UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d) of the
Securities Exchange Act of 1934
Date of Report (Date of earliest event reported): September 12, 2023

SANA BIOTECHNOLOGY, INC.
(Exact name of registrant as specified in its charter)

Delaware	001-39941	83-1381173
(State or other jurisdiction of incorporation)	(Commission File Number)	(IRS Employer Identification Number)

188 East Blaine Street, Suite 400
Seattle, Washington 98102
(Address of principal executive offices, including Zip Code)

Registrant's telephone number, including area code: (206) 701-7914

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:
☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.0001 par value per share	**SANA**	**The Nasdaq Stock Market LLC**

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 7.01 Regulation FD Disclosure.

At the Morgan Stanley 21st Annual Global Healthcare Conference on September 12, 2023, a company spokesperson of Sana Biotechnology, Inc. (the "Company") announced that the Company expects to file an investigational new drug application for its SC291 product candidate in autoimmune diseases in the fourth quarter of 2023 and expects clinical data from the evaluation of SC291 in autoimmune diseases in 2024.

On September 13, 2023, the Company released an updated corporate presentation (the "Corporate Presentation"), a copy of which is furnished as Exhibit 99.1 to this Current Report on Form 8-K (this "Current Report") and is incorporated by reference herein.

In accordance with General Instruction B.2 of Form 8-K, the information furnished with this Current Report, including Exhibit 99.1, shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended ("Exchange Act"), or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference into any other filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such a filing.

Forward-Looking Statements

This Current Report contains forward-looking statements, including regarding the timing or likelihood of the Company's regulatory filings and the timing and availability of clinical data. These forward-looking statements reflect the Company's views regarding current expectations and projections about future events and conditions and are based on currently available information. These forward-looking statements are not guarantees of future performance and are subject to risks, uncertainties and assumptions that are difficult to predict and the Risk Factors identified in the Company's filings with the SEC, including the Company's Annual Report on 10-K for the year ended December 31, 2022 and its Quarterly Report on Form 10-Q for the period ended June 30, 2023, and any subsequent Quarterly Reports on Form 10-Q; therefore, the Company's actual results could differ materially from those expressed, implied or forecast in any such forward-looking statements. Expressions of future goals and expectations and similar expressions, including "may," "will," "should," "could," "aims," "seeks," "expects," "plans," "anticipates," "intends," "believes," "estimates," "predicts," "potential," "targets," and "continue," reflecting something other than historical fact are intended to identify forward-looking statements. Unless required by law, the Company undertakes no obligation to update publicly any forward-looking statements, whether as a result of new information, future events, or otherwise. However, readers should carefully review the reports and documents the Company files or furnishes from time to time with the SEC, particularly its Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

See the Exhibit Index below, which is incorporated by reference herein.

EXHIBIT INDEX

Exhibit Number	Description
99.1	Corporate Presentation dated September 13, 2023
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Sana Biotechnology, Inc.

Date: September 13, 2023

By: /s/ Nathan Hardy

Nathan Hardy

Executive Vice President and Chief Financial Officer

Exhibit 99.1

Corporate Presentation

September 2023

Sana Biotechnology®

Cautionary Note Regarding Forward-Looking Statements

This presentation contains forward-looking statements about Sana Biotechnology, Inc. (the "Company," "we," "us," or "our") within the meaning of the federal securities laws. All statements other than statements of historical facts contained in this presentation, including, among others, statements regarding the Company's strategy, expectations, cash runway and future financial condition, future operations, and prospects, are forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "aim," "anticipate," "assume," "believe," "contemplate," "continue," "could," "design," "due," "estimate," "expect," "goal," "intend," "may," "objective," "plan," "positioned," "potential," "predict," "seek," "should," "target," "will," "would" and other similar expressions that are predictions of or indicate future events and future trends, or the negative of these terms or other comparable terminology. The Company has based these forward-looking statements largely on its current expectations, estimates, forecasts and projections about future events and financial trends that it believes may affect its financial condition, results of operations, business strategy and financial needs. In light of the significant uncertainties in these forward-looking statements, you should not rely upon forward-looking statements as predictions of future events. These statements are subject to risks and uncertainties that could cause the actual results to vary materially, including, among others, the risks inherent in drug development such as those associated with the initiation, cost, timing, progress and results of the Company's current and future research and development programs, preclinical studies, and clinical trials.

For a detailed discussion of the risk factors that could affect the Company's actual results, please refer to the risk factors identified in the Company's SEC reports, including its Quarterly Report on Form 10-Q dated August 3, 2023. Except as required by law, the Company undertakes no obligation to update publicly any forward-looking statements for any reason.

Sana Biotechnology
Engineered Cells as Medicines

Sana's ambition is to repair or replace any cell in the body. Technologies address fundamental barriers:

- **Hypoimmune (HIP) technology:** Overcoming immune rejection of allogeneic cells
- **Fusogen technology:** *In vivo* delivery of genomic modification reagents in a cell-specific manner

Overcoming immune rejection of allogeneic cells has potential to change cell therapy:

- Allogeneic CAR T cells that perform clinically like autologous CAR T cells can transform treatment of hematological malignancies
- Key to unlocking the potential of stem cell-derived therapies such as pancreatic islet cells for the treatment of type 1 diabetes

Two opportunities in 2023 for clear clinical proof of concept:

- SC291: Cell persistence and clinical efficacy
- HIP primary islets in patients with type 1 diabetes
- Results will provide insights in CAR T cell and stem-cell based platforms – ability to overcome allogeneic and autoimmune cell rejection

Pipeline poised to deliver multiple clinical data readouts over next several years:

- **Hypoimmune allogeneic CAR T cells:** SC291 (CD19 oncology), SC291 (CD19 autoimmune), SC262 (CD22), SC255 (BCMA), and beyond
- **Regenerative medicine:** SC451 (type 1 diabetes) and SC379 (CNS disorders)
- ***In vivo* fusogen platform:** SG299

Balance sheet allows potential for multiple data readouts

Sana's platforms, technology, and programs

Pipeline poised to deliver multiple clinical data readouts over next several years

Product Candidates	Mechanism	Potential Indications	Potential Clinical Milestones	
			2023	2024
SC291 (HIP)	CD19-targeted allo CAR T	NHL/ALL/CLL	●	●
HIP primary islet cells[1]		Type 1 Diabetes	●●	●
SC291 (HIP)	CD19-targeted allo CAR T	Autoimmune	●	●
SG299 (Fusogen)	*In vivo* CAR T (CD8/CD19)	NHL/ALL/CLL	●	●
SC262 (HIP)	CD22-targeted allo CAR T	NHL/ALL/CLL	●	●
SC451 (HIP)	Stem-cell derived pancreatic islet cells	Type 1 Diabetes		●
SC255 (HIP)	BCMA-targeted allo CAR T	Multiple Myeloma		●
SC379	Glial progenitor cells	PMD, HD, SPMS		●
SG239 (Fusogen)	*In vivo* CAR T (CD8/BCMA)	Multiple Myeloma		
SG242 (Fusogen)	*In vivo* CAR T (CD4/CD19)	NHL/ALL/CLL		
SG221 (Fusogen)	*In vivo* CAR T (CD4/BCMA)	Multiple Myeloma		
SG233 (Fusogen)	*In vivo* CAR T(CD8/CD22)	NHL/ALL/CLL		
SG418 (Fusogen)	*In vivo* hematopoietic stem cells	SCD, Beta-Thalessemia		

● IND filing
● Clinical data

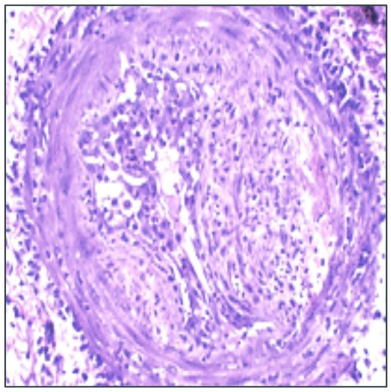
[1]IST, investigator sponsored trial.
Abbreviations: ALL, acute lymphoblastic leukemia; CLL, chronic lymphocytic leukemia; HD, Huntington's disease; IND, investigational new drug; NHL, non-Hodgkin's lymphoma; PMD, Pelizaeus-Merzbacher Disease; SCD, sickle cell disease; SPMS, Secondary Progressive Multiple Sclerosis.

Sana Biotechnology®

Overcoming allogeneic immune rejection has been key limitation in transplant and cellular medicine

- ~75 years of organ and bone marrow transplants – immune rejection remains the largest problem
- Cell-based medicines face similar immune rejection challenges
- Significant immunosuppression is current standard
- Genome modification efforts to date have generally been incomplete
- Autologous therapies have limited scalability and are only available for a small number of cell types
- Sana's hypoimmune platform is designed to overcome immune rejection of foreign cells, which has the potential to unlock the field of cellular medicine

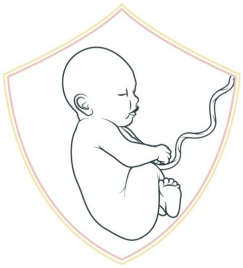
Biopsy of acute rejection of a pancreas transplant



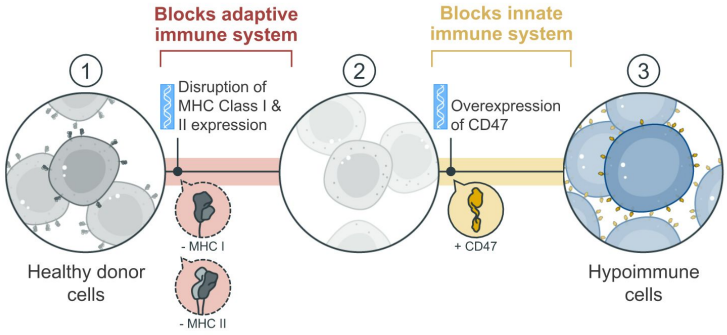
Drachenberg et al. *Am. J. Transplant.* 2008

Sana's hypoimmune solution: Leverage insights from nature

Leverage insights from nature to create hypoimmune cells

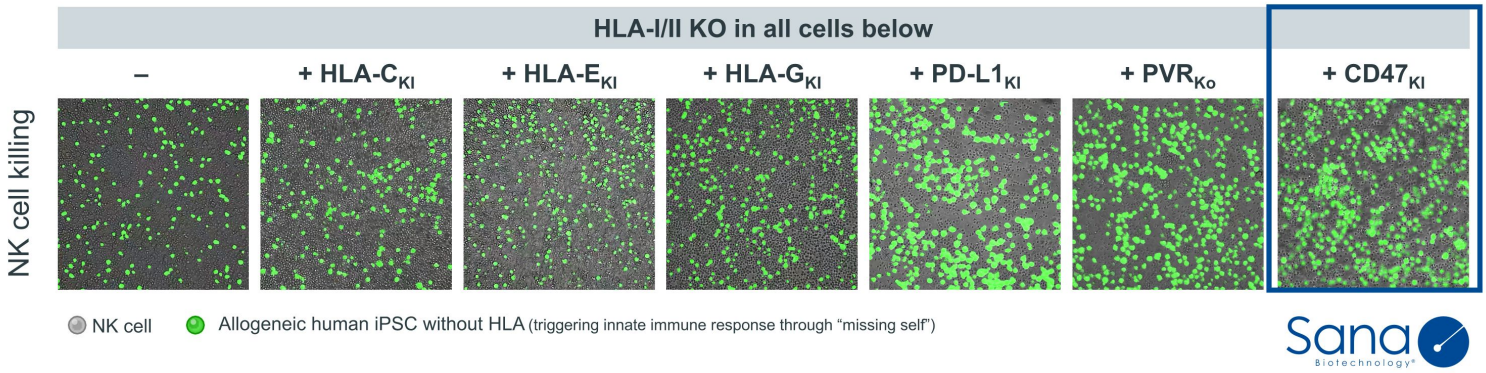


Sana's hypoimmune approach



Abbreviations: MHC, major histocompatibility complex.
Current clinical platform with multiple ongoing approaches in research phase.

