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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**

SENTI BIO CONFIDENTIAL, #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

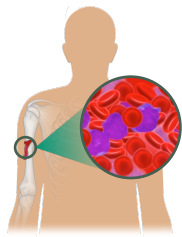
**Honoraria from:** None

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

## AML Estimated Disease Burden

- 20,800 newly diagnosed AML patients in US every year<sup>1</sup>
  - ~60% patients experience relapse or death within 12 months<sup>2</sup>

## Relapsed/Refractory AML Patient Outcomes



Median survival of 5.3 months<sup>3</sup>

5-year survival rate is 12.6%<sup>3</sup>

- Current standard of care responses<sup>4,5</sup>
  - CR rate ~15-25%
  - CR/CRh rate ~20-33%

## Effective Anti-AML Therapies Need To:

1

Target heterogenous clones / leukemia stem cells (LSCs)<sup>6</sup>

To achieve deep / MRD negative CR

Leading to durable remissions / longer survival<sup>4,6</sup>

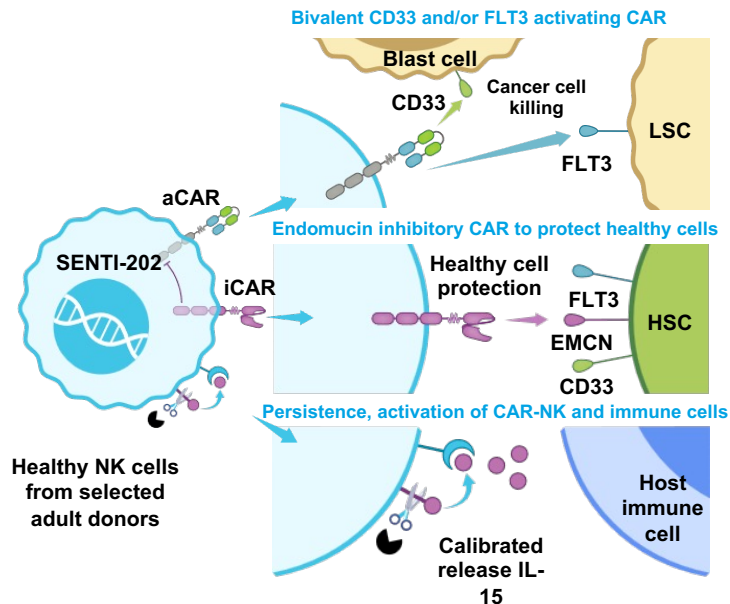
2

Selectively kill AML blasts & LSCs, and spare HSCs

To support normal blood cell count recovery

Leading to improved prognosis / longer survival<sup>7</sup>

# 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

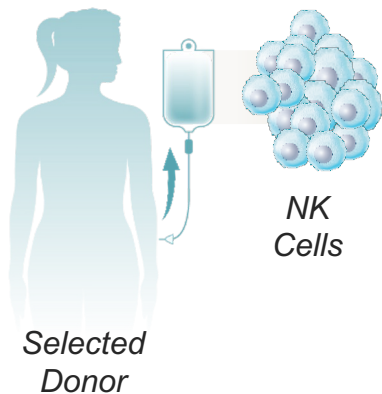
# SENTI-202 Scalable Manufacturing Process

## Off-the-Shelf Allogeneic CAR-NK

### Scalable Process

1

*Isolate from  
selected donors*

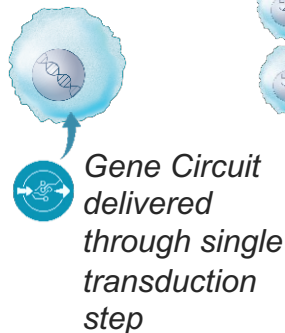


NK cells isolated from  
peripheral blood of  
selected donors

2

*Engineer*

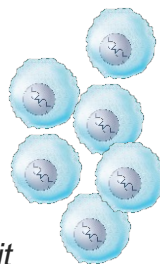
*Gene Circuit  
Engineered  
CAR-NK cells*



NK cells efficiently  
engineered with  
Gene Circuits

3

*Expand*



4

*Cryopreserve  
and Store*



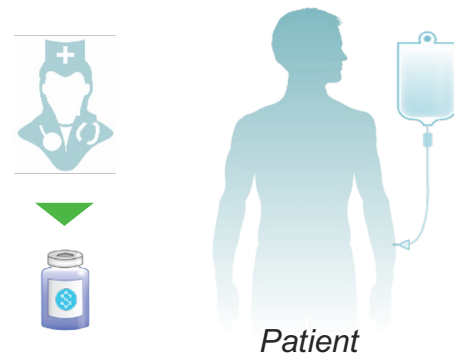
*Final product  
harvested and  
cryopreserved*

