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#AACR25

First-In-Human, Multicenter Study of SENTI-202, a CD33/FLT3 Selective Off-the-Shelf Logic Gated CAR NK Cell Therapy in Hematologic Malignancies including AML: Clinical Data

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SENTI BIO #CT014

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Disclosure Information

Stephen Strickland, MD

I have the following relevant financial relationships to disclose:

Employee of: HCA Healthcare

In addition, payments were made to Sarah Cannon Research Institute, SCRI for my work, no personal compensation was received from any of these companies.

Consultant for: AbbVie, Caribou, Genentech, Kura Oncology, Novartis, SentiBio, Sobi, Sumitomo, Syros, Terns within the past 24 months

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Stockholder in: None

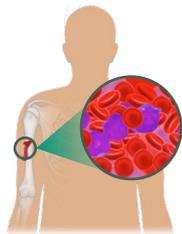
Honoraria from: None

Acute Myeloid Leukemia (AML) Is an Aggressive Leukemia with Poor Prognosis

AML Estimated Disease Burden

- **20,800 newly diagnosed AML patients in US every year¹**
 - ~60% patients experience relapse or death within 12 months²

Relapsed/Refractory AML Patient Outcomes



Median survival of 5.3 months³

5-year survival rate is 12.6%³

- **Current standard of care responses^{4,5}**
 - **CR rate ~15-25%**
 - **CR/CRh rate ~20-33%**

Effective Anti-AML Therapies Need To:

1 Target heterogenous clones / leukemia stem cells (LSCs)⁶

To achieve deep / MRD negative CR

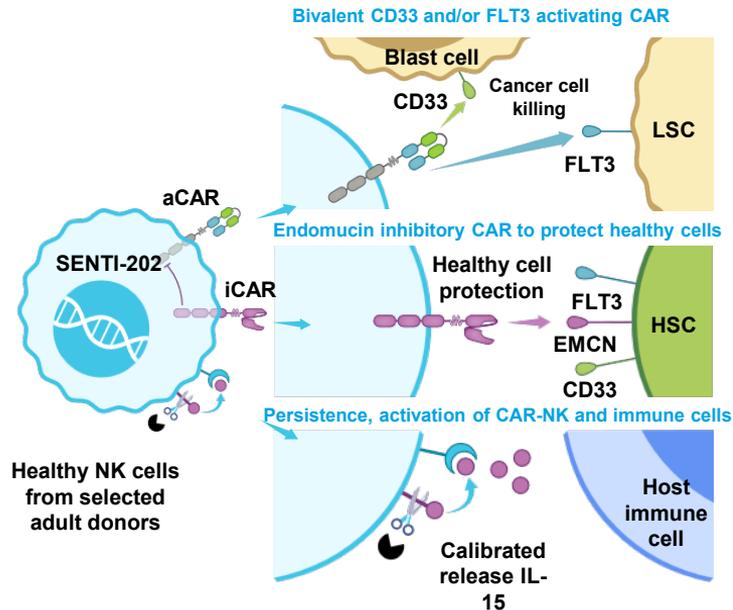
Leading to durable remissions / longer survival^{4,6}

2 Selectively kill AML blasts & LSCs, and spare HSCs

To support normal blood cell count recovery

Leading to improved prognosis / longer survival⁷

SENTI-202 is a First-in-Class Off-the-Shelf Logic Gated Selective CD33 OR FLT3 NOT EMCN CAR NK Cell Therapy for Blood Cancers



SENTI-202 Gene Circuit Design

- **OR Logic Gate “Kills”** leukemia blasts and LSCs via CD33 OR FLT3 activating CAR (aCAR)
 - CD33 and/or FLT3 expressed in ~95% of AML patients with CD33 being predominantly expressed on bulk blasts and FLT3 on LSCs
- **NOT Logic Gate “Protects”** healthy HSC/HSPCs from ‘off-tumor, on-target’ effects
 - Protection of HSC/HSPCs via NOT Endomucin (EMCN) inhibitory CAR (iCAR) even when they express CD33 and/or FLT3
 - EMCN found predominantly on healthy HSC/HSPC surface, rarely on AML blasts
- **Calibrated release IL-15 “Enhances”** SENTI-202 and host immune cell activity and persistence