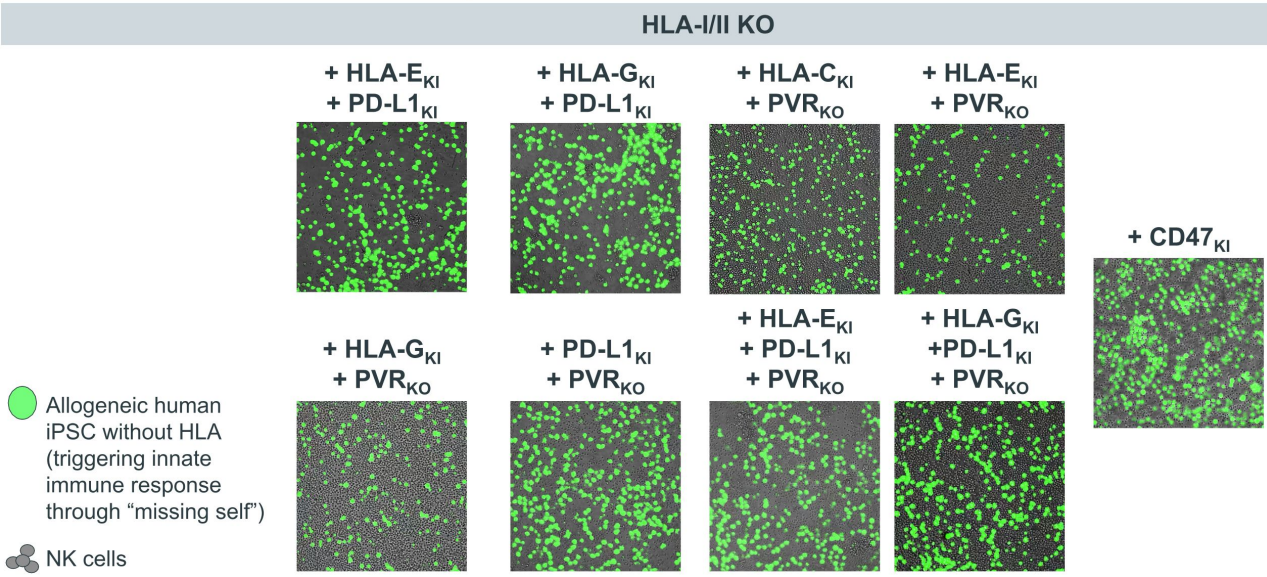
Sana's HIP modifications offer superior protection from innate cell killing



Abbreviations: HLA, human leukocyte antigen; iPSC, induced pluripotent stem cells; KI, knock-in; KO, knock-out; MHC, major histocompatibility complex; NK, natural killer; PD-L1, Programmed death-ligand 1.

Strategies to overcome the “missing self” innate immune response

No additive effect with multiple molecules

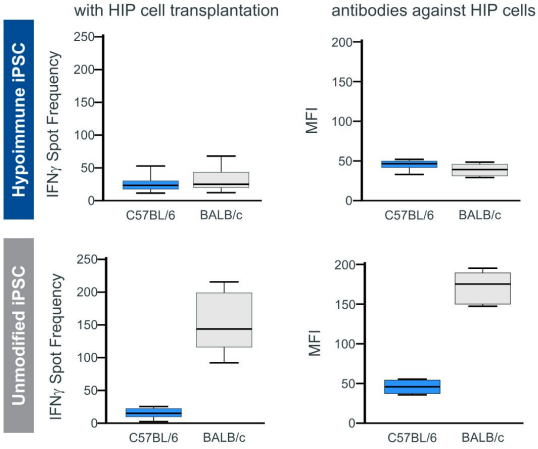


Hypoimmune cells evade rejection by the adaptive and innate immune system in mice

Evade the adaptive immune system

T cell activation (ELISPOT)
No systemic T cell activation with HIP cell transplantation

IgM Binding (FACS)
No binding of donor-specific antibodies against HIP cells



Representative of results across 5 mice for the unmodified arm and across 6 mice for the hypoimmune arm.

Deuse et al. *Nature Biotechnology.* 2019

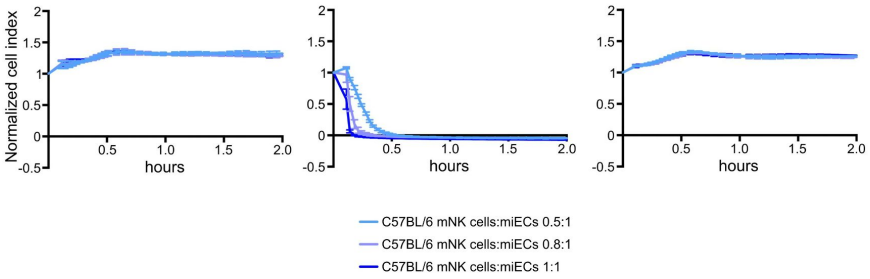
Evade the innate immune system

NK cell killing
No NK cell killing of HIP cells

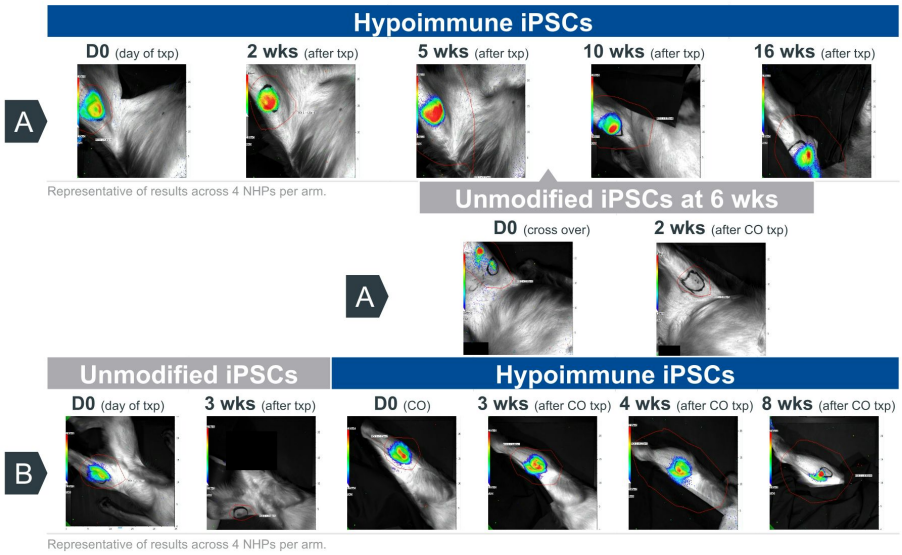
Wild type (unmodified) cells
No killing of unmodified cells by NK cells

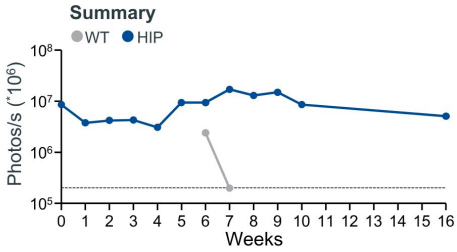
MHC Class I/II disruption
Killing of partially edited iPSC; HLA I/II disruption by NK cells

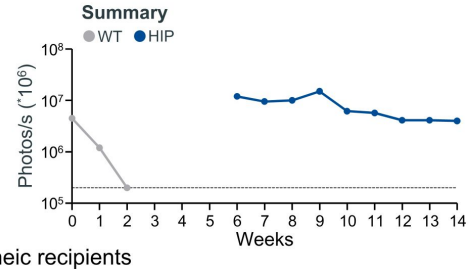
MHC Class I/II disruption & CD47 overexpression
No killing of HIP cells by NK cells



Hypoimmune cells survive *in vivo* when transplanted in NHP while unmodified iPSCs get rejected







- NHP unmodified iPSCs (WT) & NHP hypoimmune iPSCs (HIP) were transplanted into 8 allogeneic recipients

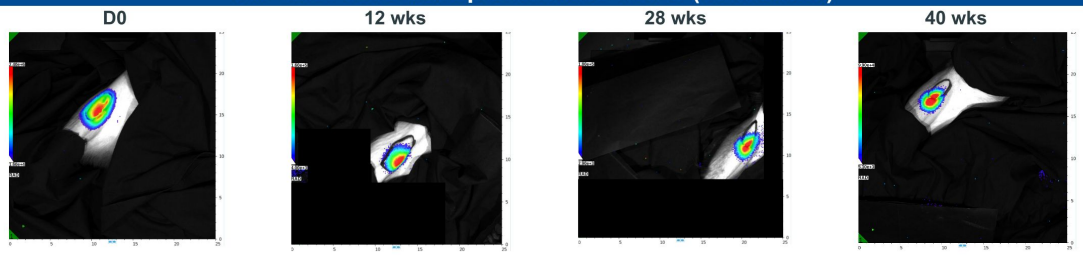
CO, cross over; Txp, transplant

Hu et al. *Nature Biotechnology*. 2023

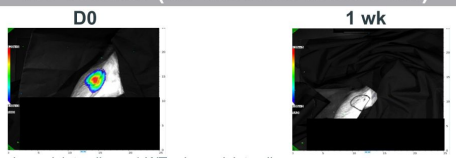
Survival of allogeneic hypoimmune pancreatic islet cells for 10+ months without immunosuppression

Study design:
- NHP primary islet cells isolated and HIP-engineered
- Cells injected intramuscularly into a healthy, allogeneic NHP without immunosuppression

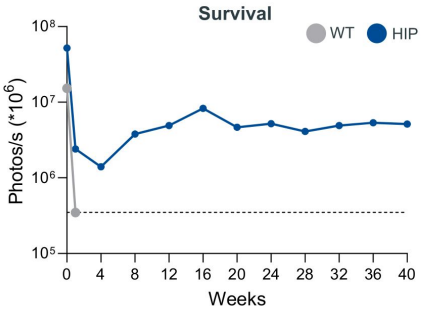
HIP islet cells transplanted into NHPs (10 months)



WT results (no survival after 1 wk)

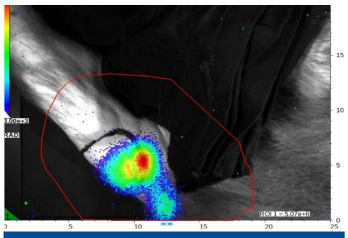


n=1 HIP primary islet cells; n=1 WT primary islet cells.

