

Corporate Presentation
November 2021



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 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 but not limited to its Annual Report on Form 10-K dated March 24, 2021 and Quarterly Report on Form 10-Q dated November 8, 2021. 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

We believe the ability to modify the genome and use engineered cells as medicines will be one of the most (if not the most) important advances in healthcare over the next several decades

Three aspirations drive us in our pursuit to deliver on the promise of cells as medicines

- Repair and control the genes in any cell in the body
- Replace any cell in the body
- Broad access to our therapies

We continue to advance our technologies with multiple INDs planned as early as 2022

Sana goal: fix cells in the body when possible or replace them when needed

in vivo Cell Engineering

Repair and control the genes of any cell in the body

- **Deliver any payload** (DNA, RNA, protein, organelle, integrating vs non-integrating)...
- **To any cell** (unlimited volume of distribution) **in a...**
- **Specific** (e.g., just T cell),...
- **And repeatable way** (limit immunogenicity)

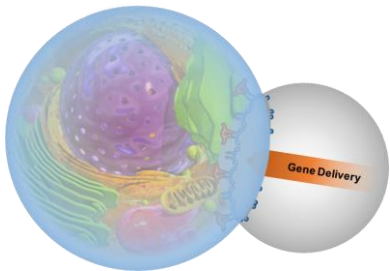
ex vivo Cell Engineering

Replace any cell in the body

- **Manufacture any cell at scale...**
- **That engrafts** (the right cell in the right environment)...
- **Functions** (understand exact phenotype desired)...
- **And persists** (overcome immune rejection and cellular signaling, such as apoptotic signaling)

Assembling an experienced team across capabilities

Delivery of Genetic Material



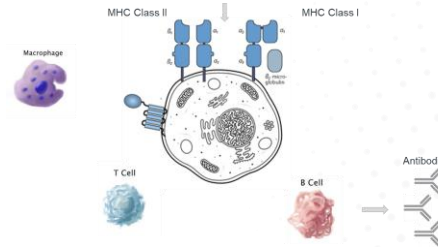
Richard Mulligan, PhD
Jagesh Shah, PhD

Modification of Genome



Ed Rebar, PhD
Christina Chaivorapol, PhD

Immunology



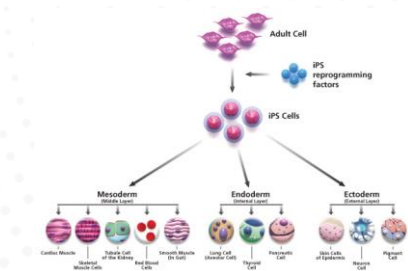
Sonja Schrepfer, MD, PhD
Terry Fry, MD

Biology

Cell
Biology

Stem Cell
Biology

Disease
Biology



Sunil Agarwal, MD
Terry Fry, MD
Chuck Murry, MD, PhD
Steve Goldman, MD, PhD
Donna Dambach, VMD, PhD
Ke Liu, MD, PhD

