cellectis

EDITING LIFE

COMMITMENT TO A CURE

Cellectis Innovation Days
Episode 1

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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

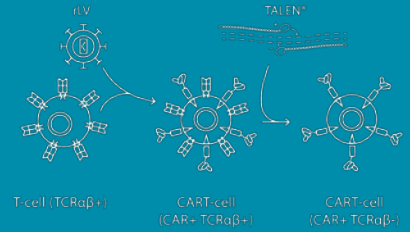
UCART MANUFACTURING

1 Frozen leukopaks

2 Thawed PBMCs

3 Lentivector transduction

4 TALEN®-mediated gene editing



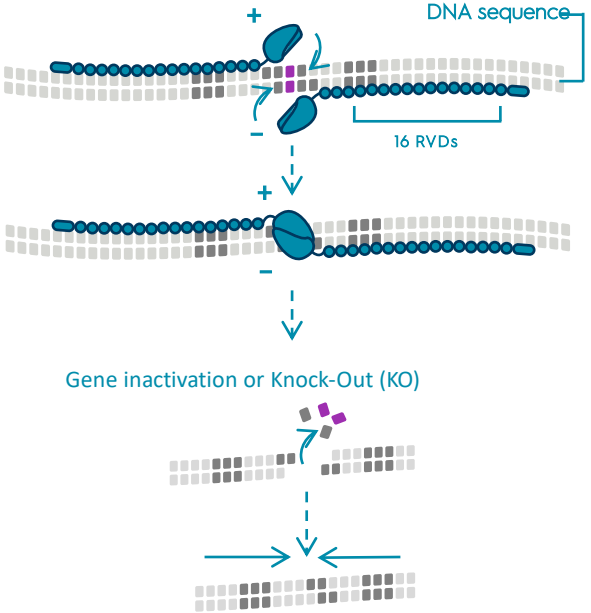
5 Cell expansion

6 Purification

7 Fill & Finish

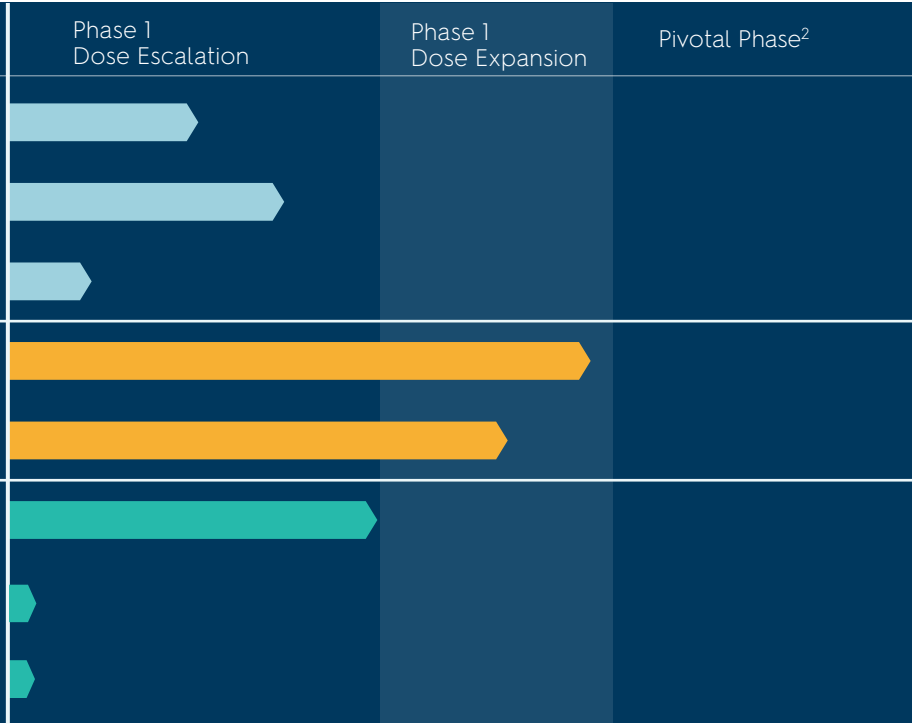
8 Frozen UCART products

Our nucleases are DNA scissors that induce gene editing at precise target sites:



CLINICAL PIPELINE

Product	Disease	Study
UCART123	ACUTE MYELOID LEUKEMIA	AMELI-01
UCART22	ACUTE LYMPHOBLASTIC LEUKEMIA	BALLI-01
UCARTCS1	MULTIPLE MYELOMA	MELANI-01
UCART19[3]	ACUTE LYMPHOBLASTIC LEUKEMIA	CALM/PALL
ALLO-501 ALLO-501A[3]	NON-HODGKIN'S LYMPHOMA[1]	ALPHA ALPHA2
ALLO-715[4]	MULTIPLE MYELOMA	UNIVERSAL
ALLO-715 + nirogacestat[5]	MULTIPLE MYELOMA	UNIVERSAL
ALLO-316	RENAL CELL CARCINOMA	TRAVERSE



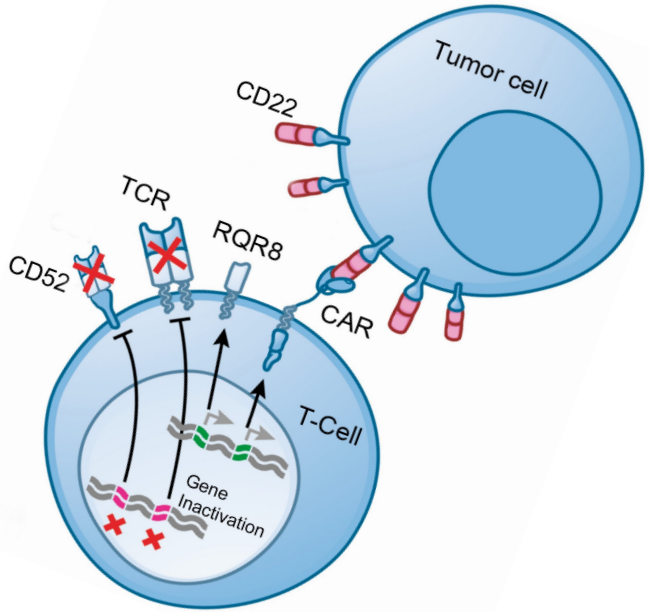
Cellectis and its partners are also working on a number of other preclinical targets

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
5 Allogene sponsored trial in combination with SpringWorksTherapeutics.