SENTI-202 is designed to selectively kill both AML blasts and LSCs while protecting healthy HSC/HSPCs using its novel CD33 OR FLT3 NOT EMCN logic gated gene circuit

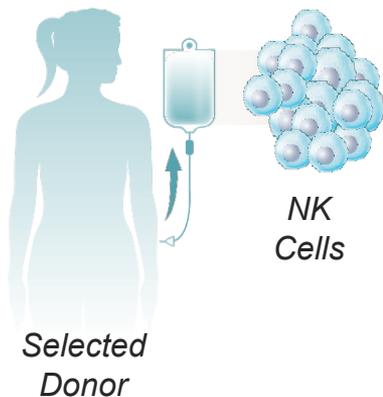
SENTI-202 Scalable Manufacturing Process

Off-the-Shelf Allogeneic CAR-NK

Scalable Process

1

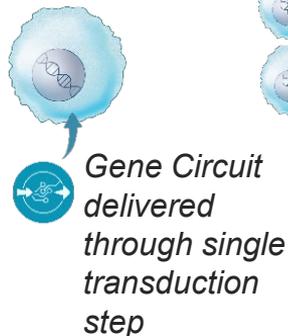
Isolate from selected donors



NK cells isolated from peripheral blood of selected donors

2

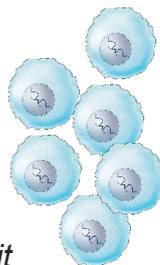
Engineer Gene Circuit Engineered CAR-NK cells



NK cells efficiently engineered with Gene Circuits

3

Expand



4

Cryopreserve and Store



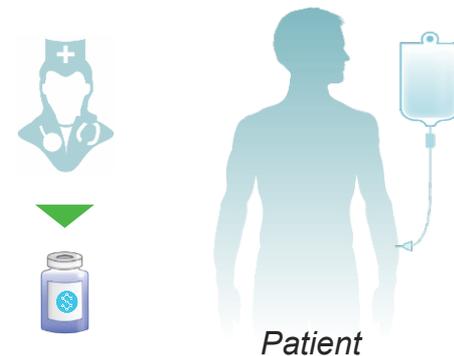
Final product harvested and cryopreserved

High post-thaw potency

SENTI-202

1

Thaw and Infuse Off-the-Shelf



Patient

Easy to thaw vials

Outpatient use potential

SENTI-202 Phase 1 Trial (SENTI-202-101) Design

A multicenter, multinational, open-label study (NCT06325748)

Key Eligibility Criteria

- ≥18 and <75 years
- ECOG 0-1
- R/R CD33 and/or FLT3 expressing heme malignancies
 - CD33+ by local assessment
- R/R AML (1-3 prior Rx)
- R/R MDS with increased blasts¹(1-2 prior Rx)
- Must have received targeted agents if applicable mutations

Study Design

“3+3”

Dose finding followed by AML, MDS and other expansion cohorts at RP2D

Study Dosing

2 Dose Levels and
2 Schedules

Opening dose cohort was anticipated to be biologically active

Study Objectives

- Primary objective- safety and determination of MTD/RP2D
- DLT definition includes:
 - ≥ G3 non-hematologic toxicities
 - Prolonged G4 neutropenia/ thrombocytopenia not due to underlying disease
- Other key objectives
 - Efficacy based on ELN 2022 criteria (AML)
 - MRD assessed per local standard of care
 - Pharmacokinetics (PK)
 - Pharmacodynamics (PDn) using CyTOF on serial BM samples

SENTI-202 Phase 1 Trial (SENTI-202-101) Dosing Schema- Preliminary RP2D Identified

SENTI-202 Dose Levels

Dose Level	CAR+ NK Cells/Dose
1	1 x 10 ⁹
2	1.5 x 10 ⁹

Multi-Dose Cycle

Lymphodepletion

Fludarabine/ Cytarabine (Ara-C)