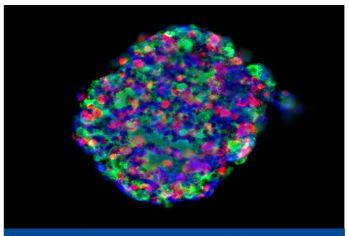


NHP unmodified islet cells (wt) and NHP hypoimmune islet cells (HIP)
Hu et al. *Nature Biotechnology*. 2023

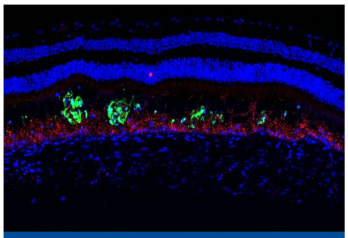
Survival and immune evasion after transplant for different cell types in multiple NHP studies



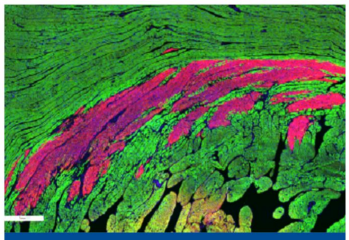
HIP iPSC



HIP primary islets



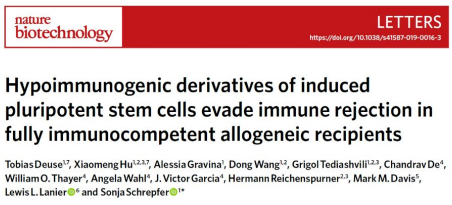
HIP iPSC-derived RPE



HIP iPSC-derived cardiomyocytes

Abbreviations: RPE, retinal pigment epithelium.

Sana's team has pioneered hypoimmune technology



nature biotechnology

LETTERS

https://doi.org/10.1038/s41587-019-0016-3

Hypoimmunogenic derivatives of induced pluripotent stem cells evade immune rejection in fully immunocompetent allogeneic recipients

Tobias Deuse[1,7], Xiaomeng Hu[1,2,7], Alessia Gravina[1], Dong Wang[1,2], Grigol Tediashvili[1,2,3], Chandrav De[4], William O. Thayer[4], Angela Wahl[4], J. Victor Garcia[4], Hermann Reichenspurner[2,3], Mark M. Davis[5], Lewis L. Lanier[6] and Sonja Schrepfer[1*]

JEM Journal of Experimental Medicine

ARTICLE

The SIRPα–CD47 immune checkpoint in NK cells

Tobias Deuse[1*], Xiaomeng Hu[1,2*], Sean Agbor-Enoh[1,4], Moon K. Jang[1], Malik Alawi[1], Ceren Saygi[1], Alessia Gravina[1], Grigol Tediashvili[1], Vinh Q. Nguyen[1], Yuan Liu[1], Hannah Valantine[1,5], Lewis L. Lanier[6,7*], and Sonja Schrepfer[1,2,7*]

Here we report on the existence and functionality of the immune checkpoint signal regulatory protein α (SIRPα) in NK cells and describe how it can be modulated for cell therapy. NK cell SIRPα is up-regulated upon IL-2 stimulation, interacts with target cell CD47 in a threshold-dependent manner, and counters other stimulatory signals, including IL-2, CD16, or NKG2D. Elevated expression of CD47 protected K562 tumor cells and mouse and human MHC class I–deficient target cells against SIRPα+ primary NK cells, but not against SIRPα− NKL or NK92 cells. SIRPα deficiency or antibody blockade increased the killing capacity of NK cells. Overexpression of rhesus monkey CD47 in human MHC-deficient cells prevented cytotoxicity by rhesus NK cells in a xenogeneic setting. The SIRPα–CD47 axis was found to be highly species specific. Together, the results demonstrate that disruption of the SIRPα–CD47 immune checkpoint may augment NK cell antitumor responses and that elevated expression of CD47 may prevent NK cell–mediated killing of allogeneic and xenogeneic tissues.

Science Translational Medicine

Current Issue First release papers

HOME > SCIENCE TRANSLATIONAL MEDICINE > VOL. 15, NO. 691 > HUMAN HYPOIMMUNE PRIMARY PANCREATIC ISLETS AVOID REJECTION AND...

RESEARCH ARTICLE | TYPE 1 DIABETES

Human hypoimmune primary pancreatic islets avoid rejection and autoimmunity and alleviate diabetes in allogeneic humanized mice

XIAOMENG HU, CORIE GATTIS, ARI G. OLROYD, ANNABELLE M. FRIERA, KATHY WHITE, CHI YOUNG, RON BASCO, MEGHAN LAMBA, FRANK WELLS, [...] AND SONJA SCHREPFER +8 authors Authors Info & Affiliations

SCIENCE TRANSLATIONAL MEDICINE · 12 Apr 2023 · Vol 15, Issue 691 · DOI: 10.1126/scitranslmed.adg5796

nature communications

Article

https://doi.org/10.1038/s41467-023-37785-2

Hypoimmune anti-CD19 chimeric antigen receptor T cells provide lasting tumor control in fully immunocompetent allogeneic humanized mice

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Accepted: 29 March 2023

A list of authors and their affiliations appears at the end of the paper

PNAS

Hypoimmune induced pluripotent stem cell–derived cell therapeutics treat cardiovascular and pulmonary diseases in immunocompetent allogeneic mice

Tobias Deuse[a,1], Grigol Tediashvili[a,b,1], Xiaomeng Hu[a,b,c,d,1], Alessia Gravina[a], Annika Tamenang[a,b], Dong Wang[a], Andrew Connolly[a], Christian Mueller[f,g], Beñat Mallavia[h], Mark R. Looney[h,i], Malik Alawi[j], Lewis L. Lanier[a,2,3], and Sonja Schrepfer[a,d,2,3]

[a]Division of Cardiothoracic Surgery, Department of Surgery, Transplant and Stem Cell Immunobiology Laboratory, University of California, San Francisco, CA 94143; [b]Department of Cardiovascular Surgery, University Heart Center Hamburg, 20246 Hamburg, Germany; [c]German Center for Cardiovascular Research (DZHK) partner site Hamburg/Kiel/Luebeck, 20246 Hamburg, Germany; [d]Sana Biotechnology Inc., South San Francisco, CA 94080; [e]Department of Pathology, University of California, San Francisco, CA 94143; [f]Horae Gene Therapy Center, University of Massachusetts, Worcester, MA 01605; [g]Department of Pediatrics, University of Massachusetts, Worcester, MA 01605; [h]Department of Medicine, University of California, San Francisco, CA 94143; [i]Department of Laboratory Medicine, University of California, San Francisco, CA 94143; [j]Bioinformatics Core, University Medical Center Hamburg-Eppendorf, 20246 Hamburg, Germany; and [k]Department of Microbiology and Immunology and the Parker Institute for Cancer Immunotherapy, University of California, San Francisco, CA 94143

Contributed by Lewis L. Lanier, May 25, 2021 (sent for review October 22, 2020; reviewed by John Cooke and Yuji Shiba

nature biotechnology

Article

https://doi.org/10.1038/s41587-023-01784-x

Hypoimmune induced pluripotent stem cells survive long term in fully immunocompetent, allogeneic rhesus macaques

Received: 18 May 2022

Accepted: 6 April 2023

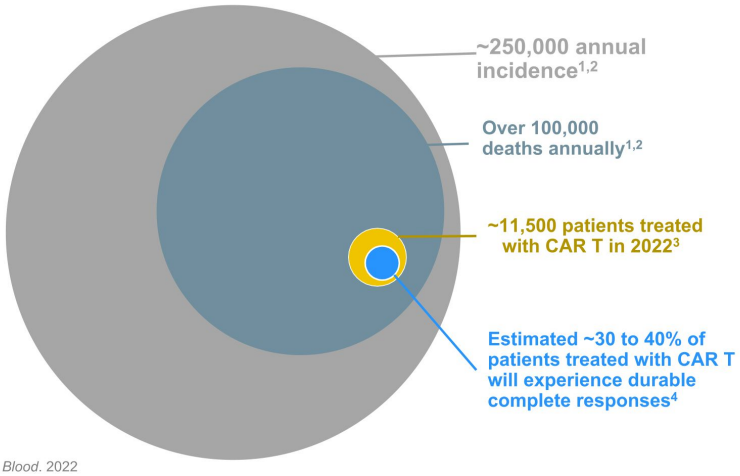
Published online: 08 May 2023

Check for updates

Xiaomeng Hu[1], Kathy White[1], Ari G. Olroyd[1], Rowena DeJesus[1], Antonia A. Dominguez[1], William E. Dowdle[1], Annabelle M. Friera[1], Chi Young[1], Frank Wells[1], Elaine Y. Chu[1], Cade Ellis Ito[1], Harini Krishnapura[1], Surbhi Jain[1], Ramya Ankala[1], Trevor J. McGill[1], August Lin[1], Kyla Egenberger[1], Allison Gagnon[1], J. Michael Rukstalis[1], Nathaniel J. Hogrebe[2], Corie Gattis[1], Ron Basco[1], Jeffrey R. Millman[3], Paul Klevit[1], Mark M. Davis[4], Lewis L. Lanier[5], Andrew J. Connolly[6], Tobias Deuse[1,10] & Sonja Schrepfer[1,8]

Hematologic cancers continue to have a high unmet need

High mortality in lymphoma and myeloma in the US and EU5



[1]Avezbakiyev et al. *Blood*. 2022
[2]Durie et al. *The Oncologist*. 2020
[3]Clarivate DRG NHL and MM Market Forecast Nov 2022; internal analysis of secondary EPI data.
[4]Scivida 2022 NHL Factbook
Abbreviations: EU5, France, Germany, Italy, Spain, UK

Challenges

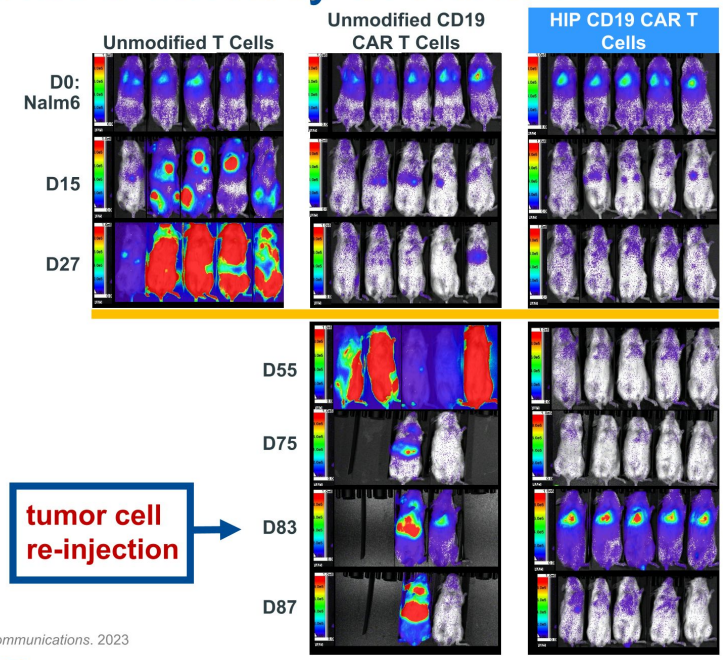
- Autologous CAR T cell scalability
- Many patients fail CAR T treatment
- Allogeneic CAR T cells immune rejection limits persistence and efficacy