UCART22: Allogeneic “Off-the-shelf” T-Cell Product

UCART22 (anti-CD22 scFv-41BB-CD3ζ):

- Immediately available, standardized, manufactured at large scale
- Ability to re-dose
- CAR expression redirects T-cells to tumor antigens
- CD20 mimotope for rituximab “safety switch”
- *TRAC* disrupted using TALEN® to eliminate TCRαβ from the cell surface and reduce risk of GvHD
- *CD52* disrupted using TALEN® to eliminate sensitivity to LD with alemtuzumab



CAR, chimeric antigen receptor; GvHD, graft-versus-host disease; LD, lymphodepletion; TCR, T-cell receptor; TRAC, T-cell receptor alpha constant.

R= CD20 mimotope (rituximab)
Q= CD34 epitope (QBEnd10)

Preliminary Results of BALLI-01: A Phase I Study of UCART22 (Allogeneic Engineered T-cells Expressing Anti-CD22 Chimeric Antigen Receptor) in Adult Patients with Relapsed or Refractory CD22+ B-Cell Acute Lymphoblastic Leukemia (NCT04150497)

- Nitin Jain, MD[1], Gail J. Roboz, MD[2], Marina Konopleva, MD, PhD[1], Hongtao Liu, MD, PhD[3], Elias Jabbour, MD[1], Camille Poirot, PharmD[4], Cécile Schiffer-Mannioui, PhD[4], Agnès Gouble, PhD[4], Asifa Haider, PhD[5], Oleg Zernovak, MD[5], and Richard A. Larson, MD

- [1]Department of Leukemia, The University of Texas MD Anderson Cancer Center, Houston, TX; [2]Division of Hematology and Oncology, Weill Cornell Medicine and The New York-Presbyterian Hospital, New York, NY; [3]Department of Medicine, Section of Hematology-Oncology, University of Chicago, Chicago, IL; [4]Cellectis SA, Paris, France; [5]Cellectis Inc., New York, NY

BALLI-01 Study Design

Key inclusion criteria

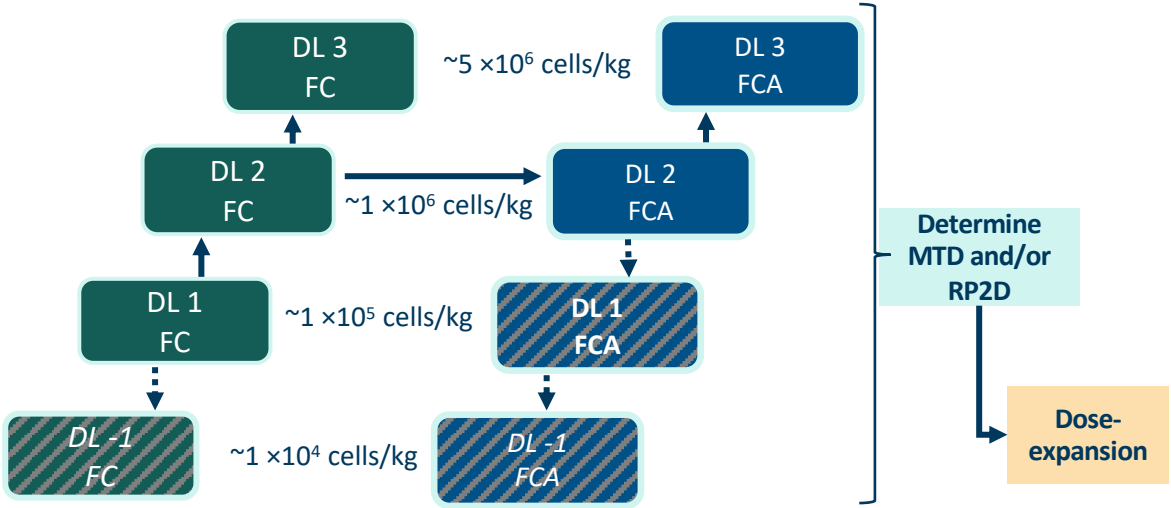
- Age 18-70 years, adequate organ function, ECOG PS ≤1
- B-ALL blast CD22 expression ≥90%
- Received ≥1 standard chemotherapy regimen and ≥1 salvage regimen

Endpoints

- Safety & tolerability
- MTD/RP2D
- Response (NCCN criteria[1]; investigator assessed)
- UCART22 expansion and persistence, VCN and chimerism in WB and BM
- Immune reconstitution