SCHEDULE I

Day -7 to -3

Dose

0

SENTI-202

Dose Schedule

7

14

Efficacy Assessment

Multiple cycles allowed to achieve optimal response

28

SCHEDULE II

Day -7 to -3

0

3

7

10

14

28

Opening Dose Cohort was Anticipated to be Biologically Active
Schedule I Dose Level 1, N = 3
No DLTs

Schedule I Dose Level 2, N = 3
No DLTs
Identified as preliminary RP2D
based on totality of clinical data

Schedule II Dose Level 1, N = 3
No DLTs

Study Enrolled a High-Risk R/R AML Population with Multiple Baseline Adverse Characteristics

Baseline Characteristics	Dose Level 1		Dose Level 2	All Patients N = 9
	Schedule I N = 3	Schedule II N = 3	Schedule I N = 3	
Age, yr, median (range)	64 (26,72)	41 (36, 67)	63 (51, 69)	63 (26, 72)
Male, n (%)	1 (33)	2 (67)	3 (100)	6 (67)
AML, n (%)	3 (100)	3 (100)	3 (100)	9 (100)
Years from AML diagnosis, median (range)	2.84 (0.5, 6.2)	0.49 (0.3, 0.8)	0.94 (0.5, 1.0)	0.75 (0.3, 6.2)
Adverse risk by ELN 2022, n (%)	2 (67)	2 (67)	3 (100)	7 (78)
Baseline bone marrow blasts, %, median (range)	20 (15, 69)	30 (18, 31)	45 (10, 93)	30 (10, 93)
Baseline platelet count < 50 x 10 ⁹ /L , n (%)	0 (0)	2 (67)	2 (67)	4 (44)

**preliminary
RP2D**

- Median of <1 yr from diagnosis to trial entry across all patients and in preliminary RP2D cohort
- Majority of patients (all in preliminary RP2D cohort) with adverse risk genetics by ELN 2022 criteria

Study Subjects had Received Multiple Prior Therapies

Prior Therapy	Dose Level 1		Dose Level 2	All Patients N = 9
	Schedule I N = 3	Schedule II N = 3	Schedule I N = 3	
Number of prior lines, median (range)	1 (1,1)	2 (1, 2)	2 (2, 3)	2 (1,3)
Chemotherapy, n(%)	3 (100)	3 (100)	3 (100)	9 (100)
Fludarabine and/or Ara-C, n (%)	3 (100)	3 (100)	3 (100)	9 (100)
Anthracycline, n (%)	3 (100)	2 (67)	3 (100)	8 (89)
Venetoclax, n (%)	1 (33)	3 (100)	3 (100)	7 (78)
Hypo-methylating Agents, n (%)	2 (67)	3 (100)	3 (100)	8 (89)
FLT3/IDH2 targeted therapy, n (%)	1 (33)	1 (33)	1 (33)	3 (33)
Bone marrow transplant, n (%)	1 (33)	0 (0)	1 (33)	2 (22)
Primary refractory*, n (%)	1 (33)	2 (67)	2 (67)	5 (56)

**preliminary
RP2D**

- Median of 2 lines before study entry overall and in preliminary RP2D cohort
- All patients with previous chemotherapy exposure including fludarabine and/or cytarabine (4 received both) and majority with previous venetoclax exposure

Patients Received a Median of 2 Cycles of SENTI-202 Therapy

Exposure	Dose Level 1		Dose Level 2	All Patients N = 9
	Schedule I N = 3	Schedule II N = 3	Schedule I N = 3	
Number of SENTI-202 treatment cycles, median (range)	2 (1, 2)	2 (1, 2)	2 (1, 2)	2 (1, 2)
Subjects continuing treatment as of data-cut, n (%)	0	2 (67)	0	2 (22)
Subjects discontinuing treatment, n (%)	3 (100)	1 (33)	3 (100)	7 (78)
Adverse Event	0	0	0	0
Achieved Optimal Response (cCR)	2 (67)	0	2 (67)	4 (44)
Disease Progression/ Stable Disease	1 (33)	1 (33)	1 (33)	3 (33)

**preliminary
RP2D**

- Median of 2 cycles across dose cohorts
- Majority of patients discontinued SENTI-202 after achieving cCR with none discontinuing due to adverse event