Opportunity

- Known targets
- Known efficacy and safety bar

Sana's HIP CAR T platform can address challenges and exploit opportunities

HIP CD19 CAR T cells demonstrate persistence and continued efficacy in humanized mice model



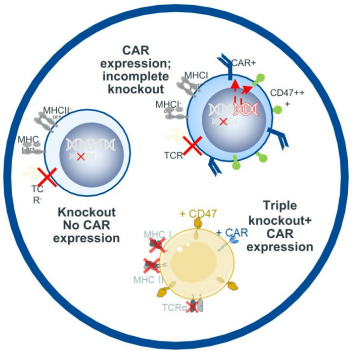
- SC291 tumor control comparable at early timepoints to standard CD19 CAR T cells
- SC291 tumor control superior at later timepoints to standard CD19 CAR T cells
- SC291 controls tumors when animals are rechallenged with tumor

Hu et al. *Nature Communications*. 2023

ARDENT trial will provide rapid insight into hypoimmune immune evasion

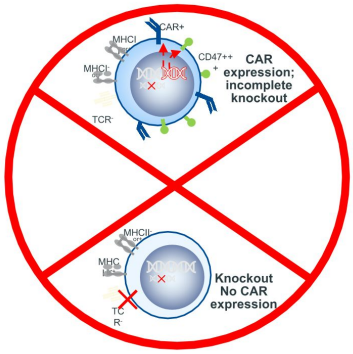
Day 0	2-4 weeks	1 month +

SC291 is a mixture of HIP and non-HIP CAR T cells



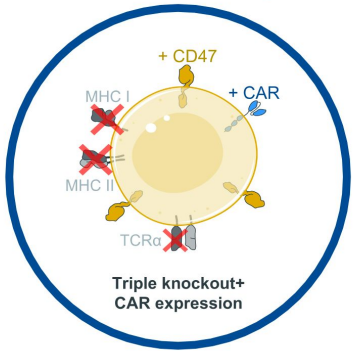
Triple Knockout and CAR expression:
40-50% are fully modified cells
80-85% have all three gene knockouts

T cells and NK cells recover



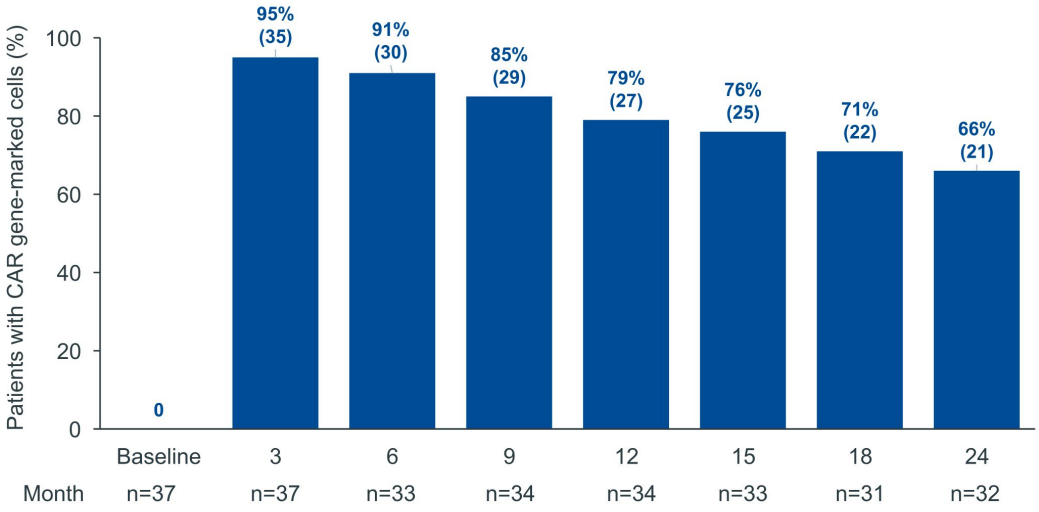
Non-HIP cells eliminated by patient immune system

HIP CAR T cells survive after immune recovery



Triple Knockout and CAR expression:
With success, ~100% of surviving cells fully modified

CAR T cells remain detectable in the majority of patients with ongoing response treated in ZUMA-1 trial

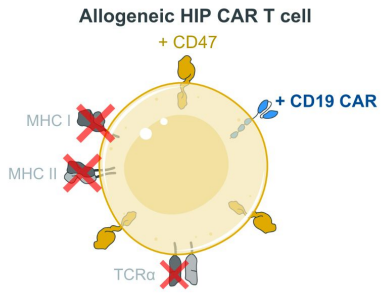


Locke et al. *Lancet Oncology*. 2019

Improved persistence can lead to best-in-class allogeneic CAR T platform

SC291: Sana's CD19 HIP allogeneic CAR T

- First clinical data in 2023



Data show CAR T cell persistence correlates with long term complete response (CRs) rates[1]

CAR T Persistence		Potential Efficacy Outcome
≤ 1 month	❯❯❯	Comparable to existing Allo CAR T
2 to 3 months	❯❯❯	Best-in-class Allo CAR T
3 to 6 months	❯❯❯	Comparable to Auto CAR T
≥ 6 months	❯❯❯	Better than Auto CAR T

[1]Porter et al. *Science Translational Medicine*. 2015

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CAR T cells have the potential to transform autoimmune disorders like they have in blood cancers

B-cell targeting validated across multiple autoimmune diseases

Field has spent 25+ years identifying

- Systemic lupus erythematosus (SLE)
- Lupus Nephritis
- Vasculitis (Granulomatosis with polyangiitis & Microscopic polyangiitis)
- Neuromyelitis optical spectrum
- Pemphigus
- Relapsing and progressive MS
- Rheumatoid Arthritis
- Sjogren syndrome
- NMDAR encephalitis
- Thrombocytopenic purpura
- Amyloidosis
- Scleroderma
- Autoimmune Hemolytic Anemia
- Chronic immune demyelinating polyradiculoneuropathy
- Immune-mediated necrotizing myopathy
- Membranous nephropathy

Depth of B-cell depletion correlates with clinical benefit

- CD19 CAR T cell therapy results in deep B-cell depletion
- Potential to deliver durable long-term remissions

SC291 has the scale and potential profile to change patient outcomes

- Drug product from oncology studies ready for use
- PoC studies across multiple diseases in near term

Adapted from Zhang et al. *Frontiers in Immunology*. 2023; Oh et al. *Immune Network*. 2023; Lee et al. *Nature Reviews Drug Discovery*. 2021

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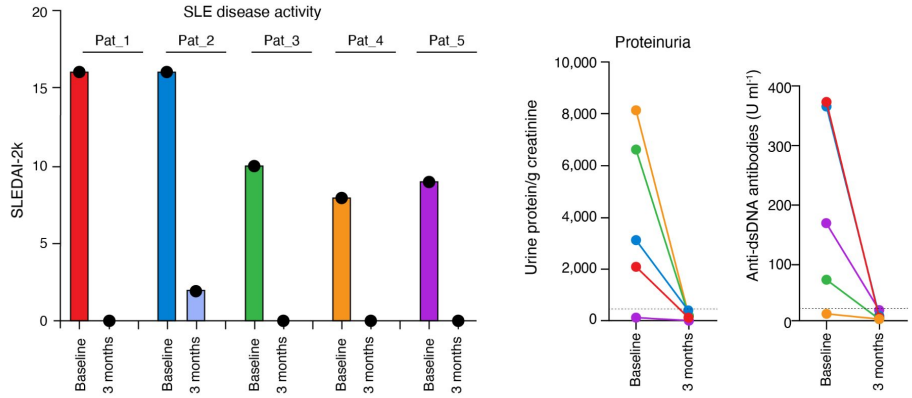
Autologous CD19 CAR T therapy results in drug-free remission in refractory SLE patients

Improvement in signs and symptoms of SLE after CD19 CART treatment



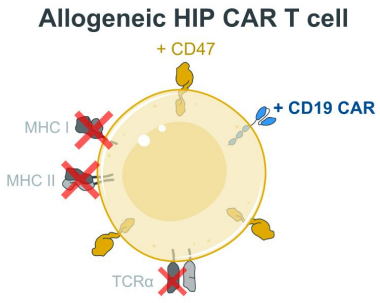
Mackensen et al. *Nature Medicine*. 2022

- Well tolerated – mild CRS (Grade 1) and no ICANS seen
- 5/5 patients are in a durable complete remission and off all drugs
- All known disease biomarkers rapidly normalized and have remained so thus far
- 18+ months of drug-free remission seen in patients constituting a potential functional cure
- Full B-cell recovery and complete immune system reset in ~3 months with sustained SLE remission

Abbreviations: SLE, systemic lupus erythematosus; CRS, cytokine release syndrome; ICANS, immune effector cell-associated neurotoxicity syndrome.

SC291 product candidate offers potential to address large unmet need in various autoimmune disorders

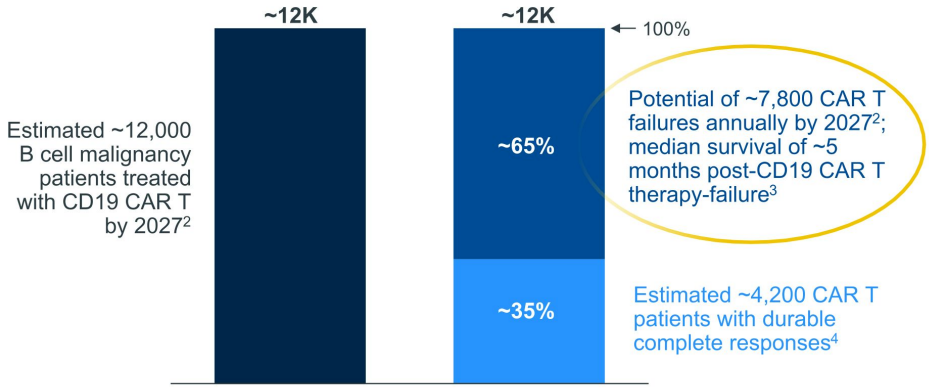
SC291: CD19 HIP allogeneic CAR T for treatment of autoimmune disorders



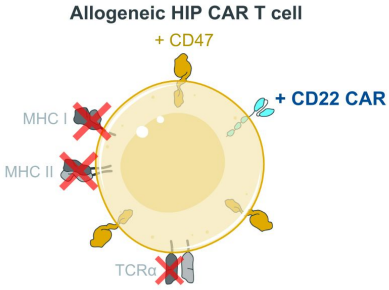
- >75 different types of autoimmune disorders with high unmet need and underlying B cell pathology
- Lupus nephritis alone impacts ~100,000 people in the US
- Utilize SC291 Phase 1 supply for potential rapid path to clinic
- Expect to file IND in Q4 2023 with clinical data in 2024

SC262: Targeting growing population of patients with inadequate response to CD19 therapy

CD19 CAR T relapsed patients represent large and growing unmet need[1]



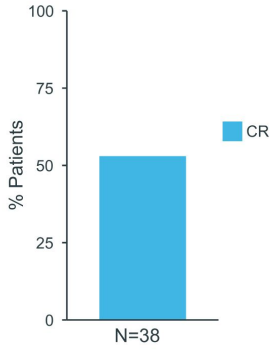
SC262 utilizes a clinically-validated CD22 CAR



[1]US, EU5, and Japan.
[2]Clarivate DRG NHL Market Forecast Nov 2021; 2027 Forecast is 2L+ LBCL patients; internal analysis of secondary EPI data.
[3]Di Blasi et al. *Blood*.2022; DESCAR-T registry.