Manufacturing



Stacey Ma, PhD
Craig Lichtenstein
Laura Deschenes, PhD
Oscar Salas, PhD

Sana's platforms, technology and programs

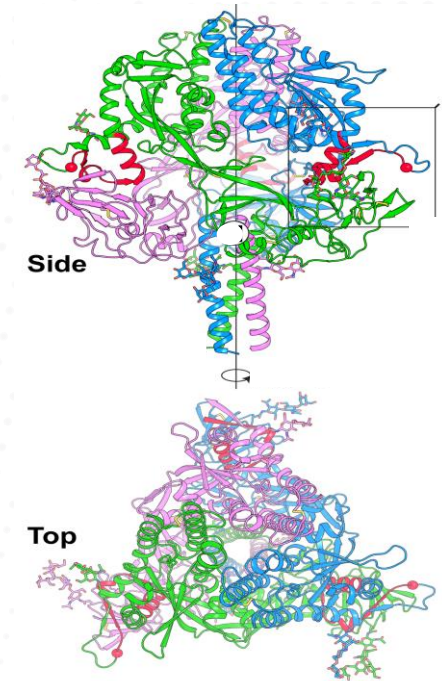
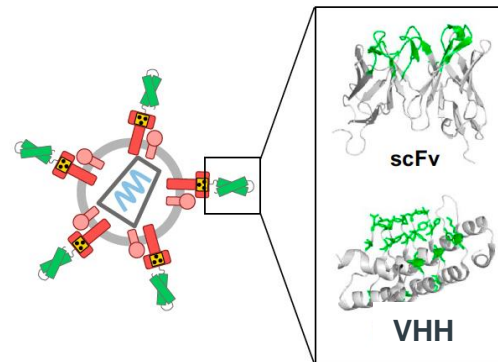
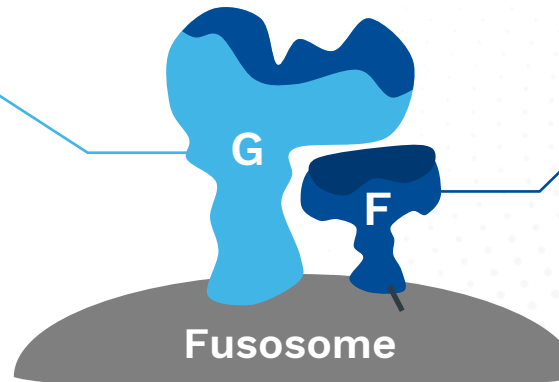
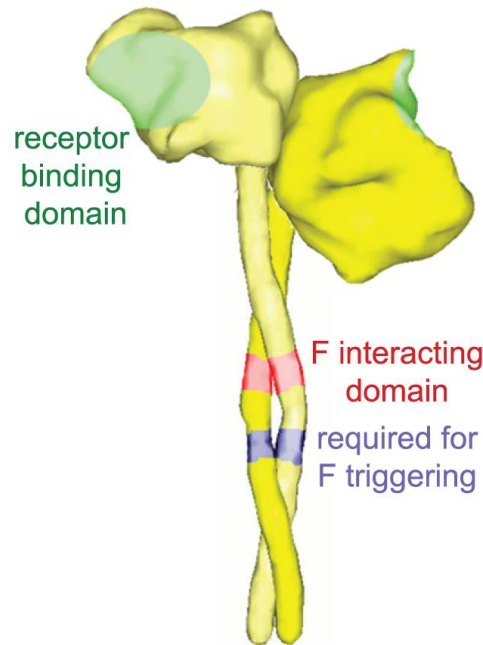
PLATFORM	TECHNOLOGY	PROGRAMS (CELL TYPES)	THERAPEUTIC AREA	PRODUCT CANDIDATE	POTENTIAL INDICATIONS	POTENTIAL IND SUBMISSION
in vivo cell engineering	Fusogen	T cells	Oncology	SG295 (CD8/CD19)	NHL/ALL/CLL	As early as 2022
				SG239 (CD8/BCMA)	Multiple myeloma	As early as 2024
				SG242 (CD4/CD19)	NHL/ALL/CLL	As early as 2023
				SG221 (CD4/BCMA)	Multiple myeloma	As early as 2024
		Hepatocytes	Liver-related genetic disorders	SG328	OTC ¹	As early as 2023
ex vivo cell engineering	Hypoimmune donor-derived	T cells	Oncology	SC291 (CD19)	NHL/ALL/CLL	As early as 2022
				SC255 (BCMA)	Multiple myeloma	As early as 2023
	Hypoimmune stem cell-derived	Beta cells	Diabetes	SC451	Type 1 diabetes	As early as 2023
	Stem cell-derived (to migrate to hypoimmune)	Glial progenitor cells	Central nervous system (CNS)	SC379	Huntington's disease	As early as 2023
					Pelizaeus-Merzbacher disease	As early as 2023
					Secondary progressive multiple sclerosis	As early as 2023
		Cardiomyocytes	Cardiovascular	SC187	Heart failure	As early as 2023

¹Ornithine transcarbamylase deficiency

Sana's fusosome technology makes use of a viral fusogen to enable the targeting of specific cells and the delivery of different therapeutic payloads

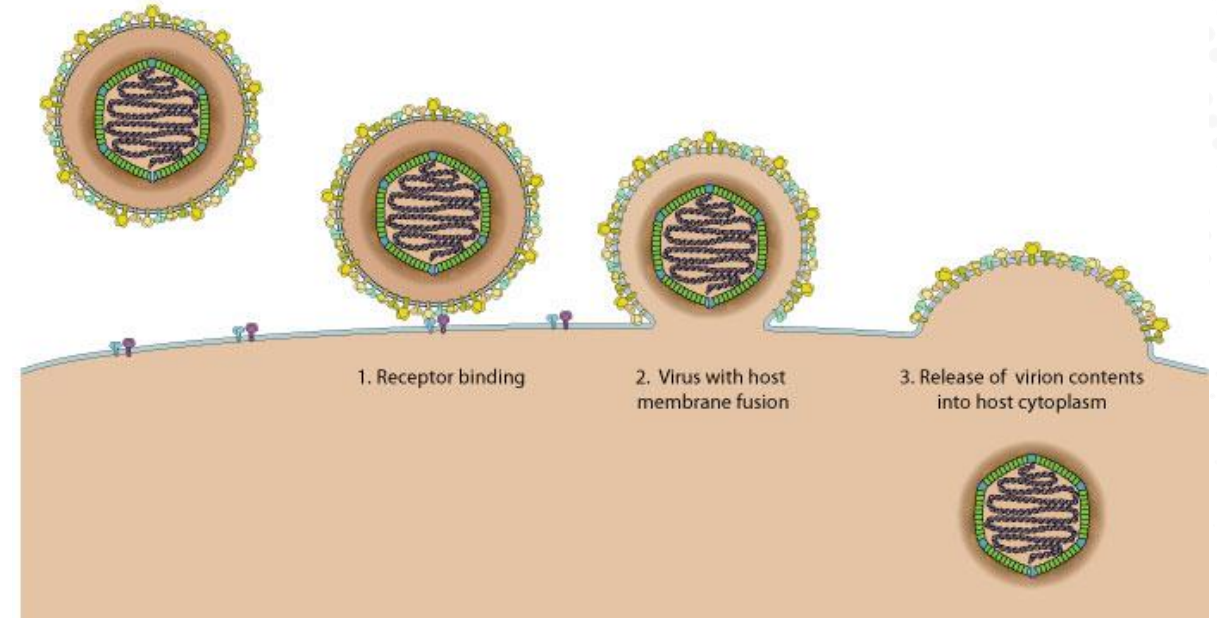
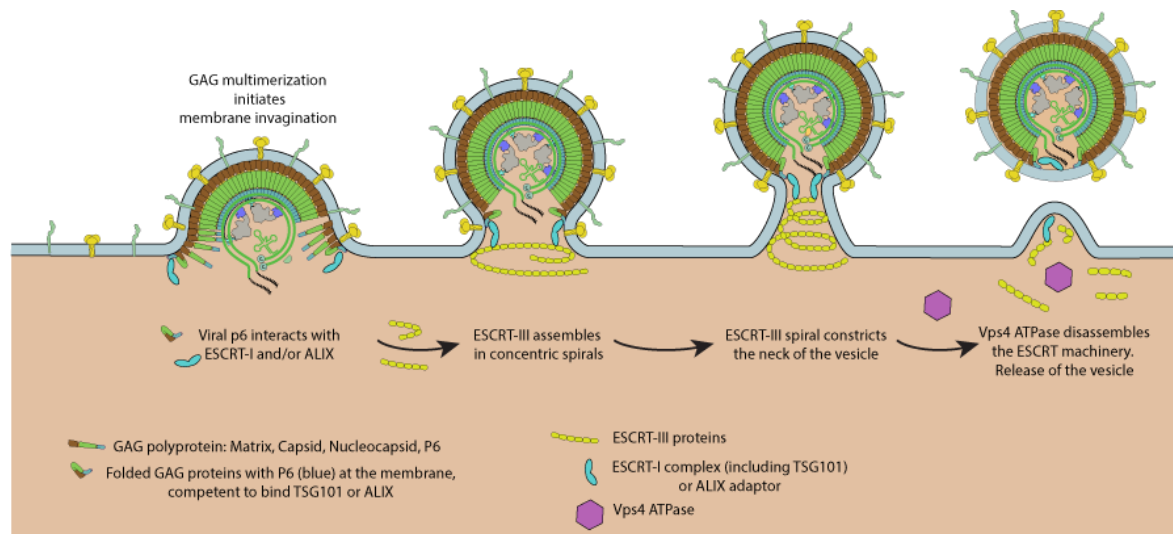
G protein dictates binding to a target receptor