Preliminary Safety Data Indicate that SENTI-202 is Well Tolerated

Any Grade 3-4* AEs Regardless of Relationship	Dose Level 1		Dose Level 2	All Patients N = 9
	Schedule I N = 3	Schedule II N = 3	Schedule I N = 3	
Any Grade ≥ 3 AEs	3 (100)	3 (100)	3 (100) ^	9 (100)
Febrile Neutropenia	1 (33)	1 (33)	2 (67) ^	4 (44)
Platelet Count Decreased	2 (67)	0	2 (67) ^	4 (44)
Anemia	1 (33)	1 (33)	0	2 (22)
Abdominal Pain	1 (33)	1 (33)	0	2 (22)
*No Grade 5 AEs, ^ 1 patient with G3 febrile neutropenia and G4 platelet count decreased assessed as possibly related to SENTI-202				

SENTI-202 was well tolerated

- In general, G3-4 AEs on study were hematologic, unrelated to SENTI-202 and consistent with R/R AML patients receiving LD
- No single type of SAE reported in > 1 patient
- No significant difference in AE profile across dose cohorts

**preliminary
RP2D**

SENTI-202 Related AEs Were Low Grade and Manageable with Standard of Care

Patient # (Dose Cohort)	Event Term (Grade)	Onset from SENTI-202 Dose (days)	Duration (days)
001-0004, (1)	Chills, G1	0	1
	Pyrexia, G1	0	1
008-005, (1)	Pyrexia, G1	0	5
	Hypotension, G1	3	1
102-007, (prelim. RP2D)	Pyrexia, G1	1	1
	Hypoxia, G2	1	1

- 3 pts experienced G1 pyrexia with either hypotension or hypoxia in 1 each, typically within 1 day of SENTI-202 dosing that were reported as Cytokine Release Syndrome (CRS)
 - Events resolved rapidly with standard of care; None were serious
- Likely represent delayed infusion reactions described with NK cell therapies
- No other AEs or DLTs reported on study

Responses Observed Across All Dose Cohorts

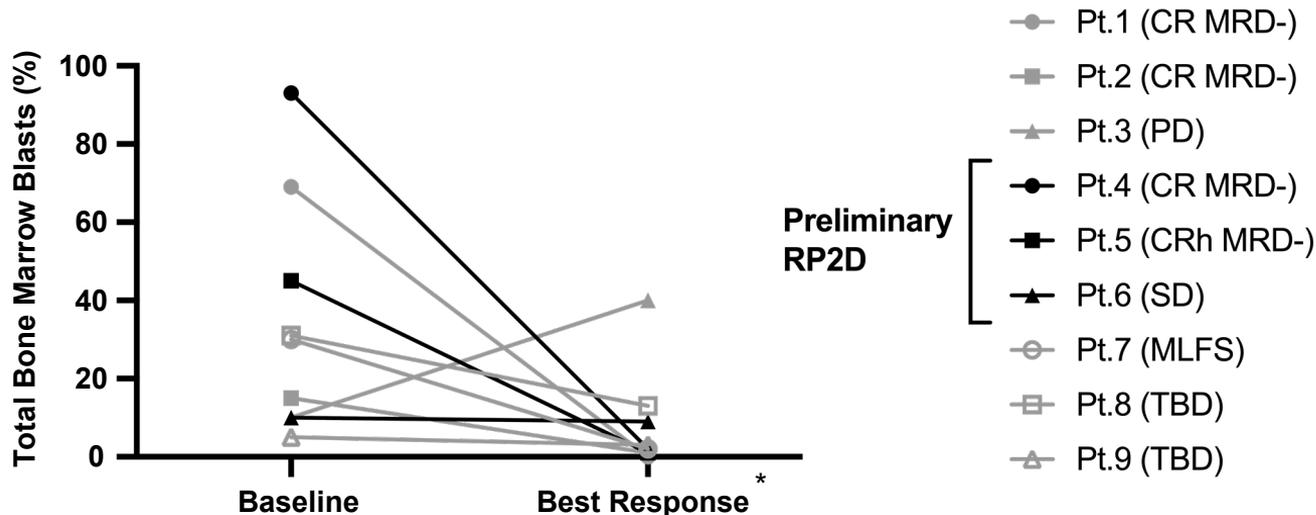
Best Overall Response on Study, n (%)	Dose Level 1		Dose Level 2	All Patients N = 7*
	Schedule I N = 3	Schedule II N = 1*	Schedule I N = 3	
Overall Response Rate (ORR)	2 (67)	1 (100)	2 (67)	5 (71)
composite CR Rate (cCR) [^]	2 (67)	0	2 (67)	4 (57)
Negative MRD Status in cCR Patients	2/2 (100)	N/A	2/2 (100)	4/4 (100)
Response Category, n(%)				
CR	2 (100)	0	1 (33)	3 (43)
CRh	0	0	1 (33)	1 (14)
MLFS	0	1 (100)	0	1 (14)
SD	0	0	1 (33)	1 (14)
PD	1 (33)	0	0	1 (14)
*Two patients continuing into second Cycle after achieving SD with blast reduction from 31% to 13% and 5% to 3% respectively are excluded from best overall response assessment; [^] CR + CRh + CRi				