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 blasts<sup>1</sup>(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	$1 \times 10^9$
2	$1.5 \times 10^9$

## Multi-Dose Cycle

**Lymphodepletion**  
Fludarabine/ Cytarabine (Ara-C)

SCHEDULE I

Day -7 to -3

Dose

0

SENTI-202 Dose Schedule

7

14

28

SCHEDULE II

Day -7 to -3

0

3

7

10

14

28

## Efficacy Assessment

Multiple cycles allowed to achieve optimal response

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)	<b>63 (51, 69)</b>	63 (26, 72)
Male, n (%)	1 (33)	2 (67)	<b>3 (100)</b>	6 (67)
AML, n (%)	3 (100)	3 (100)	<b>3 (100)</b>	9 (100)
Years from AML diagnosis, median (range)	2.84 (0.5, 6.2)	0.49 (0.3, 0.8)	<b>0.94 (0.5, 1.0)</b>	0.75 (0.3, 6.2)
Adverse risk by ELN 2022, n (%)	2 (67)	2 (67)	<b>3 (100)</b>	7 (78)
Baseline bone marrow blasts, %, median (range)	20 (15, 69)	30 (18, 31)	<b>45 (10, 93)</b>	30 (10, 93)
Baseline platelet count < 50 x 10 <sup>9</sup> /L , n (%)	0 (0)	2 (67)	<b>2 (67)</b>	4 (44)

- 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

**preliminary  
RP2D**

# 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)	<b>2 (2, 3)</b>	2 (1,3)
Chemotherapy, n(%)	3 (100)	3 (100)	<b>3 (100)</b>	9 (100)
Fludarabine and/or Ara-C, n (%)	3 (100)	3 (100)	<b>3 (100)</b>	9 (100)
Anthracycline, n (%)	3 (100)	2 (67)	<b>3 (100)</b>	8 (89)
Venetoclax, n (%)	1 (33)	3 (100)	<b>3 (100)</b>	7 (78)
Hypo-methylating Agents, n (%)	2 (67)	3 (100)	<b>3 (100)</b>	8 (89)
FLT3/IDH2 targeted therapy, n (%)	1 (33)	1 (33)	<b>1 (33)</b>	3 (33)
Bone marrow transplant, n (%)	1 (33)	0 (0)	<b>1 (33)</b>	2 (22)
Primary refractory*, n (%)	1 (33)	2 (67)	<b>2 (67)</b>	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)

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

preliminary  
RP2D

# 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

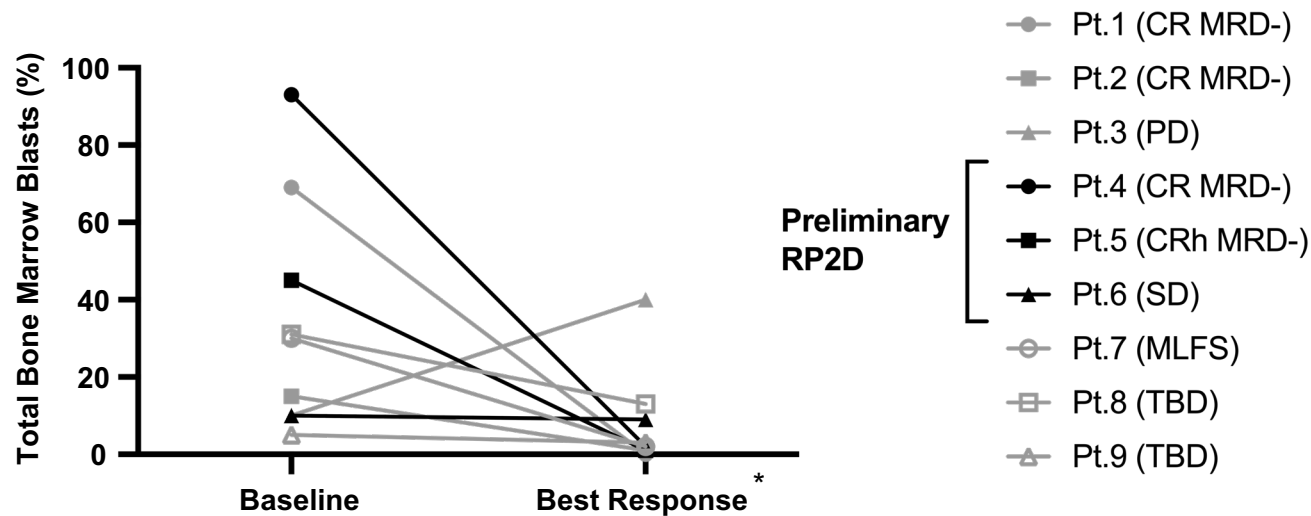
Best Overall Response on Study, n (%)	Dose Level 1		Dose Level 2	All Patients N = 7*
	Schedule I N = 3	Schedule II N = 1*	Schedule I N = 3	
Overall Response Rate (ORR)	2 (67)	1 (100)	<b>2 (67)</b>	5 (71)
composite CR Rate (cCR)^	2 (67)	0	<b>2 (67)</b>	4 (57)
Negative MRD Status in cCR Patients	2/2 (100)	N/A	<b>2/2 (100)</b>	4/4 (100)
Response Category, n(%)				
CR	2 (100)	0	<b>1 (33)</b>	3 (43)
CRh	0	0	<b>1 (33)</b>	1 (14)
MLFS	0	1 (100)	<b>0</b>	1 (14)
SD	0	0	<b>1 (33)</b>	1 (14)
PD	1 (33)	0	<b>0</b>	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