Dose-escalation

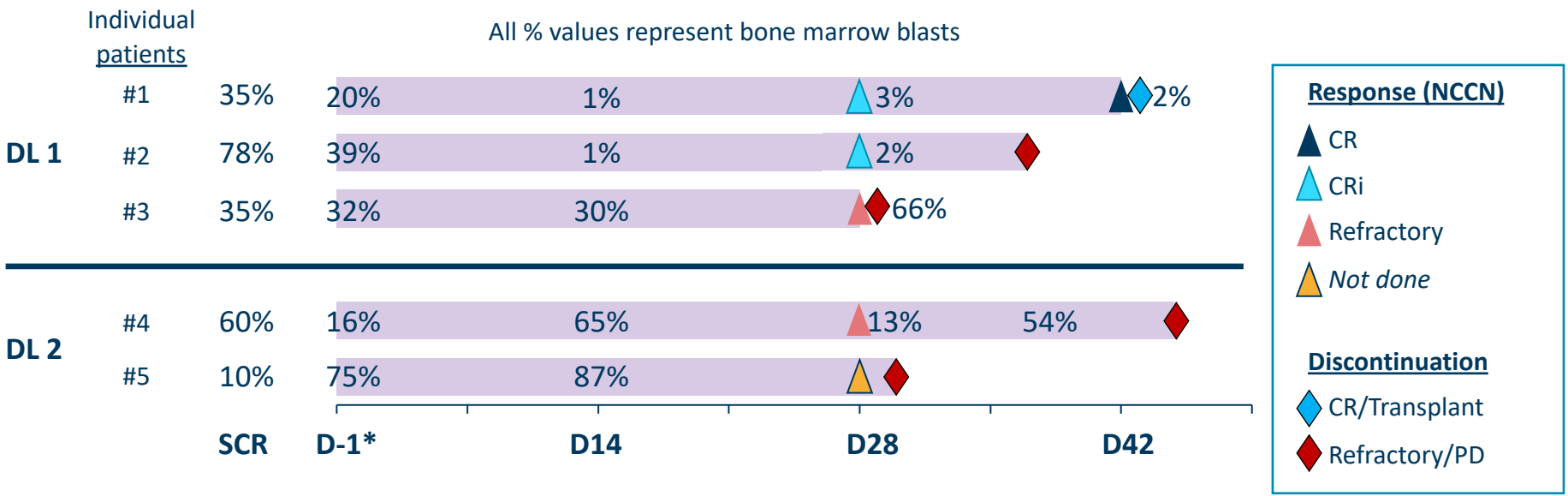
Up to 30 patients • mTPI design • 2-4 patients/cohort



Lymphodepletion (LD) regimens:

- **FC:** fludarabine (30 mg/m^2 x 4d) + cyclophosphamide (1 g/m^2 x 3d)
- **FCA:** fludarabine (30 mg/m^2 x 3d) + cyclophosphamide (500 mg/m^2 x 3d) + alemtuzumab (20 mg/d x 3d)

BALLI-01 Study: Anti-Leukemic Activity



- 2 patients at DL1 achieved CRi at D28; 1 of them attained CR (MRD+) at D42 and received transplant after subsequent therapy with inotuzumab
- 1 patient at DL2 had significant BM blast reduction at D28 and then progressed

- *D-1 sample is after LD and before UCART22 dosing
- CR, complete remission; CRi, complete remission with incomplete hematologic recovery; D, day; DL, dose level; EOT, end of treatment; LD, lymphodepletion; MRD, measurable residual disease; NCCN, National Comprehensive Cancer Network; PD, progressive disease; SCR, screening.

BALLI-01 Study: Safety

No patient experienced a DLT, ICANS, GvHD, AESI, or UCART22-related Grade ≥3 AE or SAE

Treatment-emergent adverse events of interest with DL1 and DL2					
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Graft-versus-host disease (GvHD)	0	0	0	0	0
Cytokine release syndrome (CRS)*	2	1	0	0	0
ICANS	0	0	0	0	0
SAEs			3	1	1

- Grade ≥3 TEAEs (not related to UCART22 treatment): hypokalemia (G3); anemia (G3); bilirubin increase (G4); acute hypoxic respiratory failure (G4)
- 3 patients experienced 4 treatment-emergent SAEs not related to UCART22 treatment: porta-hepatis hematoma (G3); sepsis (G3); bleeding (G4); sepsis (G5) in the context of progressive disease
- No patient discontinued treatment due to a UCART22-related TEAE

- *CRS durations ranged from 2-4 days; no patient received tocilizumab or steroids
- AESI, adverse event of special interest; DLT, dose-limiting toxicity; G, grade; ICANS, immune effector cell-associated neurotoxicity syndrome; SAE, serious adverse event.

BALLI-01 ASH2020: Conclusions

- UCART22 showed no unexpected toxicities at doses of $1x10^5$ cells/kg and $1x10^6$ cells/kg with the FC LD regimen
  - No patient had a DLT, GvHD, AESI, or ICANS; no SAEs related to UCART22 treatment
- CRS occurred in 3 patients, all grade 1 or 2 and of short duration (2-4 days), no patient required tocilizumab or steroids
- CR and CRi achieved in 2 patients and blast reduction in 1 patient
- Cytokine profiles show minor changes
- Host immune recovery observed early; addition of alemtuzumab to FC LD regimen is currently being explored to achieve deeper and more sustained T-cell depletion and promote expansion and persistence of UCART22
- FCA LD cohorts are enrolling

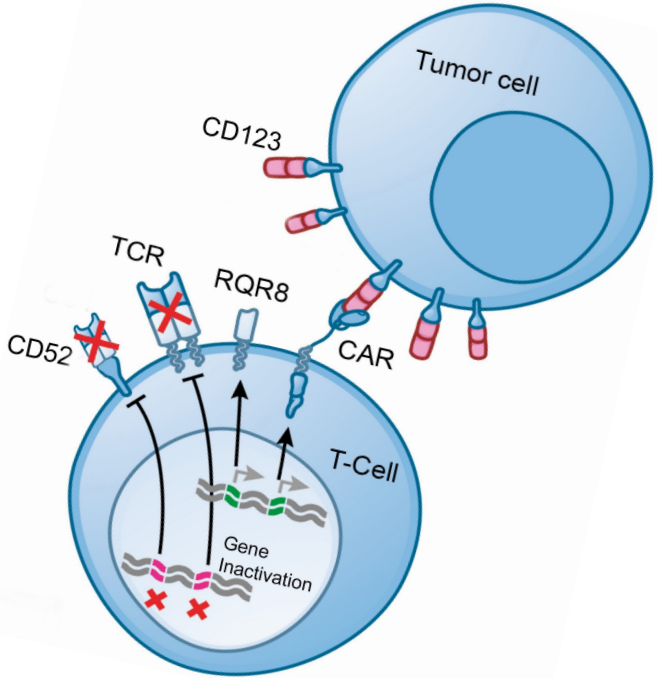
- AESI, adverse event of special interest; CR, complete remission; CRi, complete remission with incomplete hematologic recovery; CRS, cytokine release syndrome; DLT, dose-limiting toxicity; FC, fludarabine + cyclophosphamide; FCA, fludarabine + cyclophosphamide + alemtuzumab; GvHD, graft-vs-host disease; ICANS, immune effector cell-associated neurotoxicity syndrome; LD, lymphodepletion; SAE, serious adverse event.

