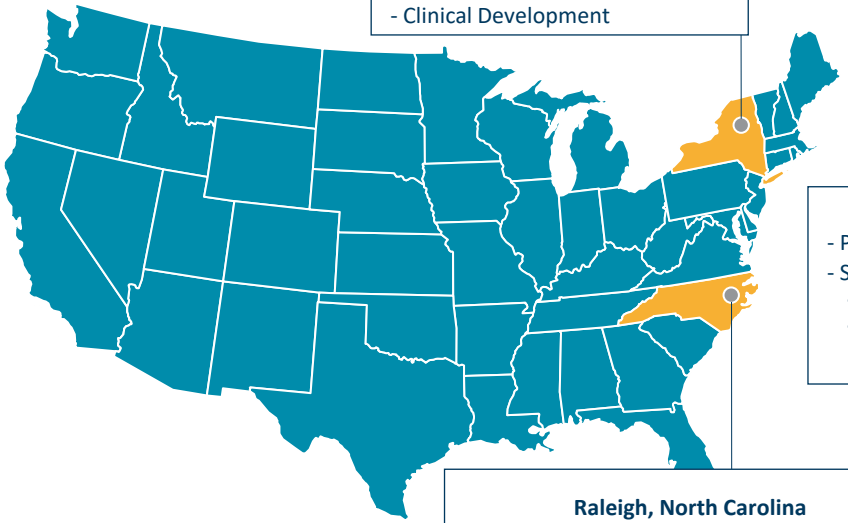
THE UNIVERSITY OF TEXAS MD Anderson Cancer Center
Making Cancer History®

Hackensack Meridian *Health*

A CROSS ATLANTIC ORGANIZATION

US Footprint

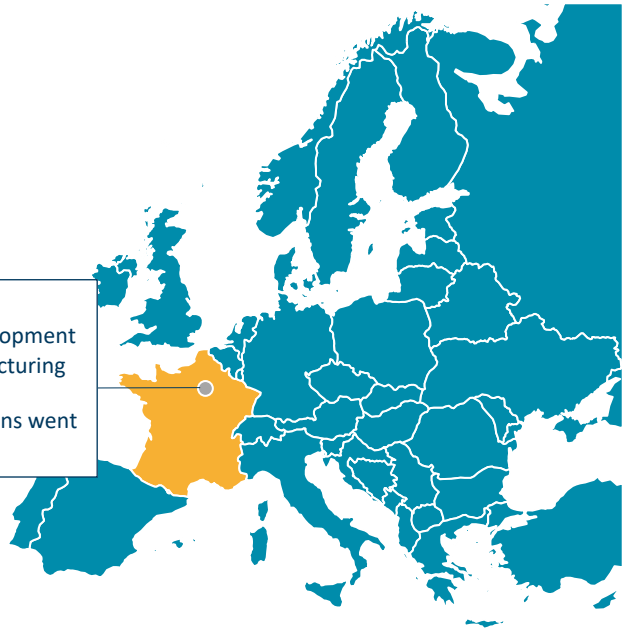
New York, NY
- Gene Editing Platform
- Innovation
- Clinical Development



Raleigh, North Carolina
- Clinical & Commercial UCART Manufacturing
  - **82,000 sq ft. facility**
  - Operational "go-live" targeted in 2021

EU Footprint

Paris, France
- Process & Analytical Development
- Starting Materials Manufacturing
  - **14,000 sq ft. facility**
  - Manufacturing operations went live in 2020



THE CELLECTIS GROUP

~64.7%* ownership

NASDAQ: CLLS

EURONEXT GROWTH: ALCLS

- ~$278M** cash and cash equivalents as of September 30, 2020
- Expected to fund operations into 2022
- Based in Paris, France, New York & Raleigh, USA
- Patient focused

Equity Investor
6.56%* ownership
in Cellectis

NASDAQ: CLXT

- $30M cash and cash equivalents as of September 30, 2020 (before the $15M Registered Direct Offering in October 2020)
- Cash Runway Extended into the Second Half of 2022
- Based in Minnesota, USA
- Consumer focused
- High value asset

Gene editing is the link

* As of October 20, 2020, following the Registered Direct Offering
** $308M of consolidated cash, cash equivalents, current assets and restricted cash (Cellectis + Calyxt)

ACHIEVED MILESTONES

Proprietary clinical programs

UCART22: Phase 1 in R/R ALL ongoing; data presented at ASH 2020

UCARTCS1: Phase 1 R/R MM ongoing

UCART123: Phase 1 for R/R AML ongoing

Partnered clinical programs

UCART19[1]: Phase 1 in R/R ALL near completion

ALLO-501/ALLO-501A[1]: Phase 1 in R/R NHL ongoing; data presented at ASCO 2020

ALLO-715[2]: Phase 1 in R/R MM ongoing; data presented at ASH 2020

Manufacturing

2 in-house GMP manufacturing plants:

Paris, France facility has started manufacturing of GMP starting material supply

Raleigh, North Carolina facility on track for GMP UCART manufacturing in 2021

EXPECTED FUTURE MILESTONES

UCART22:	**Enrollment and dosing ongoing at DL2 with Alemtuzumab+FC lymphodepletion; data update expected in 2021**
UCARTCS1:	**Clinical hold lifted and study resumed; data update expected in 2021**
UCART123:	**Enrollment and dosing ongoing at DL2 with Alemtuzumab+FC lymphodepletion; data update expected in 2021**

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THANK YOU

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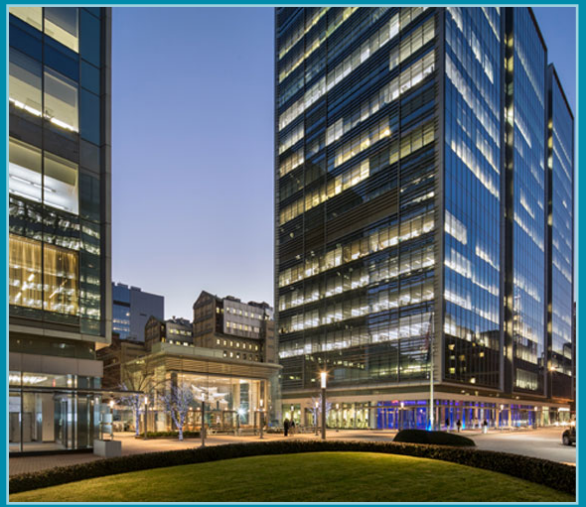

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