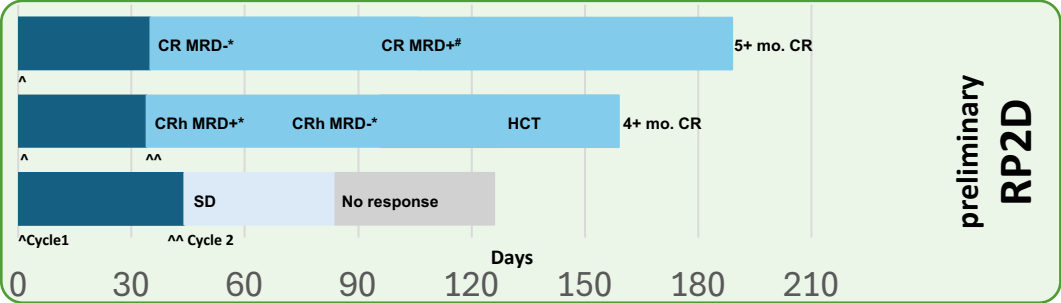
\* End of cycle 1 for patients 8 and 9

Blast reduction noted in majority of patients across all dose cohorts

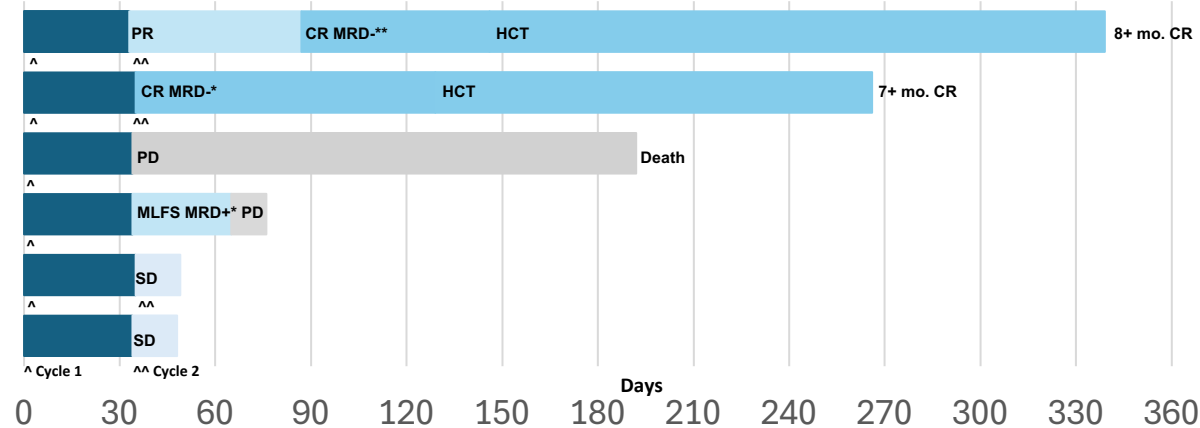
# Early Deep Responses Noted Across Dose Levels with Durability 8+ months