AMELI-01: Phase I, Open Label Dose-escalation and Dose-expansion Study to Evaluate the Safety, Expansion, Persistence and Clinical Activity of UCART123 (Allogeneic Engineered T-cells Expressing Anti-CD123 Chimeric Antigen Receptor), Administered in Patients with Relapsed/Refractory Acute Myeloid Leukemia

Gail J. Roboz1, Daniel J. DeAngelo2, David Sallman[3], Monica L. Guzman[1], Pinkal Desai[1], Hagop Kantarjian[4], Marina Konopleva[4], Nelli Bejanyan3, Hany Elmariah3, Francisco Esteva[5], Andrew Garton5, Kate Backhouse5, Roman Galetto6, Carrie Brownstein[5], Naveen Pemmaraju[4]

[1]Weill Cornell Medical College and New York Presbyterian Hospital, New York, NY; [2]Dana Farber Cancer Institute, Boston, MA; [3]Moffitt Cancer Center, Tampa, FL; [4]MD Anderson Cancer Center, Houston, TX; 5Cellectis Inc., New York, NY; [6]Cellectis SA, Paris, France

UCART123: Allogeneic “Off-the-shelf” T-Cell Product



- Second-generation CAR targeting CD123
- Mouse-derived scFv
- Derived from healthy donor T-cells
- Reduces risk of GvHD (TCR K/O and TCRαβ-purification)
- CD20 mimotope for rituximab “safety switch”
- Alemtuzumab resistance (CD52 K/O)
- Available “off-the-shelf”
- Manufactured at large scale

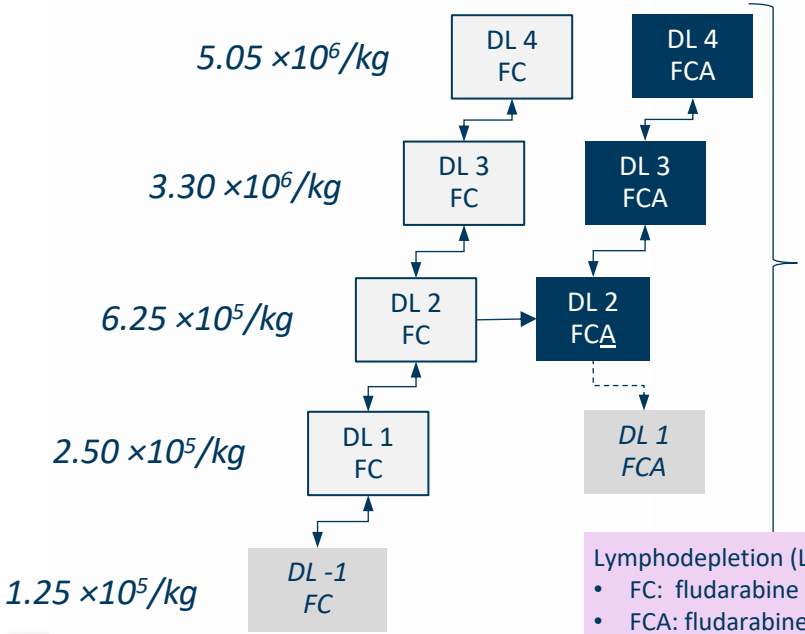
- CAR, chimeric antigen receptor; GvHD, graft-versus-host disease; K/O, knock-out; scFv, single-chain variable antibody fragment; TCR, T-cell receptor.

AMELI-01 Study Schema

DOSE ESCALATION

Up to 28 Patients • MTPI design • 2–4 patients/cohort

Dose level*



Determine MTD/RP2D

Lymphodepletion (LD) regimens:
- FC: fludarabine + cyclophosphamide
- FCA: fludarabine + cyclophosphamide + alemtuzumab

DOSE EXPANSION

18–37 patients • Simon's two-stage design

UCART123 at MTD / RP2D with recommended LD regimen

*Up to 80-kg equivalent.
DL, dose level; FC, fludarabine + cyclophosphamide; FCA, fludarabine + cyclophosphamide + alemtuzumab; LD, lymphodepletion; MTD, maximum tolerated; MTPI, modified Toxicity Probability Interval; RP2D, recommended phase 2 dose.

AMELI-01 Study Design

Phase I, open label, dose-escalation and dose-expansion study of UCART123 in patients with R/R AML

KEY ELIGIBILITY CRITERIA

Inclusion:

- Age 18–65
- CD123+ R/R AML with ≥ 5% blasts in BM or PB
- Adequate PS organ function
- *(Dose-escalation)* Identified donor and transplant strategy prior to lymphodepletion (LD)

Exclusion:

- APL or CNS leukemia
- Previous investigational gene or cell therapy (including CAR); ≥ 2 prior allogeneic SCTs
- Any known active or uncontrolled infection

KEY STUDY OBJECTIVES

Primary: Safety & tolerability; Establish MTD and identify RP2D

Secondary: Anti-leukemic activity

Exploratory:

- UCART123 expansion, trafficking, and persistence;
- investigate correlation between CD123 expression levels and clinical outcomes;
- Confirm the absence of replication competent lentivirus (RCL)

•AML, acute myeloid leukemia; APL, acute promyelocytic leukemia; BM, bone marrow; CAR, chimeric antigen receptor; CNS, central nervous system; ECOG PS, Eastern Cooperative Oncology Group performance status; PB, peripheral blood; R/R, relapsed/refractory; SCT, stem cell transplant.