F protein drives fusion



Development of cell-specific *in vivo* delivery platform

Fusogen Technology

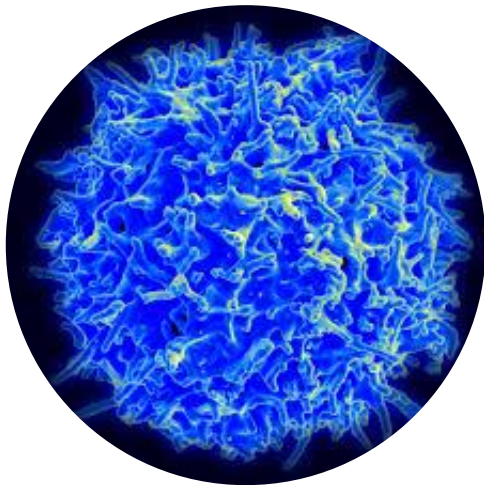


Enveloped viruses incorporate viral and cellular proteins (**fusogens**) expressed on the infected cell membrane upon release from infected cells

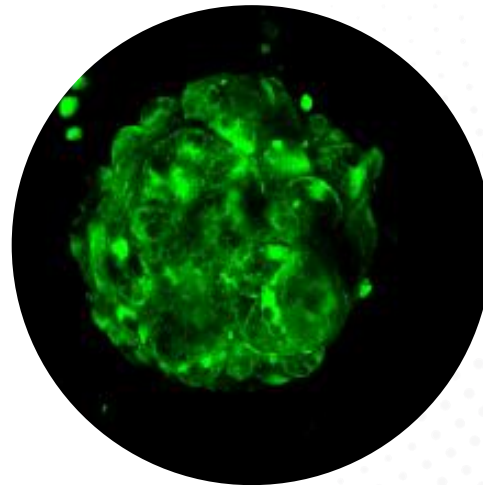
Fusogens on surface of the resulting virus particles (**fusosomes**) mediate virus entry via direct fusion of virus and cell membranes

in vivo cell engineering – creating targeted medicines across a diverse set of cell types

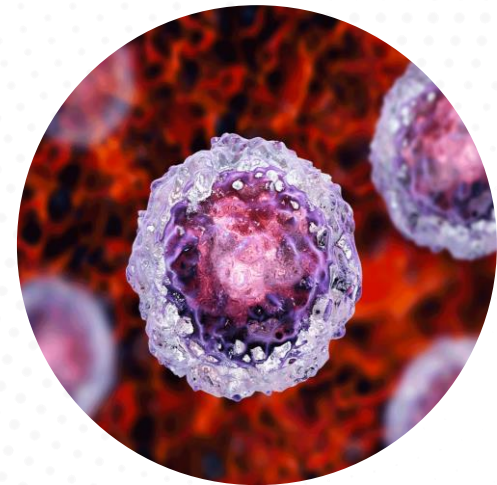
in vivo cell engineering strategy focused on developing therapies with transformative **fusogen platform delivery based on cell specificity and payload diversity**