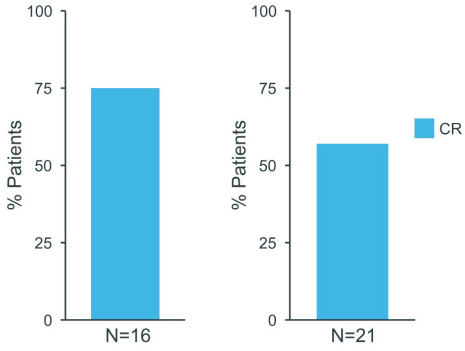
SC262: Licensed CD22 CAR produced strong clinical data in CD19 failures when part of autologous CAR T

>50% 6-month CR rate in CD19 CAR failure DLBCL patients



2023 DAVA Frank/Stanford

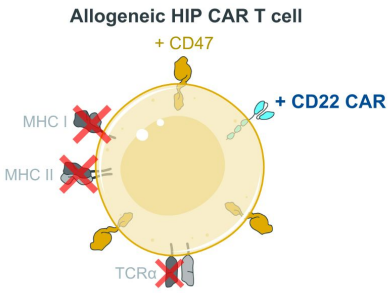
High rate of CRs in CD19 failure ALL patients
~80% patients with prior CD19 therapy



2022 ASH Miklos/Stanford

2018 *Nature Med* Fry, et al.

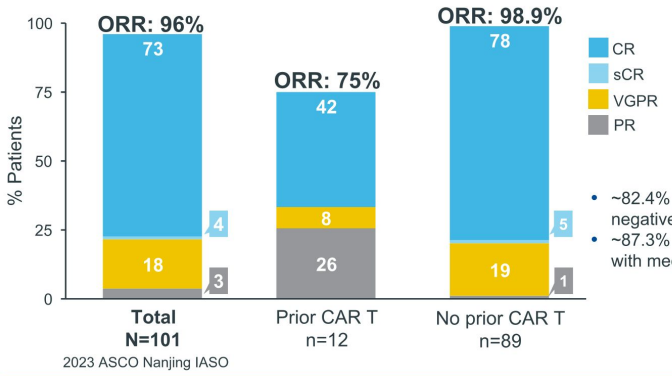
Expand our allo T platform to CD22 with Sana's SC262 candidate



SC262 Goals: File IND this year; clinical data in 2024

SC255: Licensed BCMA CAR produced strong clinical data in myeloma when part of autologous CAR T

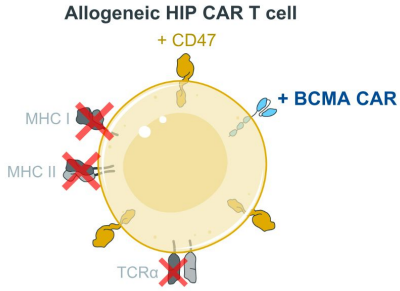
High response rate in multiple myeloma with 95% of patients MRD negative



2023 ASCO Nanjing IASO

- ~82.4% patients MRD negative at 12 months
- ~87.3% patients in CR/sCR with median follow-up ~1 year

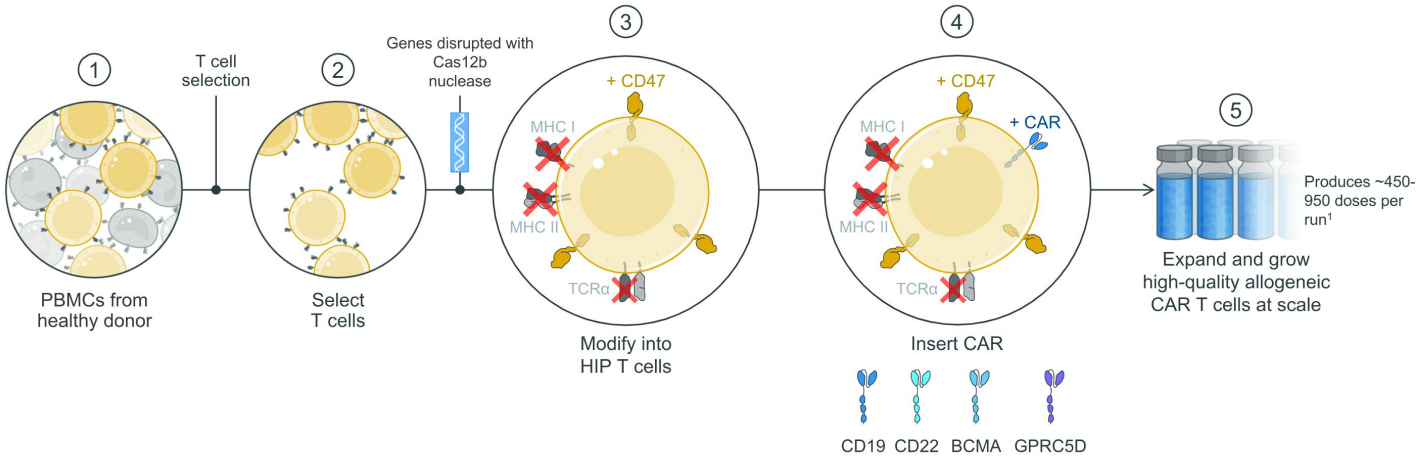
Expand our allo T platform to BCMA with Sana's SC255 candidate



SC255 Goal: File IND as early as 2024

Abbreviations: CR, complete response; ORR, objective response rate; PR, partial response; sCR, stringent complete response; VGPR, very good partial response.

Sana's HIP platform can create a regenerative pipeline for allogeneic CAR T therapies



[1]~450 doses assumes the middle dose in the ARDENT Phase 1 study and ~950 doses assumes an autoimmune dose consistent with public data on current autoimmune dose levels.
Abbreviations: Cas12b, CRISPR associated protein 12b; GPRC5D, G protein–coupled receptor, class C, group 5, member D; PBMC, peripheral blood mononuclear cell.

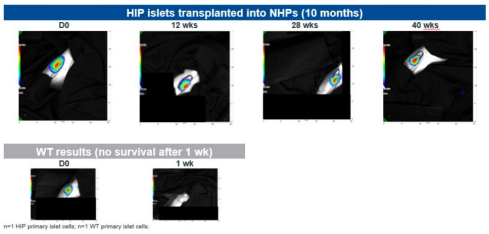
Type 1 diabetes represents a large unmet need with a loss of ~15 years of life[1]

- Disease caused by autoimmune destruction of insulin-producing beta cells in the pancreas; results in inability to control blood glucose
- Type 1 diabetes is a large unmet need with 1.9M patients in the U.S. and 2.4M in Europe[2]
- Long-term complications: end-organ damage, including heart attack, stroke, blindness, and kidney failure
- SC451 goal is euglycemia without exogenous insulin or immunosuppression

[1]Rawshani et al. *Lancet.* 2018
[2]Clarivate Type 1 Diabetes Landscape & Forecast, December 2022; internal analysis of secondary EPI data.

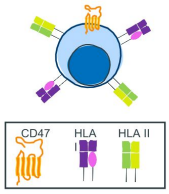
Sana's solution: SC451 is an allogeneic iPSC-derived hypoimmune pancreatic islet cell therapy

1. Hypoimmune technology overcomes allogeneic rejection and autoimmunity



2. iPSC-derived islet cells can be scaled to treat many patients

Create iPSC GMP master cell bank

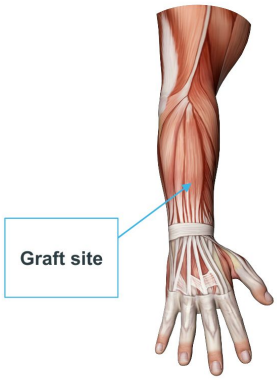


Starting iPSC cell

Differentiate iPSCs into glucose-responsive islet cells that are hypoimmune

Hypoimmune iPSC-derived islet cells

3. Intramuscular implantation site improves access and function



Hu et al. *Nature Biotechnology*. 2023

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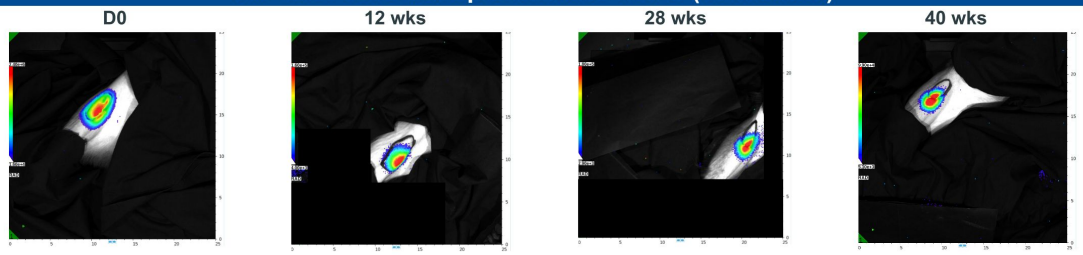
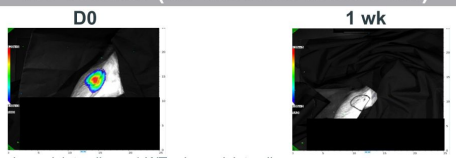
Survival of allogeneic hypoimmune pancreatic islet cells for 10+ months without immunosuppression

Study design:
- NHP primary islet cells isolated and HIP-engineered
- Cells injected intramuscularly into a healthy, allogeneic NHP without immunosuppression

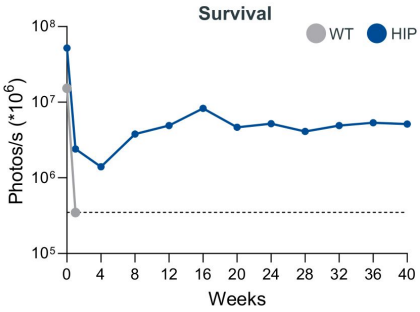
HIP islet cells transplanted into NHPs (10 months)



WT results (no survival after 1 wk)



n=1 HIP primary islet cells; n=1 WT primary islet cells.