AML Summary

- There is an important unmet need for novel therapies to treat patients with R/R AML
- This phase I study will evaluate the safety, tolerability, RP2D, and preliminary efficacy of UCART123, a genetically modified allogeneic anti-CD123 CAR T-cell product
  - Disruption of the TCRα constant and CD52 genes reduces risk of GvHD and allows use of alemtuzumab for selective and prolonged host lymphodepletion
  - Allogeneic cells from healthy donors allows for large-scale production and “off-the-shelf” availability immediately upon treatment decision

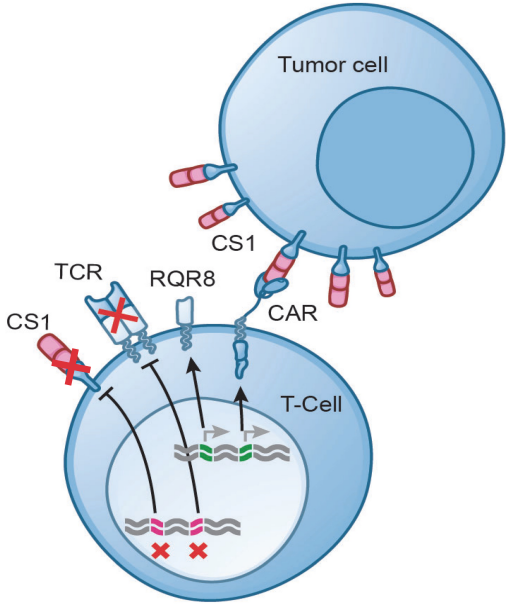
AML, acute myeloid leukemia; CAR, chimeric antigen receptor; GvHD, graft-vs-host disease; R/R, relapsed/refractory; RP2D, recommended phase 2 dose; TCR, T-cell receptor

Mark Frattini, MD, PhD
Senior Vice President of Clinical and Translational Sciences

UCARTCS1A: First Allogeneic CAR-T Cell Therapy to Target CS1/SLAMF7

UCARTCS1A Product Attributes

- **Anti-CS1 CAR:** Targets CS1/SLAMF7^{+} tumor cells
- **TRAC gene KO**: Avoid GvHD by disrupting TCR assembly
- **CS1 KO:** Facilitate robust UCARTCS1A expansion and yield by avoiding fratricide
- **RQR8 safety switch**: CD20 mimotope in RQR8 could be engaged by rituximab



CAR, chimeric antigen receptor; CS1, CD2 subset-1 (also CD319/SLAMF7); GvHD, graft-versus-host disease; KO, knock-out; LD, lymphodepletion; TCR, T cell receptor; TRAC, T-cell receptor alpha constant.

R= CD20 mimotope (rituximab)
Q= CD34 epitope (QBEnd10)

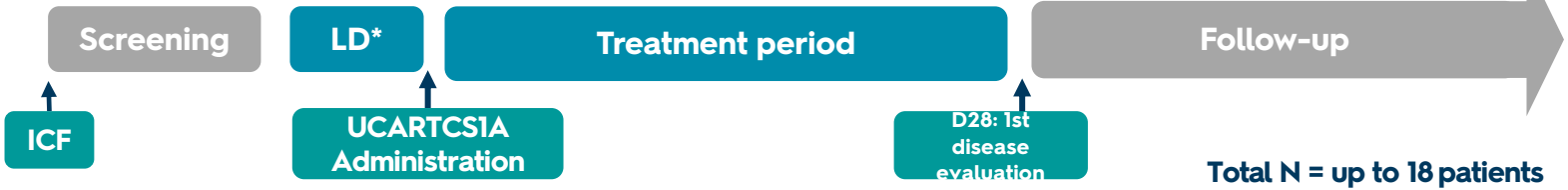
UCARTCS1A, an allogeneic CAR T-cell therapy targeting CS1 in patients with relapsed/refractory multiple myeloma (RRMM): Preliminary translational results from a first-in-human phase I trial (MELANI-01)

Krina K Patel[1], Mini Bharathan[2], David Siegel[3], Adriana Rossi[4], Mark G. Frattini[2], Julianne Smith[5], Carrie Brownstein[2]

[1]The University of Texas MD Anderson Cancer Center, Houston, TX; [2]Cellectis, Inc., New York, NY, [3]John Theurer Cancer Center, Hackensack, NJ, [4]Weill Cornell Medical College, New York, NY, [5]Cellectis, S.A., Paris

MELANI-01: Study Schema

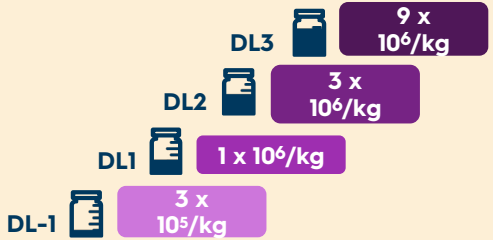
Patient flow



Key Eligibility

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

Dose escalation



Key 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

(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.