T cells



Hepatocytes

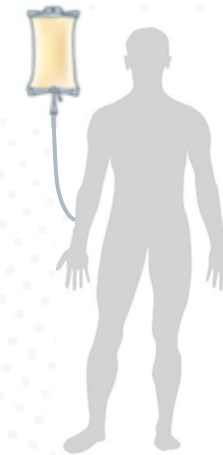
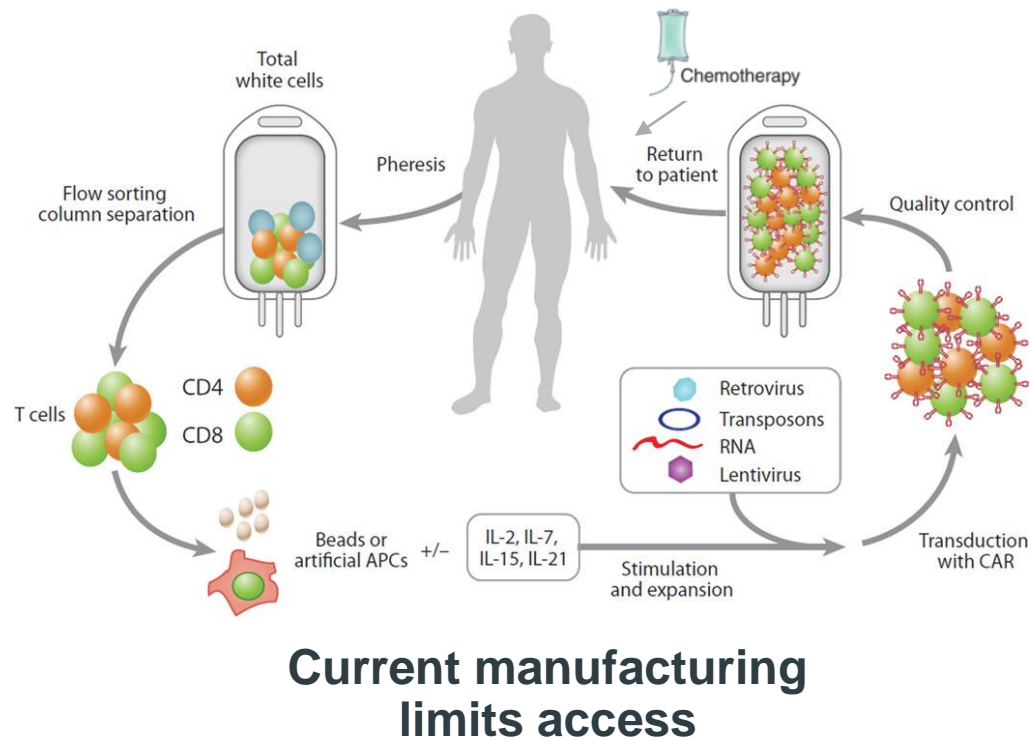


Hematopoietic
stem cells

Blood cancers remain high unmet need; despite success, current CAR T solutions have limitations

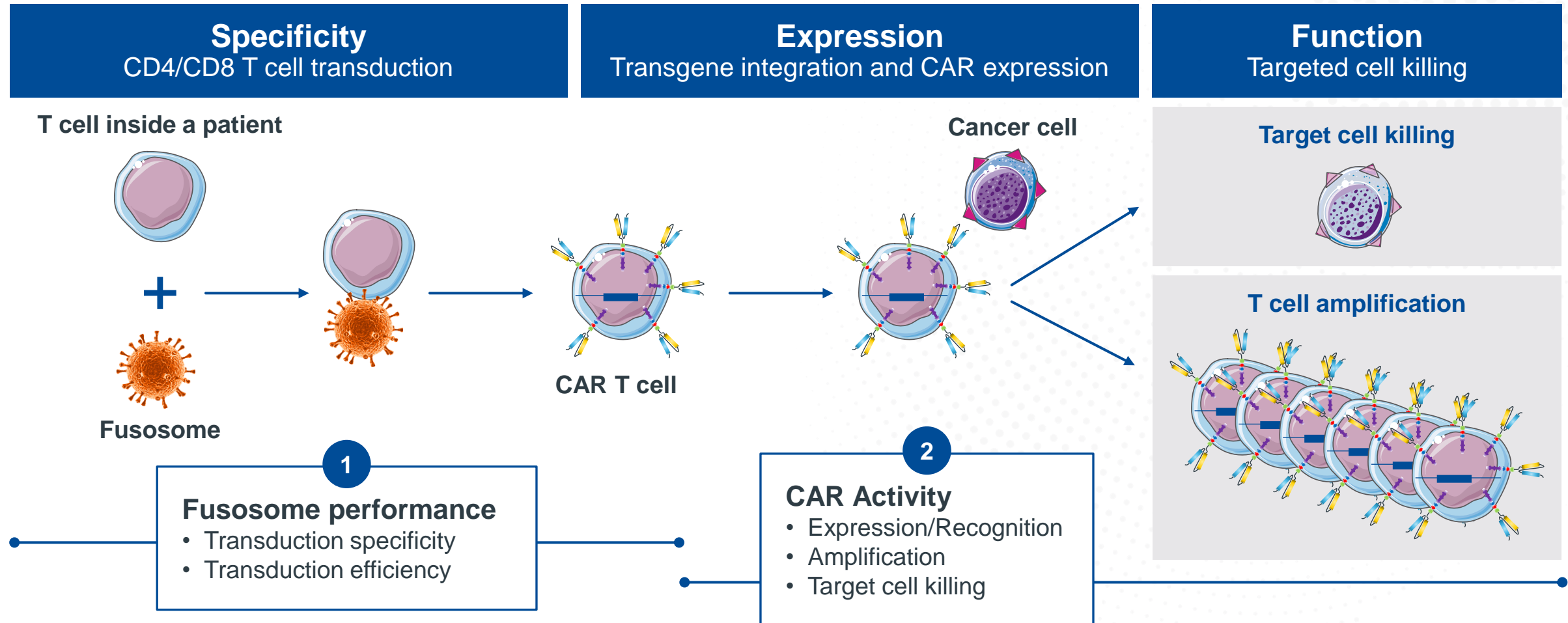
Current *ex vivo* approaches have limitations