Pt	I <sup>0</sup> 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

Pt	I <sup>0</sup> 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



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

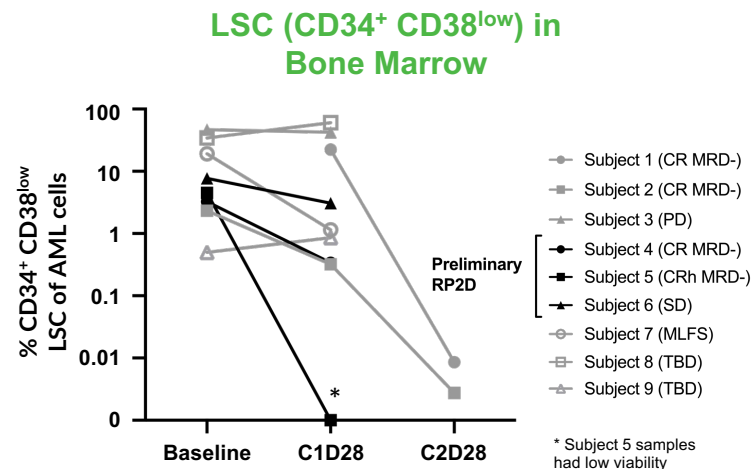
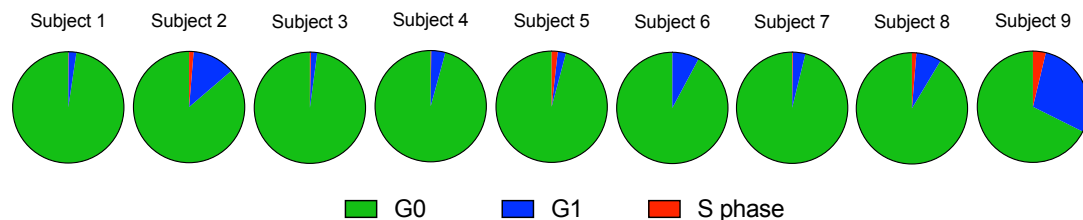


I<sup>0</sup> Ref: Primary refractory defined as failure to achieve cCR or cCR lasting <3 mo with front-line therapy; Adv. Risk: Adverse Risk genetics by ELN 2022; FA Exp: fludarabine and/or Ara-C Exposed, both indicates exposed to both agents; FA Ref: Fludarabine and/or Ara-C refractory (failure to 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

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

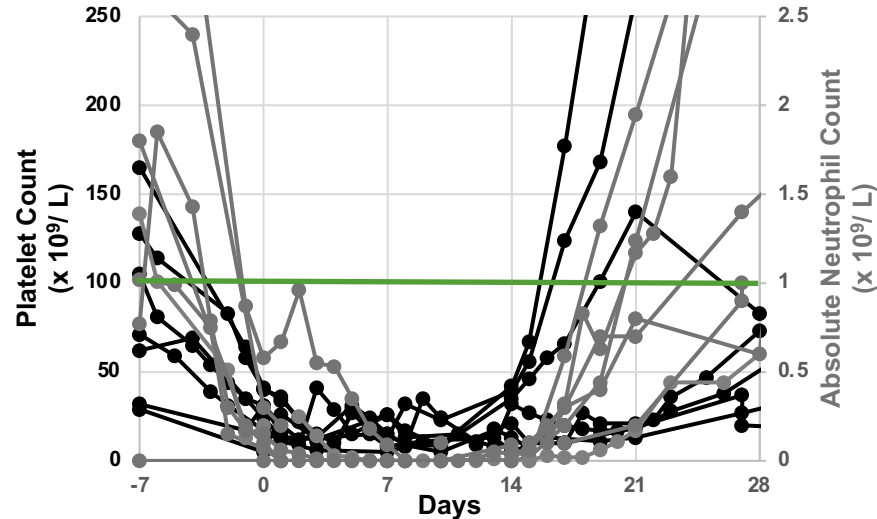
LSCs in bone marrow at baseline are largely non-cycling when analyzed by Ki67 and IdU