All Treated Patients: Baseline Characteristics and Clinical Response

Patient ID Dose level	Light chain disease	Prior lines of therapy	Cytogenetics	Tumor Burden (Screen)- Local lab analysis*	CAR T cell detection	Clinical Response
102-101 DL-1	kappa	• 1st treatment in 2009 • 15 lines of therapy including auto-transplant (twice), BCMA CAR T, daratumumab, elotuzumab + pom	del(17p), t(4;14)	BM aspirate + biopsy: 5% plasma cells	Detection at D9 and D11 (<LLOQ)	PD
102-109 DL-1	kappa	• 1st treatment in 2015 • 12 prior lines including 1 auto-transplant, BCMA ADC	Normal	No detectable plasma cells (measurable plasmacytoma)	Not detected	SD
102-107 DL-1	kappa	• 1st treatment in 2015 • 11 prior lines including 2 auto-transplant and daratumumab	del(17p), t(4;14), 1q21, CKS1B, t(11;14)	BM biopsy: 60% plasma cells	Not detected	Patient withdrew at D24
102-111 DL1	lambda	• 1st treatment in 2016 • 4 prior lines including auto-transplant, daratumumab, elotuzumab	+1q21	BM aspirate & biopsy: 90% plasma cells	Initial detection at D9 **Peak** levels at D28	PR with MRD negativity by D28 VGPR at M3
102-113 DL2	kappa	• 1st treatment in 2015 • 13 lines including auto-transplant, venetoclax, elotuzumab, daratumumab, 2x BCMA CAR T	CCND1/IGH rearrangement & monosomy 13 as per history	BM aspirate & biopsy: 1% plasma cells (aspirate quality poor)	Initial detection at D7 **Peak** levels D7-D11	PR on D14

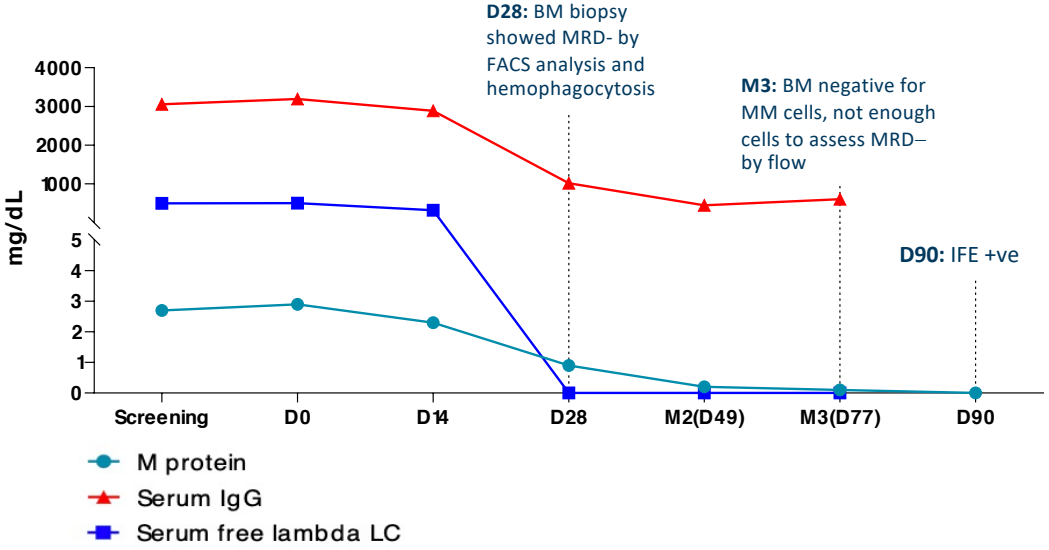
***Exploratory analysis: 97-100 % of detected plasma cells expressed CS1 with high intensity in all patients**

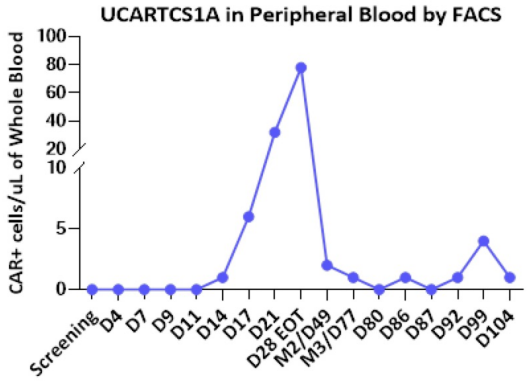
ADC, antibody-drug conjugate; BCMA; B-cell maturation antigen; BM, bone marrow; D, day; DL, dose level; LLOQ, lower limit of quantitation; M, month; MRD, measurable residual disease; PD, progressive disease; PR, partial response; SD, stable disease; VGPR, very good partial response.

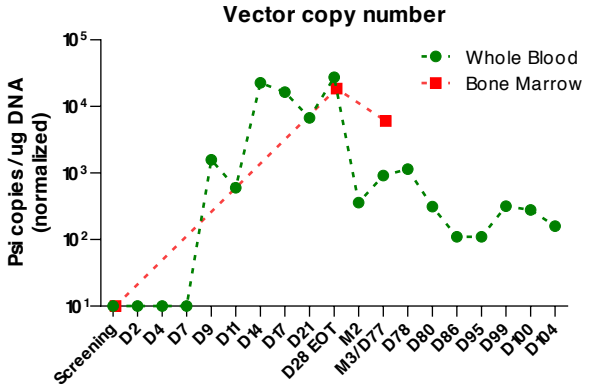
Clinical Activity Correlated with UCARTCS1A Expansion