NHP unmodified islet cells (wt) and NHP hypoimmune islet cells (HIP)
Hu et al. *Nature Biotechnology*. 2023

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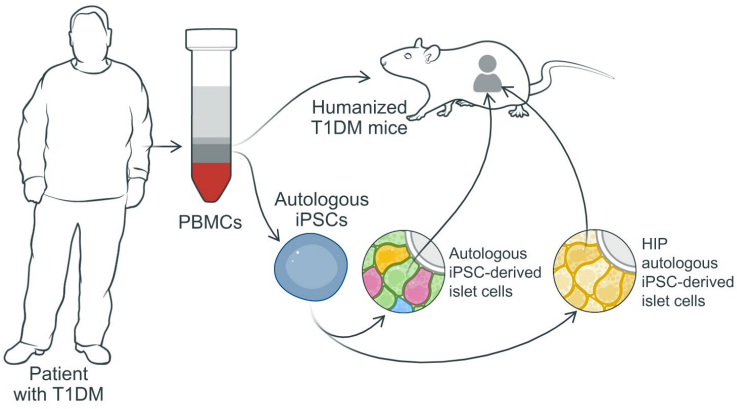
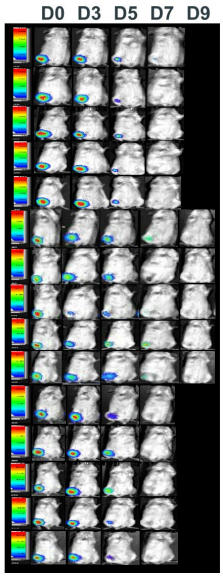
Sana's immunology, gene modification, & stem cell capabilities create proprietary type 1 diabetes model

PBMCs from patient with T1DM used to generate stem cell-derived islet cells and to humanize immune system in mice



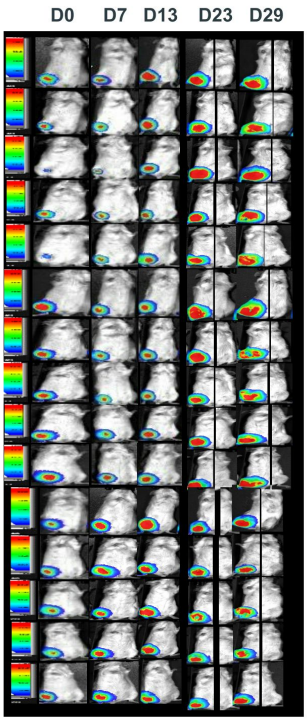
Unmodified stem cell-derived islet cells from patient with T1DM do not survive

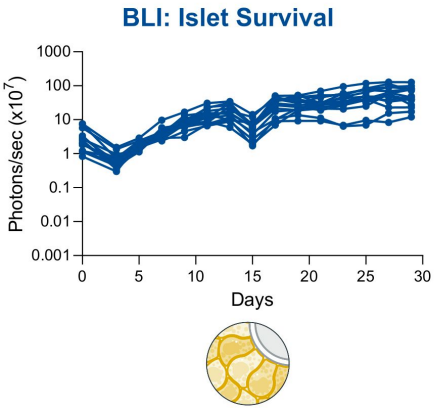
Patient T cells eliminate islet cells due to autoimmunity

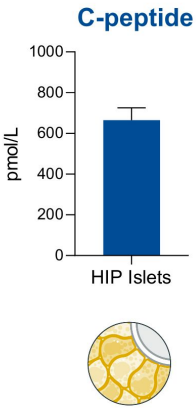


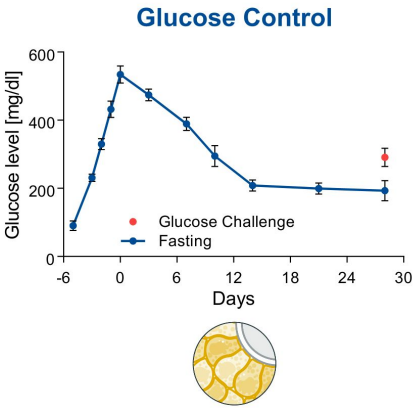
Abbreviations: T1DM, type 1 diabetes mellitus
Hu et al. *Sci Transl Med*. 2023

HIP iPSC-derived pancreatic islet cells from patient with T1DM evade autoimmune killing and control glucose









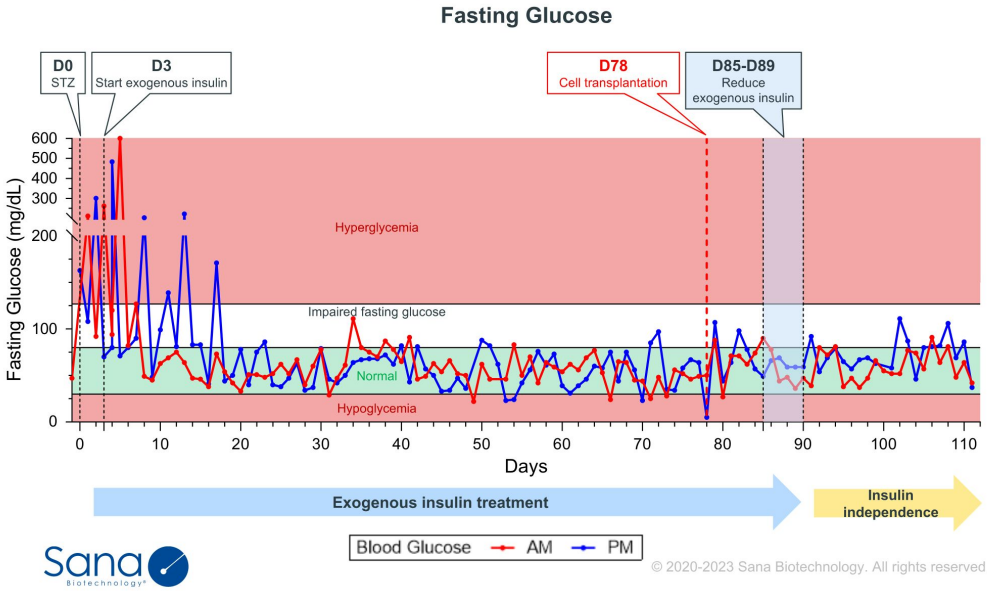
Abbreviations: BLI, bioluminescence imaging

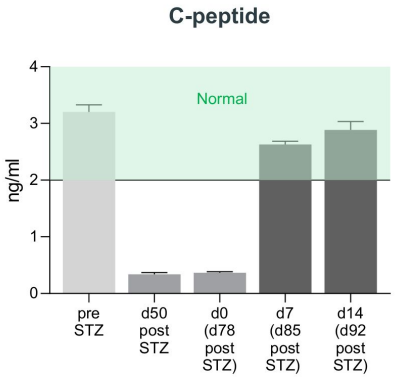
Hu et al. *Sci Transl Med*. 2023.

HIP-modified allogeneic islet cells lead to normal blood glucose with no insulin and no immunosuppression in diabetic NHP

Study Design (N=1)

- NHP primary islet cells isolated and HIP-modified
- Cells injected intramuscularly into a healthy, allogeneic NHP without immunosuppression

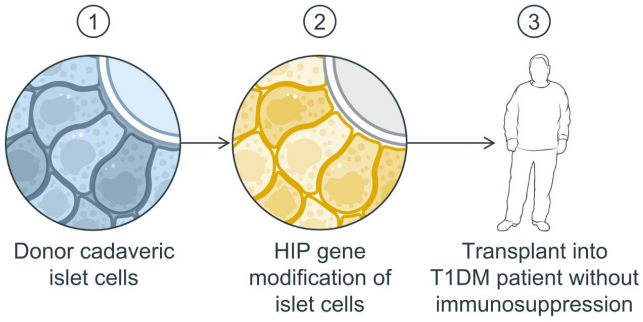




Path to potential clinical validation of hypoimmune islet cells in T1DM patients in 2023

- Investigator sponsored trial
- Primary human HIP islet cells transplantation in type 1 diabetes patients
- Goal: Cell survival with no immunosuppression
- Goal: Data in 2023
- Insight for SC451

Overview



Key Measured Outcomes

Cell survival & immune evasion
C-peptide
Glycemic control

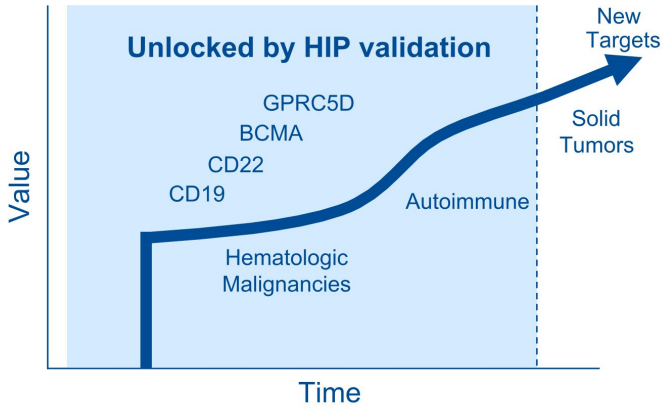
Goal is to build a best-in-class portfolio to treat patients with a range of cancers, autoimmune diseases, and beyond

Known

- [x] Validated targets
- [x] Validated CAR constructs for allogeneic platform
- [x] >100,000 potential cancer patients worldwide[1,2]
- [x] HIP platform understood in preclinical models
- [x] Potential for SLE and other autoimmune disorders

Future State

- [ ] Type 1 diabetes
- [ ] Solid tumors
- [ ] Other stem cell-derived products



Unlocking the potential of our hypoimmune platform across multiple patient populations

[1]Avezbakiyev et al. *Blood*. 2022
[2]Durie et al. *The Oncologist*. 2020

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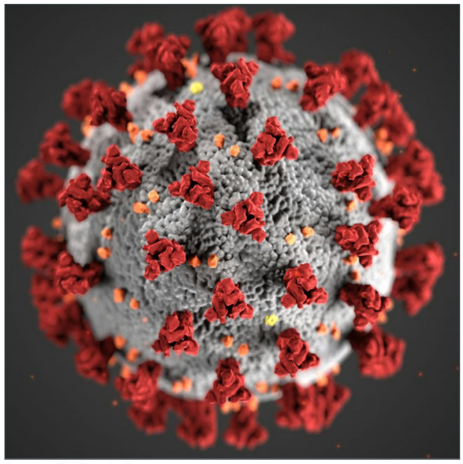
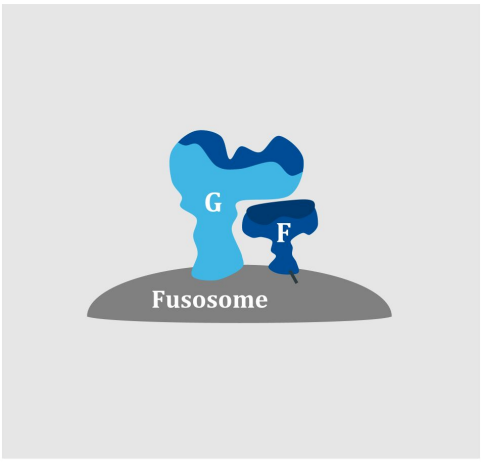
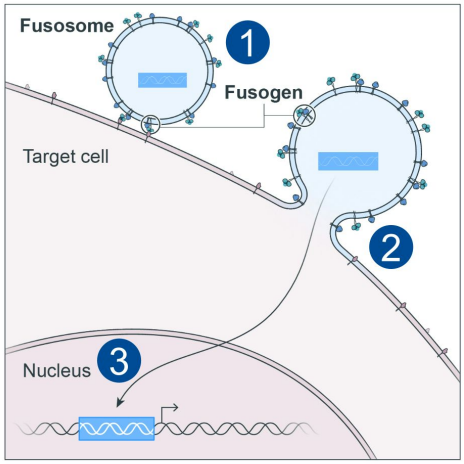
Fusosome technology: Development of cell-specific *in vivo* delivery platform