**preliminary
RP2D**

AML Response

- 5 of 7 patients overall achieved ORR
- 2/3 and 4/7 patients achieved cCR respectively in preliminary RP2D cohort and across all patients
- 4/4 cCR patients were MRD-
- All cCR responses are ongoing as of data-cut with median duration of response not reached

Rapid Bone-Marrow Blast Reduction Observed Across All Dose Cohorts

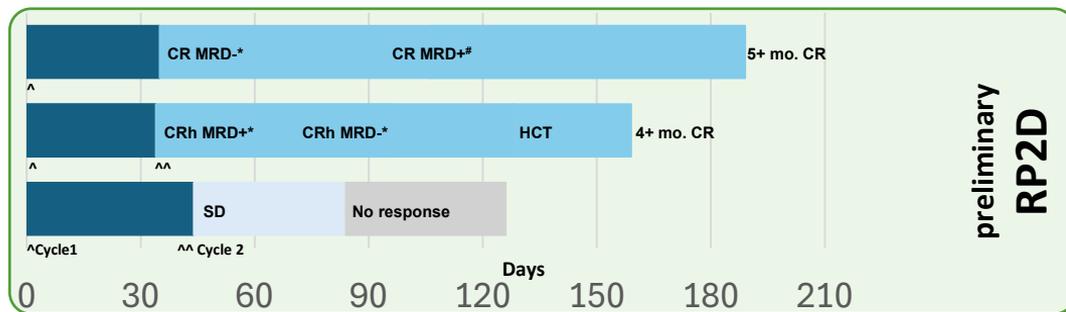


* End of cycle 1 for patients 8 and 9

Blast reduction noted in majority of patients across all dose cohorts

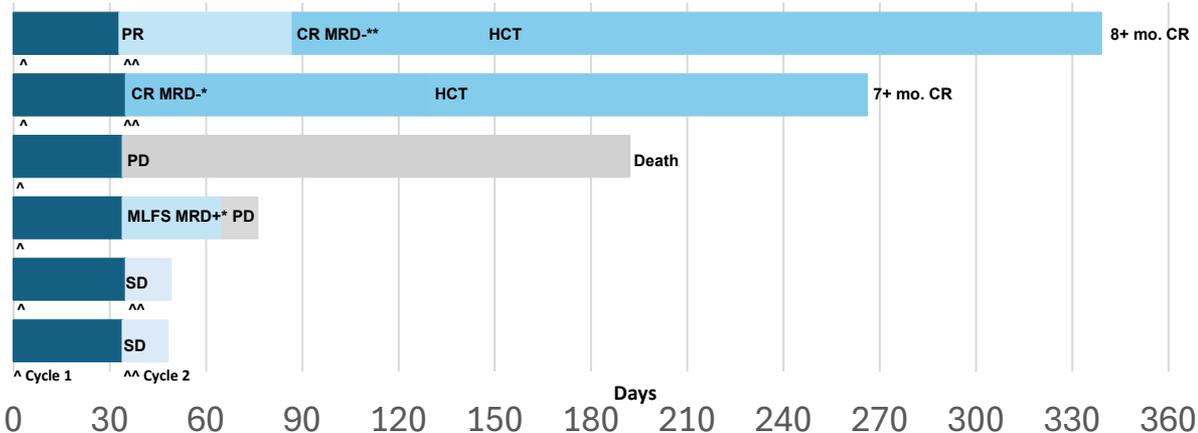
Early Deep Responses Noted Across Dose Levels with Durability 8+ months