Pt# 102-111

MRD-negative VGPR





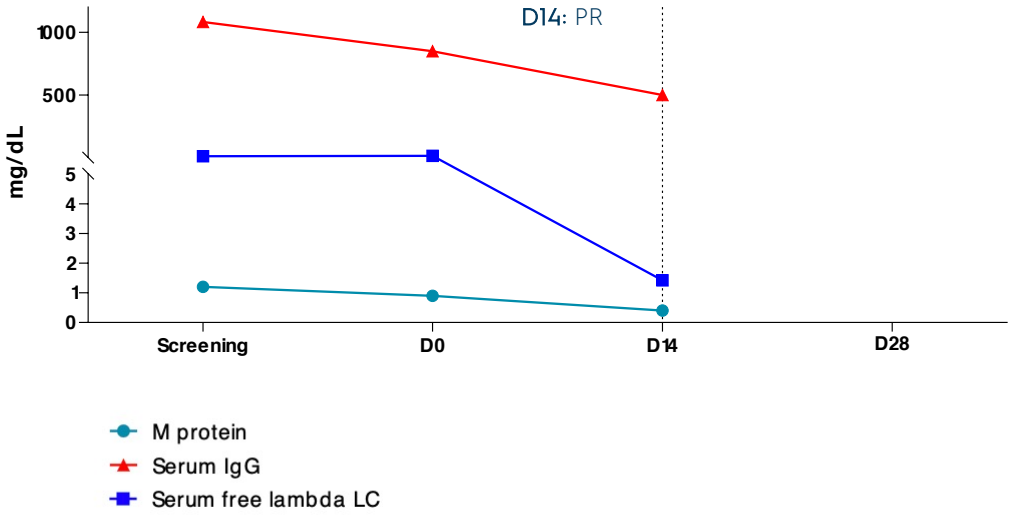


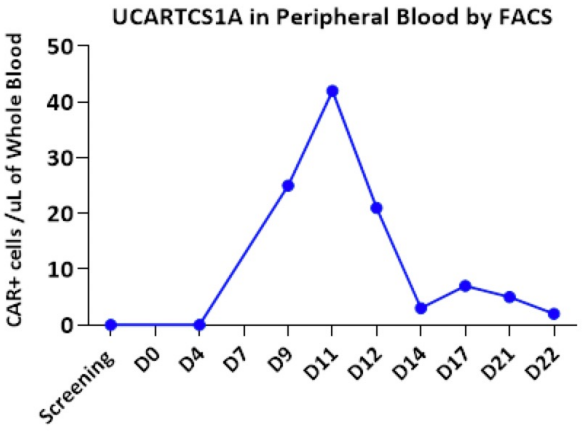
BM, bone marrow; CRS, cytokine release syndrome; D, day; DL, dose level; DLT, dose-limiting toxicity; FACS, fluorescence-activated cell sorting; HHV6, human herpesvirus 6; HLH, hemophagocytic lymphohistiocytosis; IFE, Immunofixation electrophoresis; IgG, immunoglobulin G; IFNγ, interferon gamma; LC, light chain; M, month; MM, multiple myeloma; MRD, measurable residual disease.

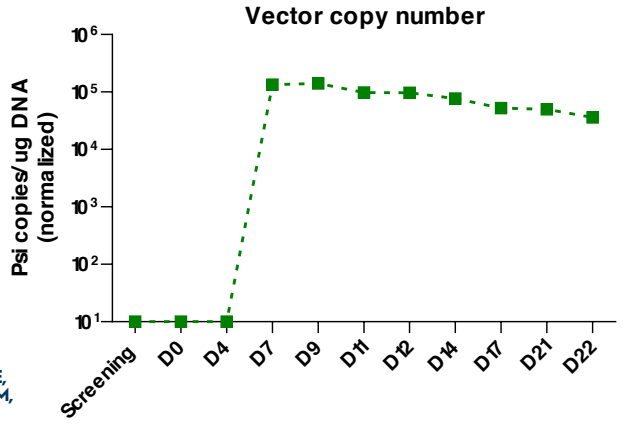
Clinical Activity Correlated with UCARTCS1A Expansion

Pt# 102-113

Partial Response on D14



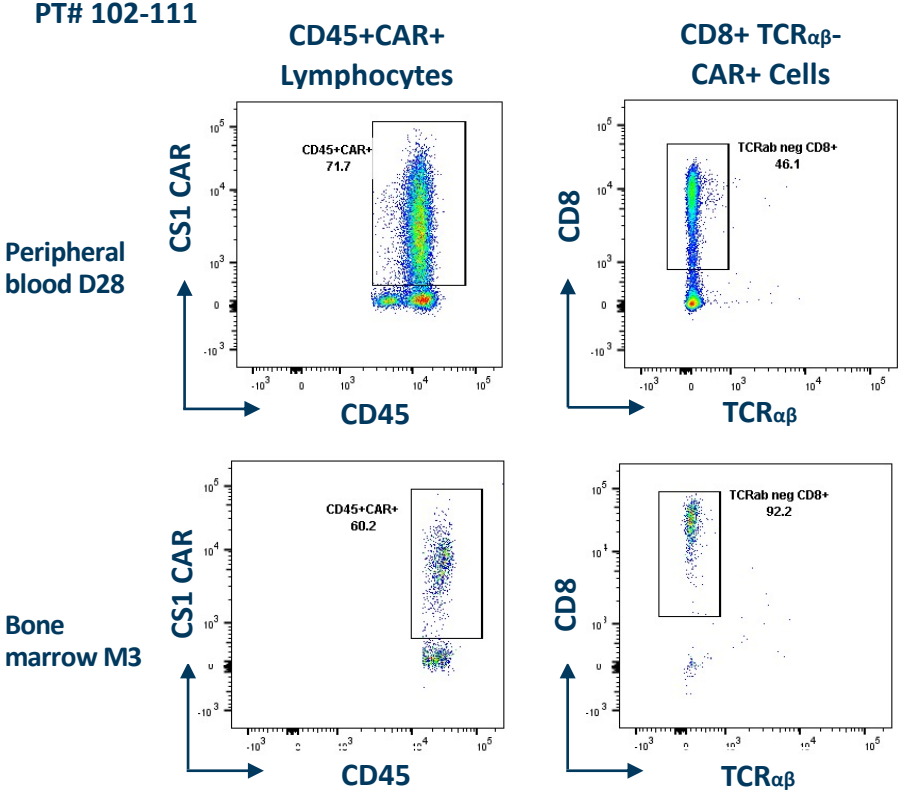




BM, bone marrow; CRS, cytokine release syndrome; D, day; DL, dose level; DLT, dose-limiting toxicity; FACS, fluorescence-activated cell sorting; HHV6, human herpesvirus 6; **HLH, hemophagocytic lymphohistiocytosis; IFE, immunofixation electrophoresis; IgG, immunoglobulin G; IFNγ, interferon gamma; LC, light chain; M, month; MM, multiple myeloma; MRD, measurable residual disease.**