Fusogen platform offers potential to overcome these limitations



T cell fusosome carrying CAR construct infused into patient; the patient is the bioreactor that creates CAR T

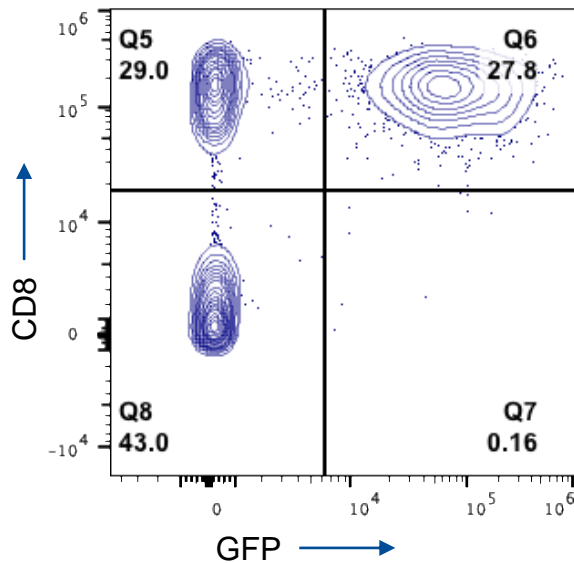
Using a T cell-targeted fusosome to make CAR T cells *in vivo*



Targeting of different T cell types by viral fusosomes

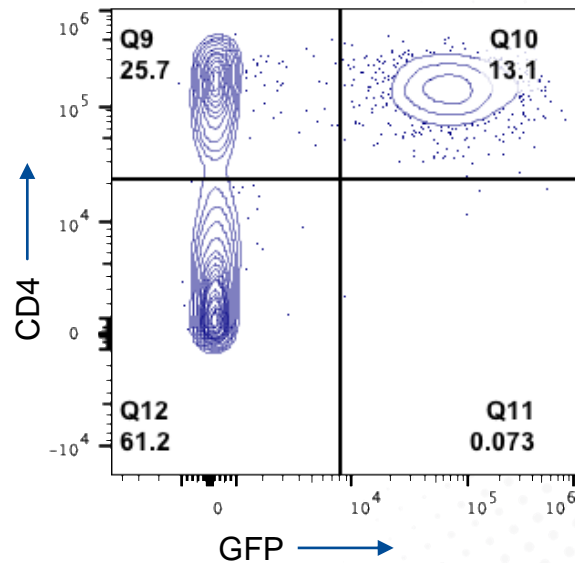
Sana has generated fusosomes that specifically target and transduce CD8, CD4 and CD3 T cells

CD8-targeted



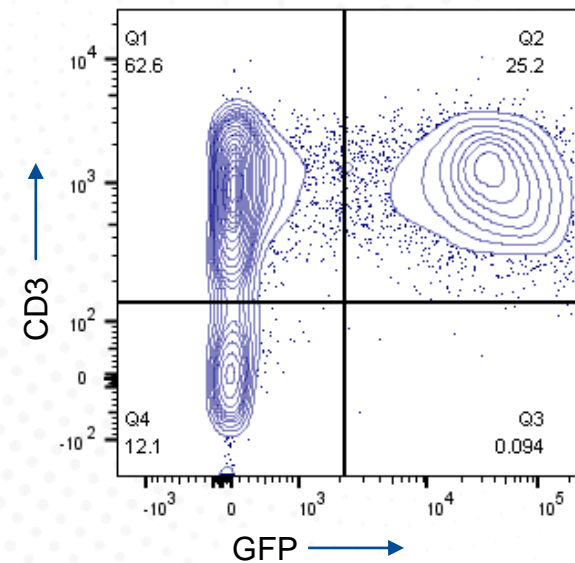
CD8-targeted fusosome
in vitro primary T cells