Sana approach: Leverage insights from nature to deliver various payloads to specific cells



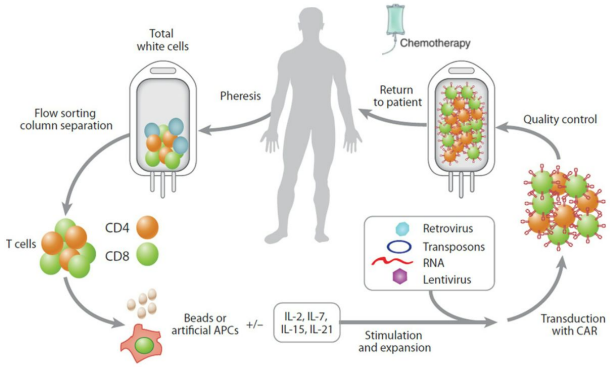
Source: CDC website





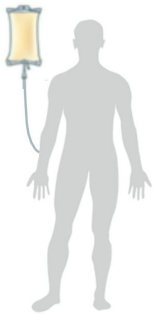
Fusogen technology has potential to eliminate conditioning chemotherapy and *ex vivo* manufacturing

Current *ex vivo* approaches have limitations

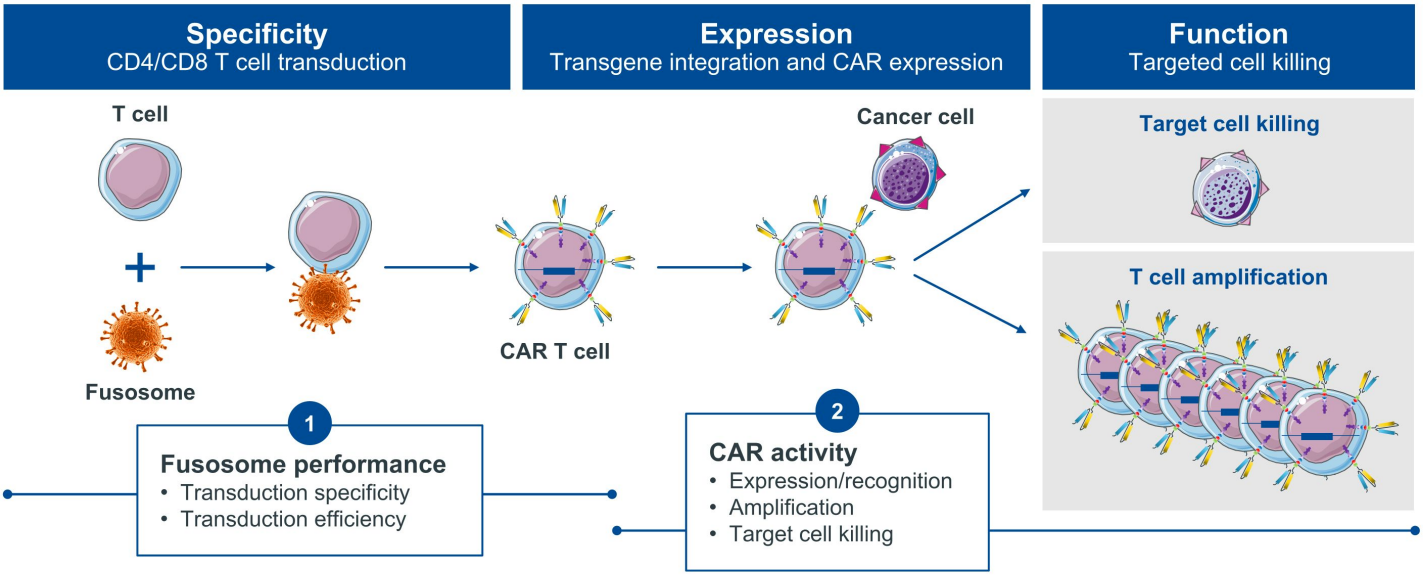


June et al. *Annu Rev Med.* 2014

Fusogen platform offers potential to overcome these limitations

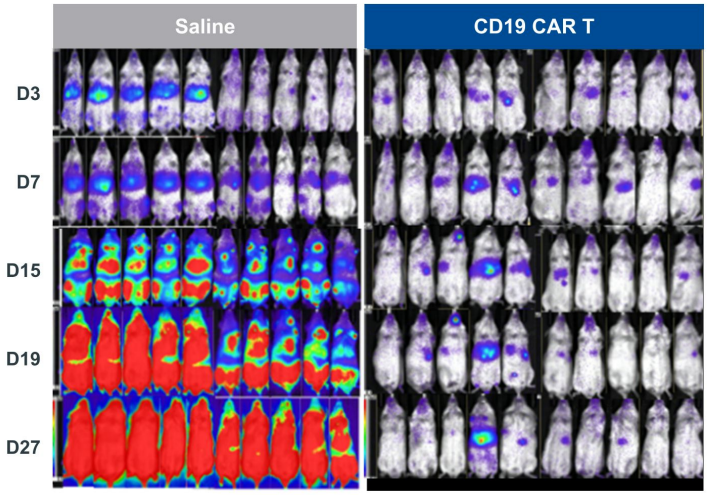


T cell fusosome delivers CAR construct directly to T cells *in vivo*

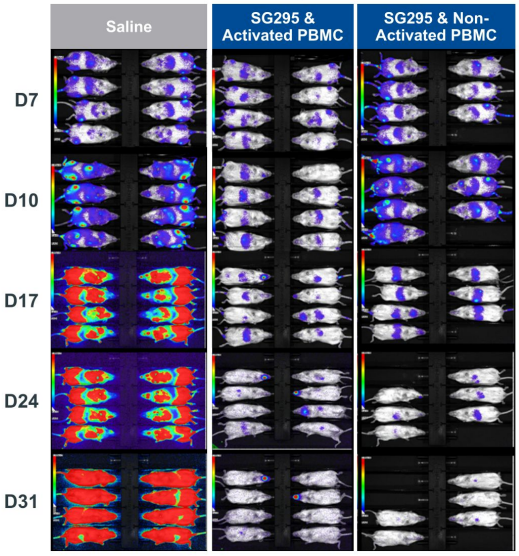


IV administration of CD19 CAR delivered by fusosome can clear B cell tumors in humanized mice comparably to *ex vivo* CD19 CAR T

CD19 CAR T: *ex vivo*

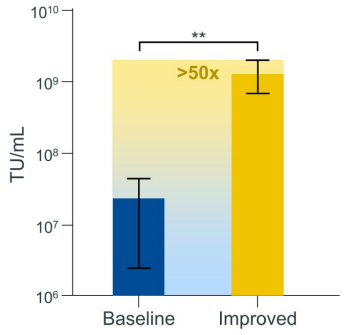


CD19 CAR delivered by fusosome: *in vivo*



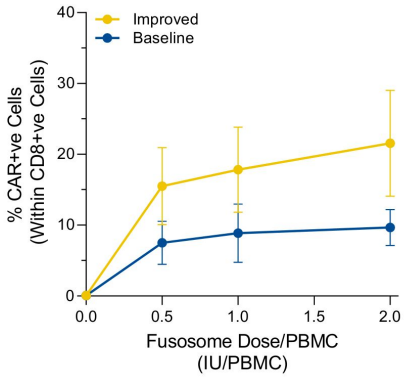
Significant improvements may lead to a better therapy: CD19 CAR delivered by fusosome, SG299

SG299 results in >50X potency improvement



Potential for:
- Better efficacy
- Greater safety
- Higher yields and lower cost of goods

SG299 transduces more T cells at the same dose

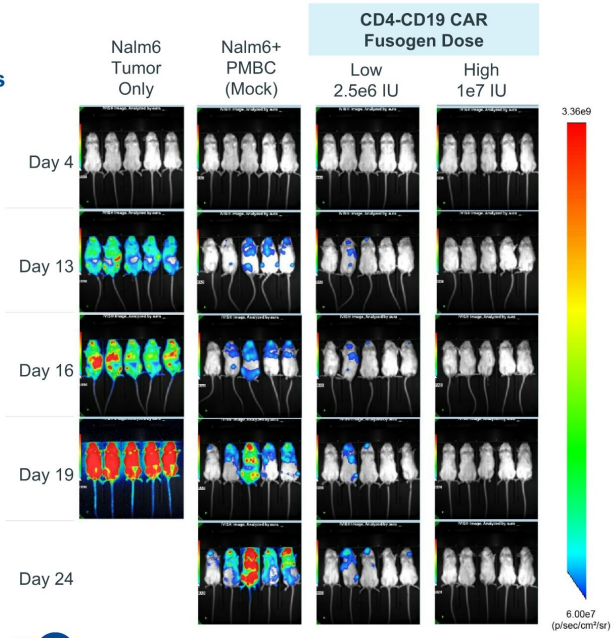


SG299 Goals: File IND in 2023; clinical data in 2024

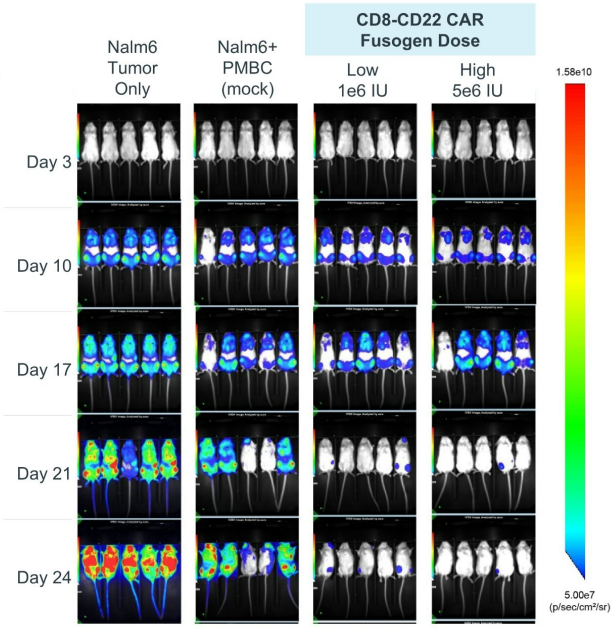
Abbreviations: TU, transduction units.