Pt	I ⁰ Ref	Adv. Risk	FA Exp	FA Ref
Pt4	Yes	Yes	Yes-both	Yes-both
Pt5	No	Yes	Yes-both	No
Pt6	Yes	Yes	Yes	Yes



*MRD by multi-parametric flow (sensitivity $\leq 1/10^{-4}$),
**MRD by NGS (sensitivity $\leq 1/10^{-2}$)

Pt	I ⁰ Ref	Adv. Risk	FA Exp	FA Ref
Pt1	No	Yes	Yes	No
Pt2	No	No	Yes	No
Pt3	Yes	Yes	Yes	Yes
Pt7	Yes	No	Yes-both	Yes-both
Pt8	Yes	Yes	Yes	Yes
Pt9	Unk	Yes	Yes-both	Unk

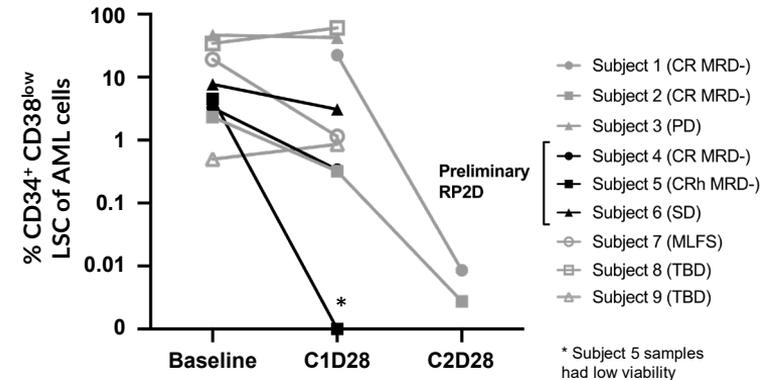


I⁰ Ref: Primary refractory defined as failure to achieve cCR or cCR lasting <3 mo with front-line therapy; Adv. Risk: Adverse Risk genetics by ELN 2022; FA Exp: fludarabine and/or Ara-C Exposed, both indicates exposed to both agents; FA Ref: Fludarabine and/or Ara-C refractory (failure to achieve cCR or cCR lasting < 3 mo), both indicates refractory to both agents; #Patient had detectable IDH2 mutation by NGS while in morphologic remission and started on venetoclax/enasidenib; Data from an open clinical database of an ongoing study as of 7 Apr 2025

CyTOF Bone Marrow Data Reveals SENTI-202 Treatment Results in Decreased LSCs in Responders

LSCs in bone marrow at baseline are largely non-cycling when analyzed by Ki67 and IdU