CD4-targeted



CD4-targeted fusosome
in vitro primary T cells

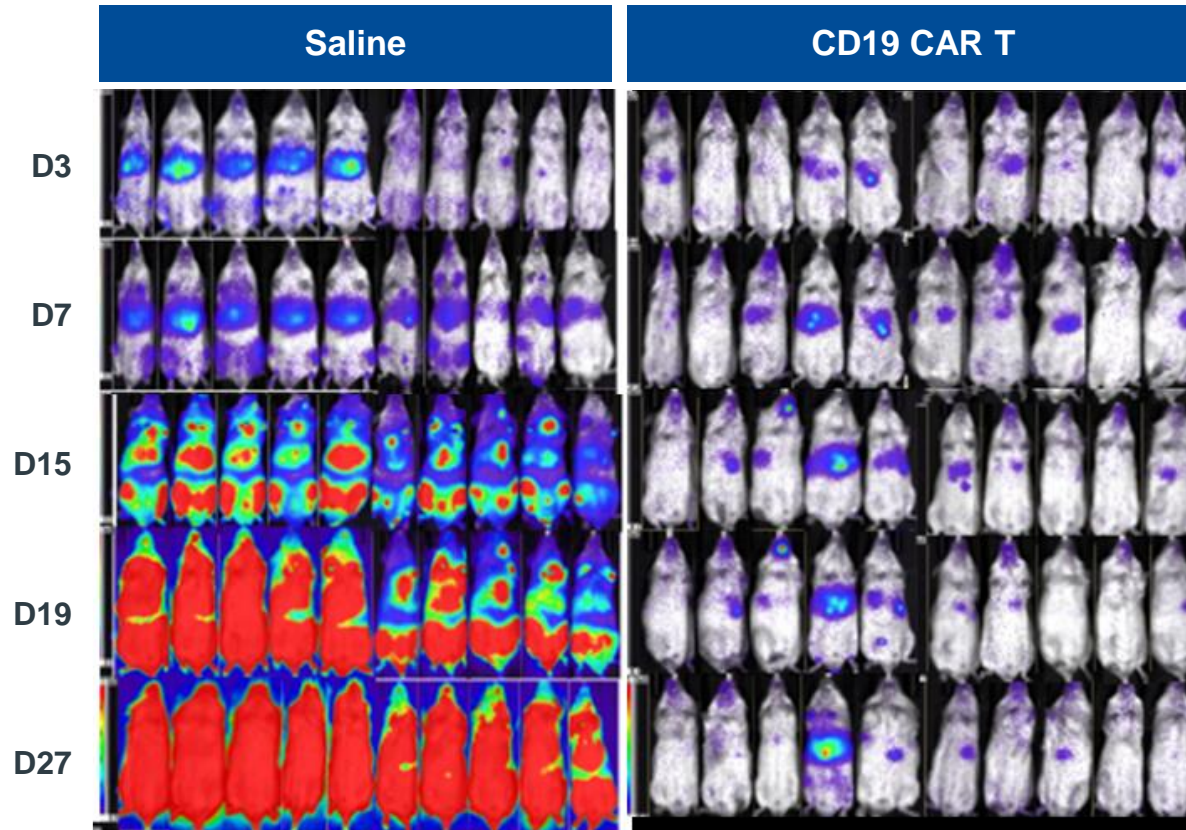
CD3-targeted



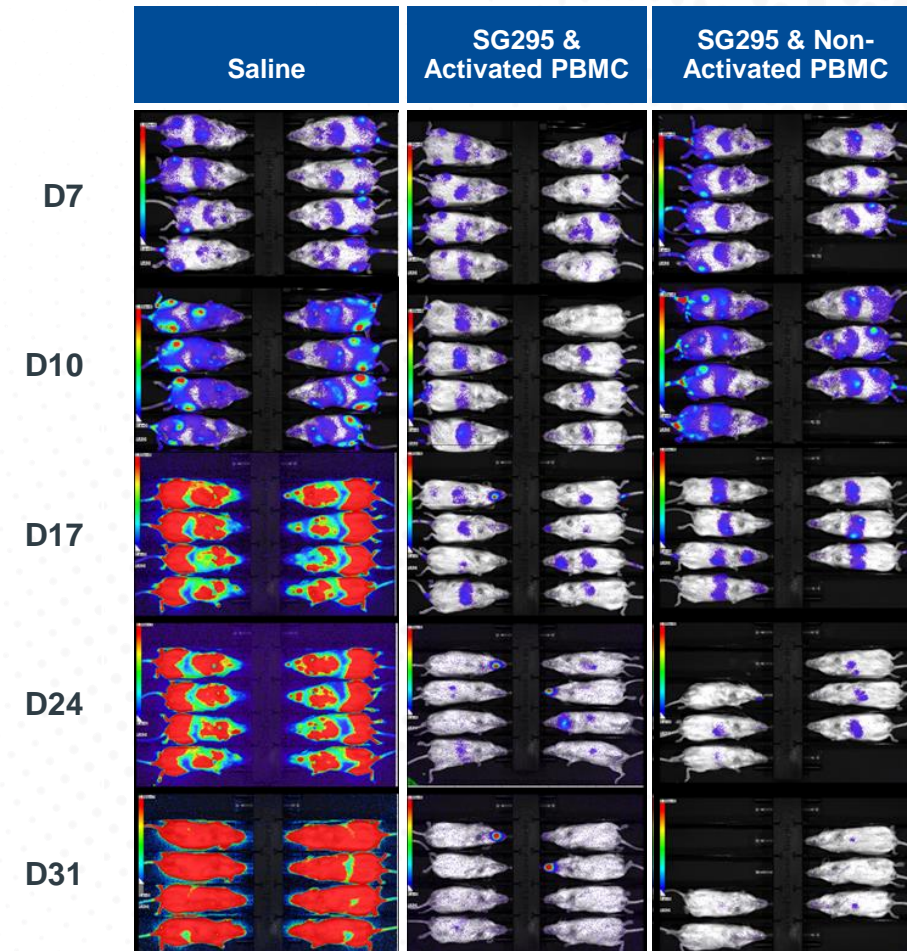
CD3-targeted fusosome
in vitro primary PBMCs