UCARTCS1A in Peripheral Blood and Bone Marrow

PT# 102-111



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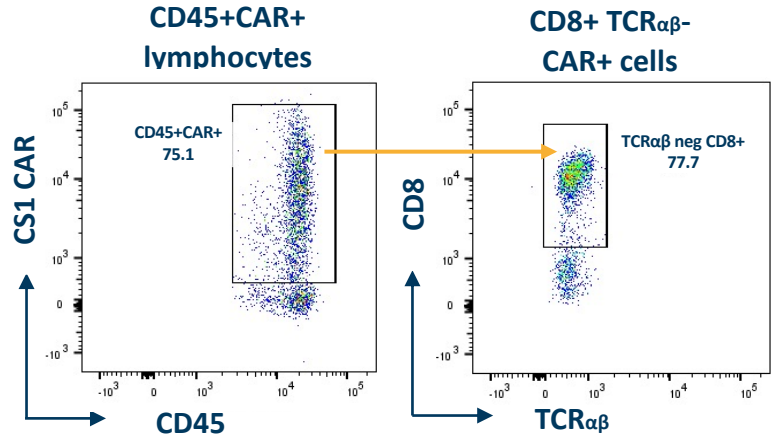
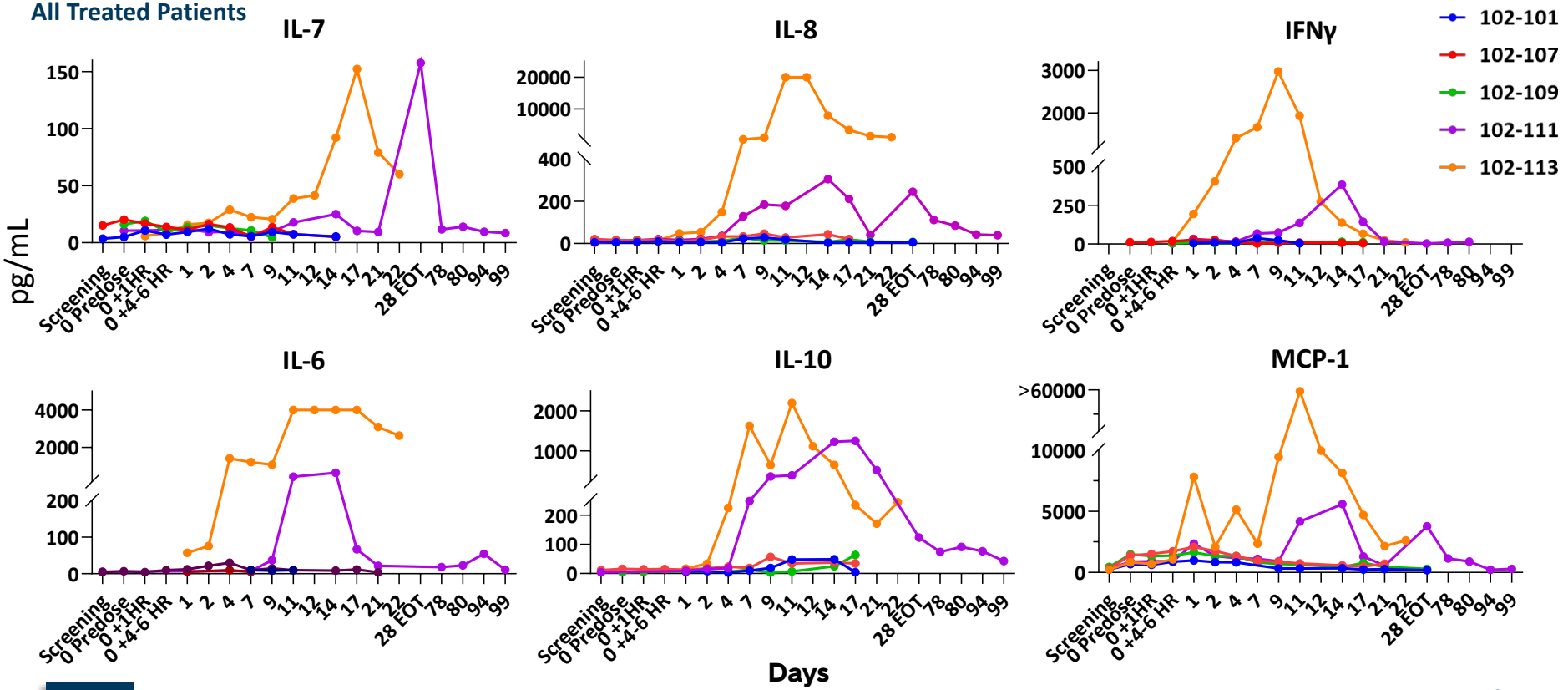


*Although UCARTCS1A cells were detected in PB on D7, numbers were not quantified as WBC counts were very low; hence, the difference between the flow data and vector copy number graphs. D, day; TCR, T-cell receptor.

Select Serum Cytokine Changes Over Time Correlate with UCARTCS1A Expansion

All Treated Patients



EOT, end of treatment; HR, hour; IL, interleukin; IFNγ, interferon gamma; MCP-1, monocyte chemoattractant protein 1.