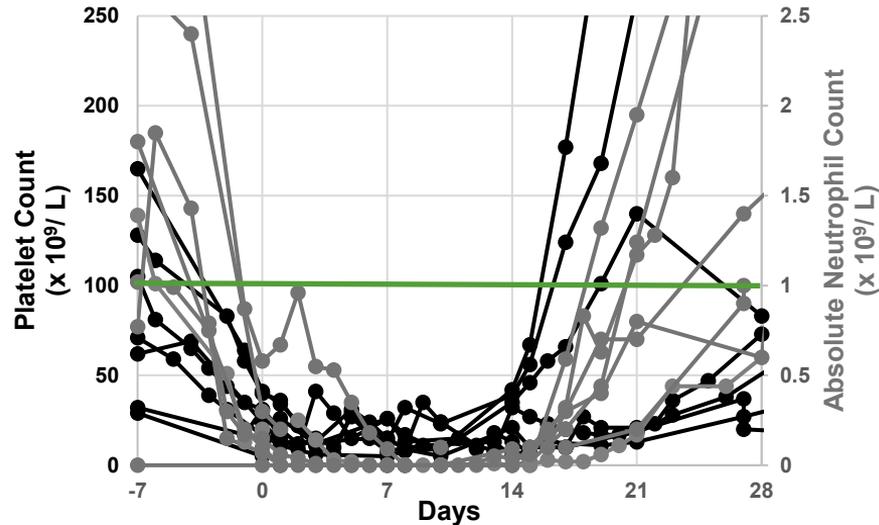
LSC (CD34⁺ CD38^{low}) in Bone Marrow



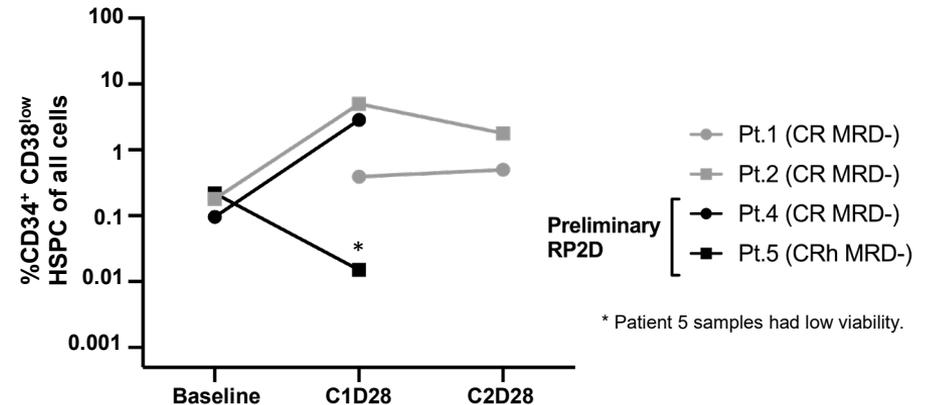
- CyTOF measured 49 different proteins in serial bone marrow derived mononuclear cells samples from baseline and end of each Cycle
- At baseline, majority of leukemia stem cells (LSCs) were in G0 phase and not expected to be susceptible to chemotherapy
- With SENTI-202 treatment, LSCs decreased > 10-fold in all patients who achieved cCR

Rapid Normalization of Peripheral Blood Cell Count along with Protection of BM HSPCs in Patients who Achieved cCR

Peripheral Blood Cell Counts



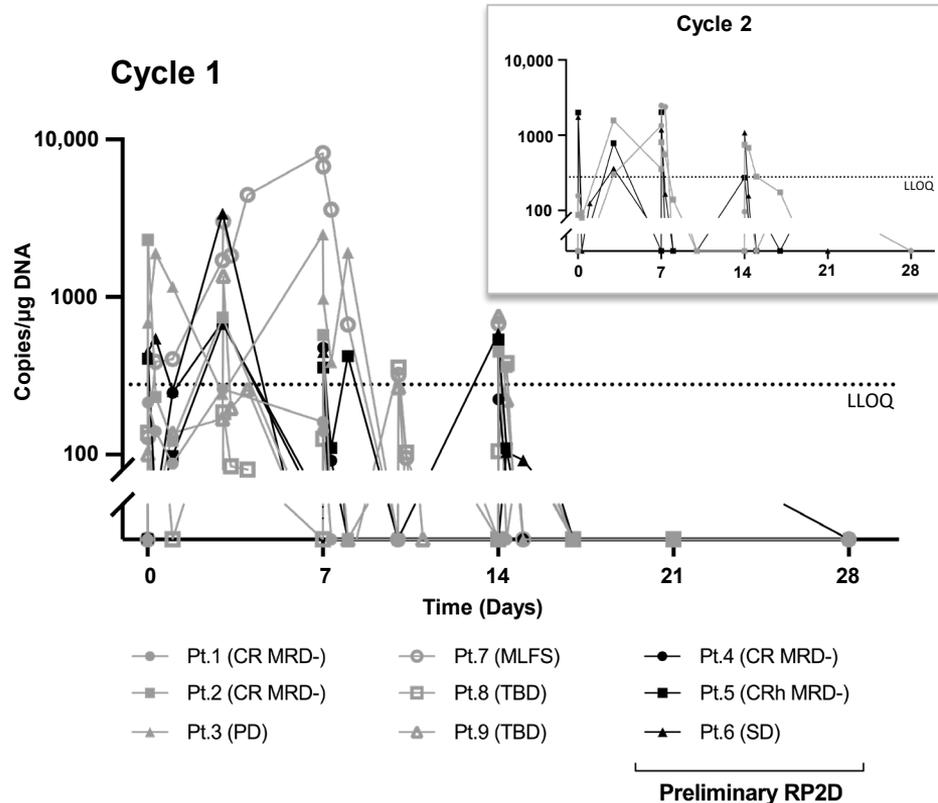
HSPC (CD34⁺ CD38^{low}) in Bone Marrow (BM)