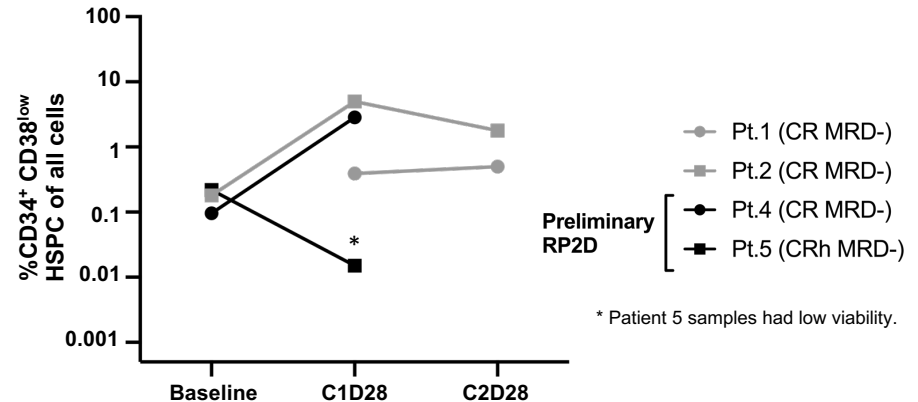
- CyTOF measured 49 different proteins in serial bone marrow derived mononuclear cells samples from baseline and end of each Cycle
- At baseline, majority of leukemia stem cells (LSCs) were in G0 phase and not expected to be susceptible to chemotherapy
- With SENTI-202 treatment, LSCs decreased > 10-fold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



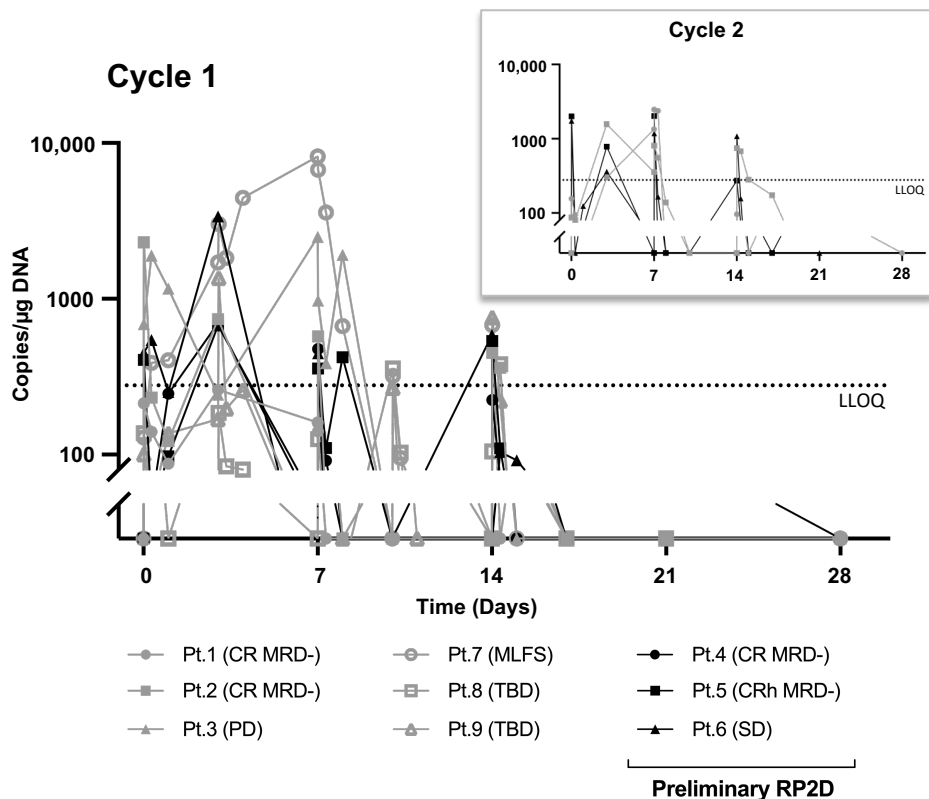
## HSPC ( $CD34^+ CD38^{low}$ ) in Bone Marrow (BM)



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

- Median of 21 days for neutrophil count  $\geq 0.5$  and  $1 \times 10^9/L$ , and 28/35 days to platelet count  $\geq 50$  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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- **We deeply appreciate our Patients and their caregivers**
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    - SCRI at TriStar Centennial, Nashville, TN
    - Colorado Blood Cancer Institute, Denver CO
    - Methodist Physician Practices, PLLC, San Antonio
    - The University of Texas M.D. Anderson Cancer Center, Houston, TX
    - UCLA Department of Medicine, Los Angeles, CA
  - **Australia:**
    - Peter MacCallum Cancer Center, Melbourne, Australia
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