Tumor control achieved with fusosomes targeting other cell types and alternate tumor antigens

CD4 T cell targeting fusosomes delivering CD19 CAR achieve tumor control in mice



CD8 T cell targeting fusosomes delivering CD22 CAR achieve tumor control in mice



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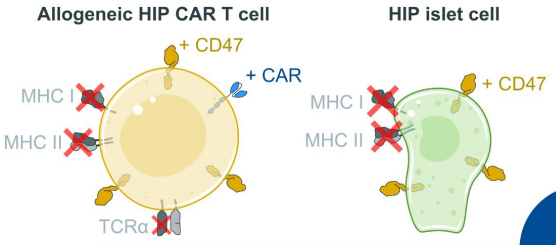
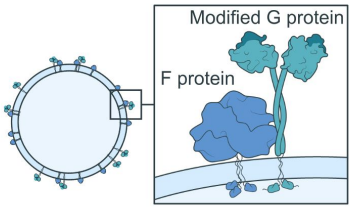
Sana aspiration: Engineered cells as medicines





2023

Ex Vivo – Hypoimmune

Allogeneic CAR T Franchise
- Oncology: SC291, SC262, SC255
- Autoimmune: SC291

Stem Cell-Derived
- Type 1 Diabetes: SC451
- CNS: SC379[1]

In Vivo – Fusogen

- *In vivo* CAR T: SG299
- Cell-specific *in vivo* HSC editing: SG418
- Cell-specific delivery of genomic modification material

Engineered cells into new therapeutic areas

[1]Does not incorporate hypoimmune genomic modifications

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Thank You

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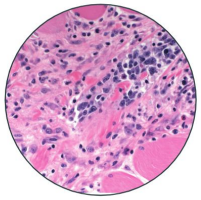
Appendix

Overcoming the allogeneic immune barrier is crucial for off-the-shelf approaches



Allogeneic cells getting rejected

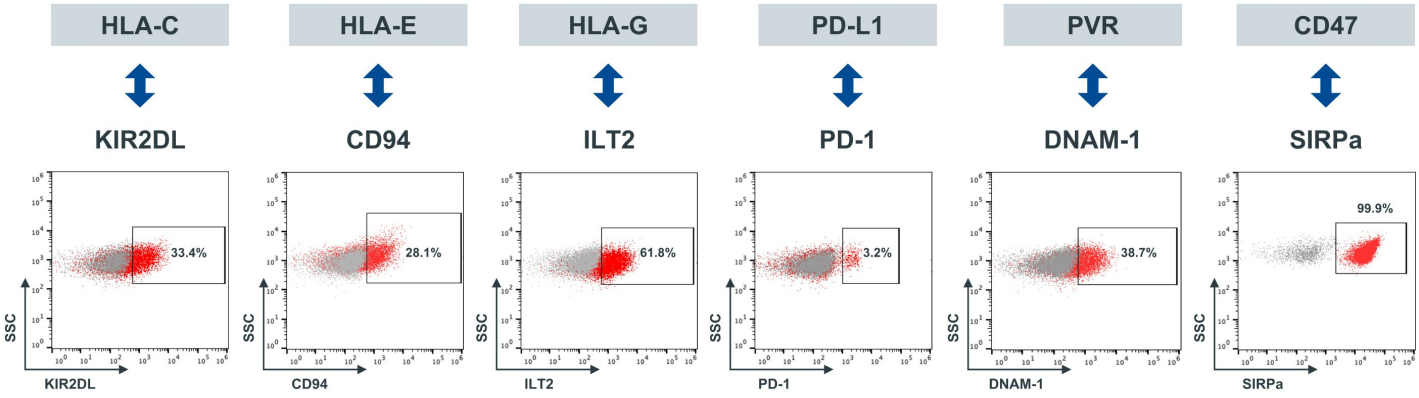
Fetomaternal border

Fetomaternal border proteins:

- MHC downregulation
- Indolamin-di-oxygenase (IDO)
- Fas-L
- PD-L1
- HLA-E
- HLA-G
- HLA-C
- CD47
- CCL-22
- CEA
- TRAIL
- Galectin-1
- CD155
- Etc.

- ✓ **MHC downregulation or KO+**
  - ✓ Indolamin-di-oxygenase (IDO)
  - ✓ Fas-L
  - ✓ PD-L1
  - ✓ HLA-E
  - ✓ HLA-G
  - ✓ HLA-C
  - ✓ **CD47**
  - ✓ CCL-22
  - ✓ CEA
  - ✓ TRAIL
  - ✓ Galectin-1
  - ✓ HLA-E+HLA-G
  - ✓ PD-L1+HLA-E+HLA-G
  - ✓ PD-L1+HLA-E+HLA-G+CD155KO
  - ✓ Fas-L+HLA-E
  - ✓ … And more

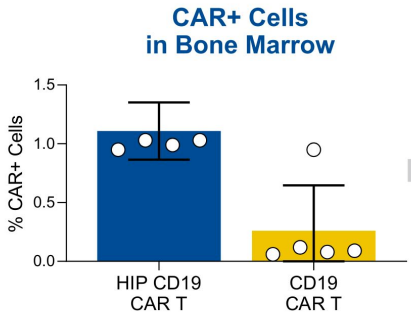
Receptors expressed on % NK cells

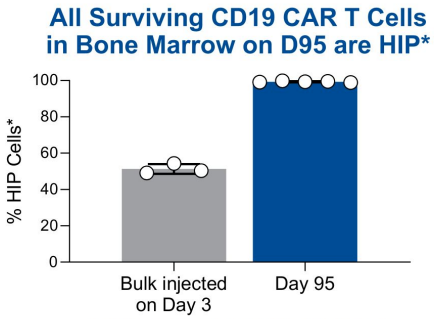


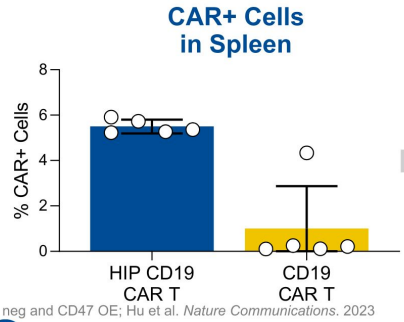
Only subpopulations of NK cells express the appropriate receptors for HLA-C, HLA-E, HLA-G, PD-L1, PVR

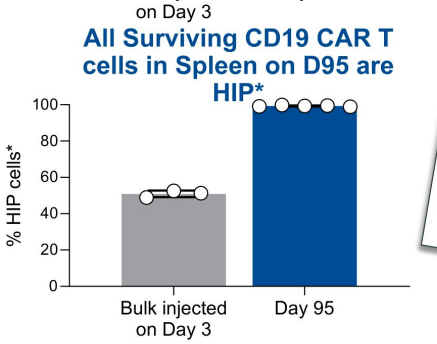
Deuse et al. *J Exp Med.* 2021

Persisting CAR T cells are solely HIP phenotype

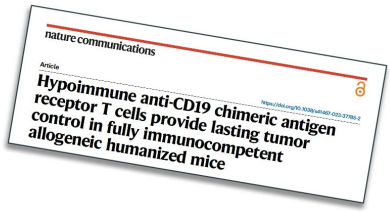








- Bulk HIP CD19 CAR T cells survive in humanized mice.
- While cells injected on D3 as bulk HIP showed <50% HIP cells, all surviving CAR T cells at D95 have the HIP phenotype.


nature communications

Article

Hypoimmune anti-CD19 chimeric antigen receptor T cells provide lasting tumor control in fully immunocompetent allogeneic humanized mice

*HIP cells = HLA-I/II neg and CD47 OE; Hu et al. *Nature Communications*. 2023

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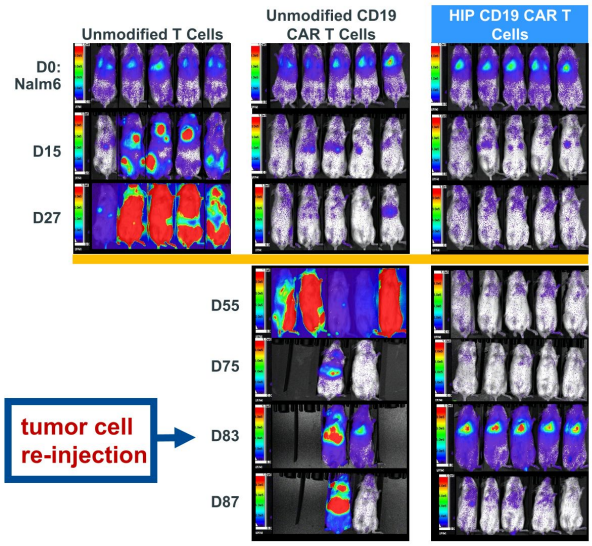
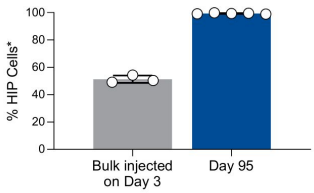
Humanized immune system provided preclinical proof of concept of HIP-modified CAR T cell selection

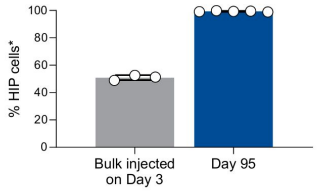


HIP CAR T cells selectively persist for the duration of the experiment

Surviving CD19 CAR T Cells in Bone Marrow on D95 are HIP

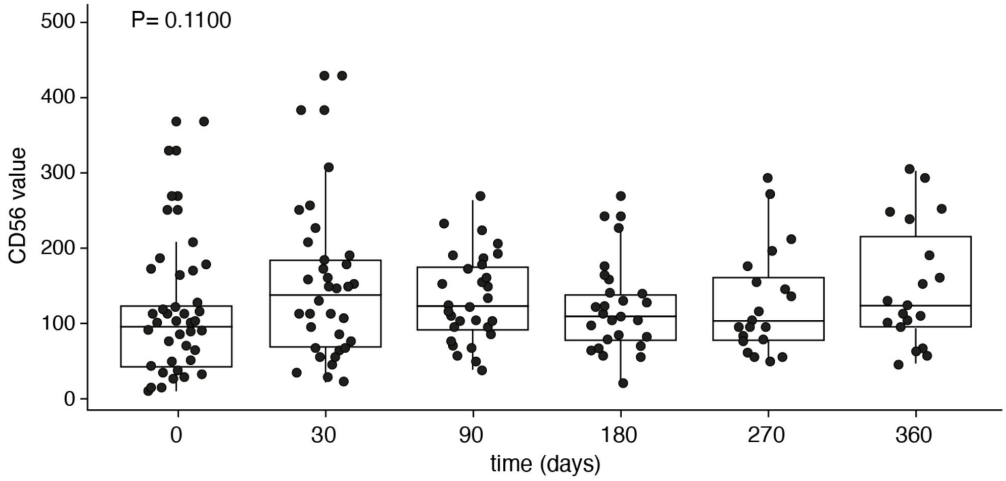


Surviving CD19 CAR T cells in Spleen on D95 are HIP



Hu et al. *Nature Communications*. 2023

NK cells recover within thirty days of CD19 CAR T cell therapy



CD56 value measures NK cells

(Data from 85 Yescarta® patients treated at Moffitt Cancer Center between 2016 and 2019)

Logue et al. *Hematologica*. 2021