Rapid blood cell count recovery in periphery in patients who achieved cCR

- Median of 21 days for neutrophil count ≥ 0.5 and $1 \times 10^9/L$, and 28/35 days to platelet count ≥ 50 and $100 \times 10^9/L$
- CyTOF analyses revealed HSPCs were maintained or increased in bone marrow of patients who achieved cCR consistent with SENTI-202 Logic Gate mechanism of action

Senti-202 Is Detected in Periphery of All Treated Patients Consistent with Allo-NK Profile



- PK profile consistent with allogeneic NK cell therapy
 - Modest peripheral expansion in first 14 days consistent with NK biology and safety of SENTI-202
 - Clearance >14 days from periphery
- No significant difference in exposure across patients who achieved cCR or not
- No significant difference in exposure across Dose Cohorts
- No significant difference in exposure between Cycle 1 and 2

Dosing and Safety Conclusions- SENTI-202

Well Tolerated in R/R AML Patients

- SENTI-202 is a First-In-Class Off-the-Shelf Logic Gated selective CD33 OR FLT3 NOT EMCN CAR NK cell therapy
 - Designed to selectively kill both AML blasts and LSCs while protecting healthy HSPCs with a novel OR/NOT logic gated gene circuit
- SENTI-202-101 trial enrolled heavily treated R/R AML patients with poor prognosis
- SENTI-202 is well tolerated
 - Most frequent Grade 3+ AEs were hematologic and consistent with R/R AML patients receiving LD
 - MTD not reached and preliminary RP2D identified as 1.5B cells/ dose x 3 weekly doses/ 28 days

Efficacy Conclusions- Promising Preliminary Efficacy Noted with SENTI-202 in R/R AML Patients

- Efficacy
 - 5/7 ORR and 4/7 cCR across all patients including 2/3 cCR in preliminary RP2D cohort
 - 4/4 cCR MRD- as assessed per local standard of care
 - All cCR patients maintaining morphologic remission with longest follow up of 8+ mo
- PK
 - SENTI-202 detected in all treated patients, consistent with other allogeneic CAR NK cell therapy PK profiles and its well-tolerated safety profile
- CyTOF analyses of BM
 - SENTI-202 treatment decreased LSC frequencies and maintained (or increased) healthy HSPC frequencies in patients achieving cCR consistent with SENTI-202 Logic Gated gene circuit design

Also at AACR...

- First-In-Human, Multicenter Study of SENTI-202, a CD33/FLT3 Selective Off-the-Shelf Logic Gated CAR NK Cell Therapy in Hematologic Malignancies including AML: Correlative Data (#10977)
 - Session:** PO.CT01.02 - First-in-Human Phase I Clinical Trials 2
 - Location:** Section 48, #9
 - Time:** 4/29/2025 9:00:00 - 12:00:00 PM
- SENTI-202 CD33 OR FLT3 NOT EMCN Logic-Gated Gene Circuit Components Selectively Target AML while Protecting Human HSC/HPCs from Off-Tumor Toxicity in a Humanized Mouse Model (#6833)
 - Session:** PO.IM01.17 - Novel In Vivo, In Vitro, and In Silico Models
 - Location:** Section 38, #18;
 - Time:** 4/30/2025 9:00:00 - 12:00:00 PM

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 - The University of Texas M.D. Anderson Cancer Center, Houston, TX
 - UCLA Department of Medicine, Los Angeles, CA
 - **Australia:**
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