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

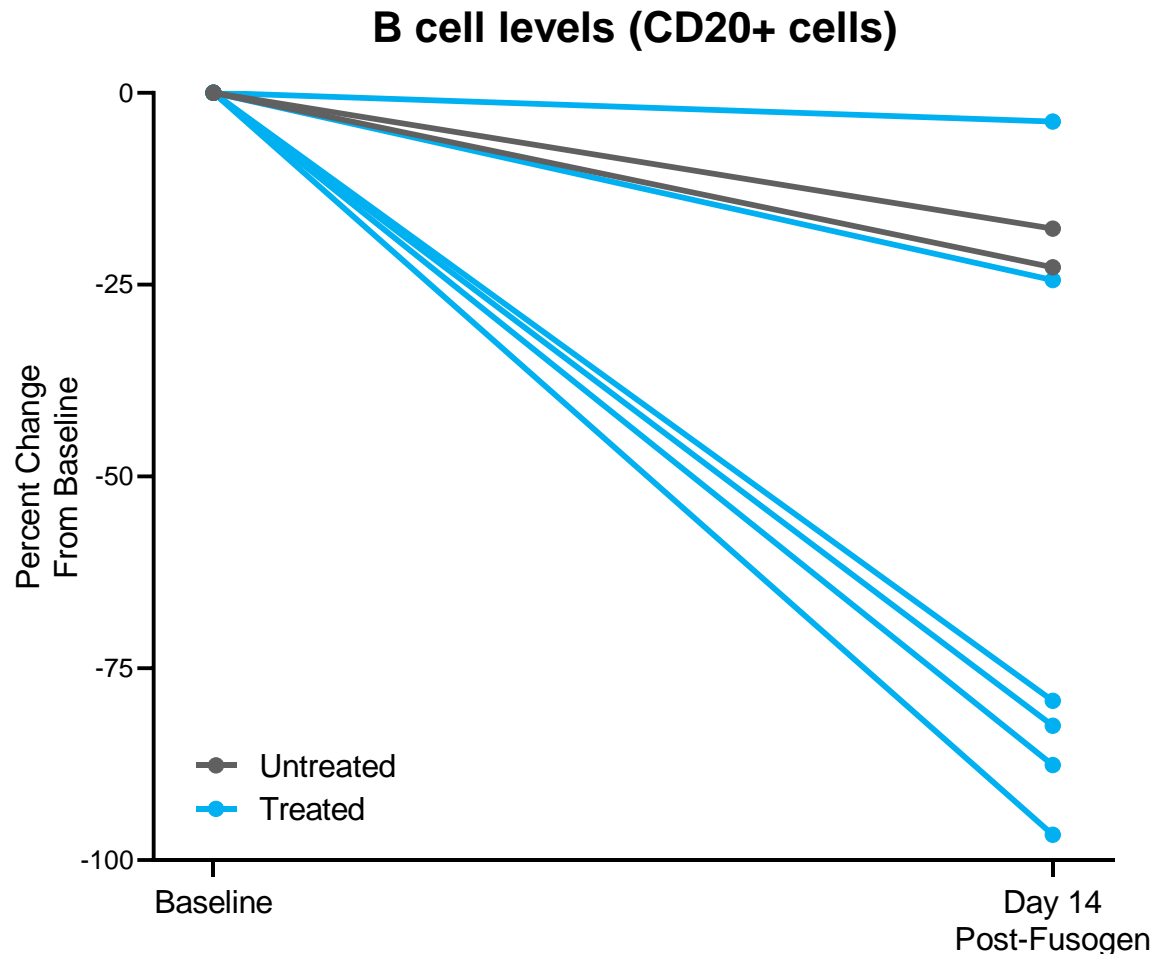
CD19 CAR: *ex vivo*



CD19 CAR delivered by fusogen: *in vivo*



CD8 fusogen delivering a CD20 CAR causes B cell depletion in NHPs



- Dosing well tolerated in all animals treated with CD20 CAR T delivered by CD8 fusogen, no infusion-related toxicity or evidence of CAR-associated toxicity
- Substantial B cell depletion observed in 4/6 treated animals

Potential first-in-class fusogen T cell programs – potential to target large markets with a single IV administration

Next Steps SG295 and SG239

- IND-enabling studies and scale GMP manufacturing
- Finalize development plan – expect initial indications in NHL for CD19 and multiple myeloma for BCMA

Future Development

- Build CD8 and CD4 fusogen programs
- CD19 indications beyond NHL
- Targets beyond CD19 and BCMA

Protecting cells from immune destruction is key to unlocking potential of *ex vivo* cell engineering

Fetomaternal tolerance during pregnancy

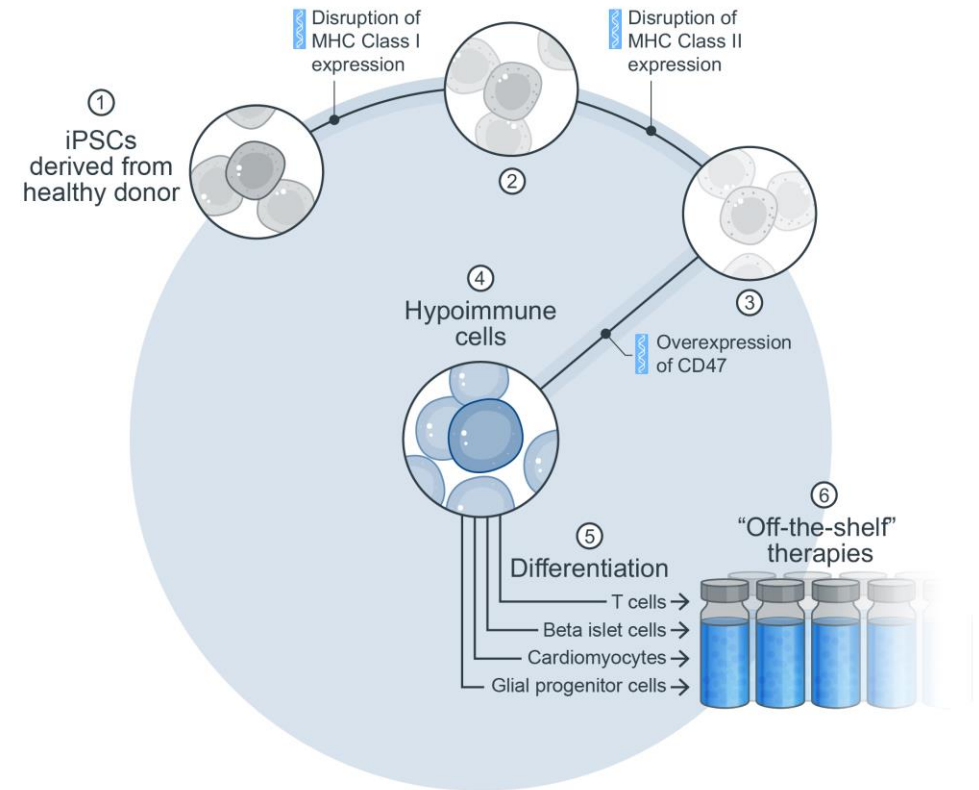
“Allogeneic” fetus:

- Half of fetal proteins are from the father, not the mother.
- However, the fetus is not rejected by the mother.



How can we protect our engineered cells from getting attacked from the recipient's immune system?

Sana approach: creating hypoimmune cells from human iPSCs

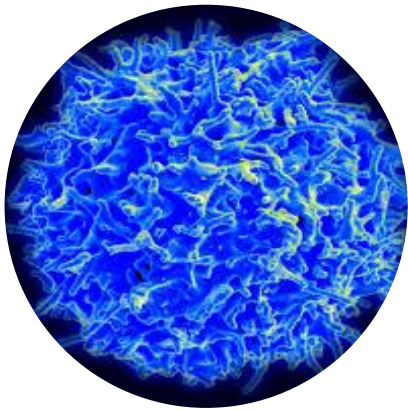


Sana is pursuing a broad *ex vivo* cell engineering strategy

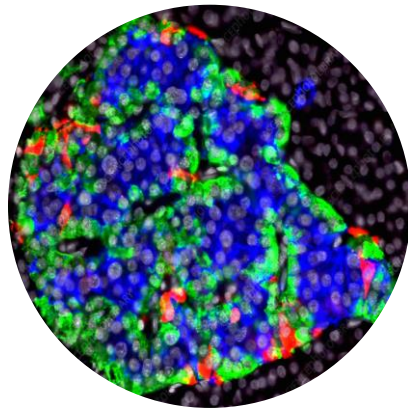
Transforming *ex vivo* cell engineering through development of hypimmune cell platform

Differentiate pluripotent stem cells with hypimmune edits

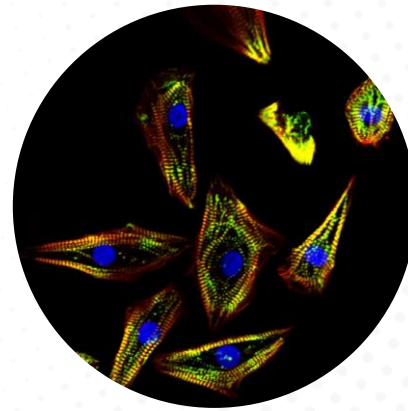
Programs that benefit from, but do not require hypimmune



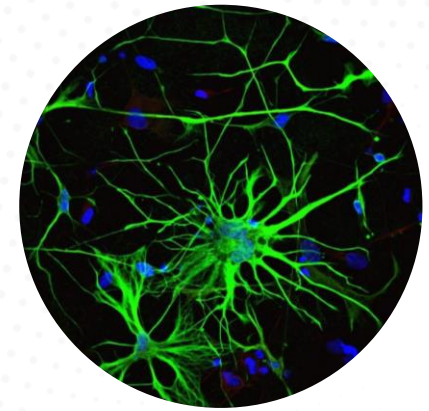
T cells



Pancreatic islets



Cardiomyocytes



Glial progenitor cells

Hypoimmune cells evade rejection from the adaptive and innate immune system in a mouse

Evade the adaptive immune system

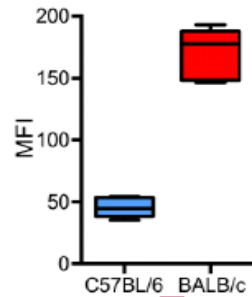
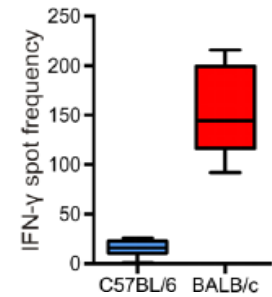
T Cell Activation
(ELISPOT)

IgM Binding
(FACS)

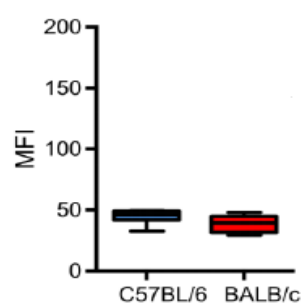
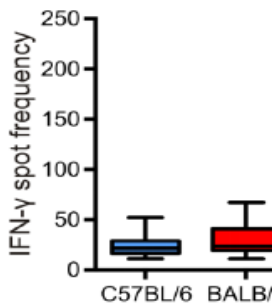
No systemic T cell activation with
HIP cell transplantation

No binding of donor specific
antibodies against HIP cells

Unmodified iPSC



HIP



Evade the innate immune system

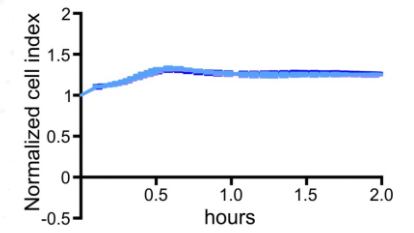
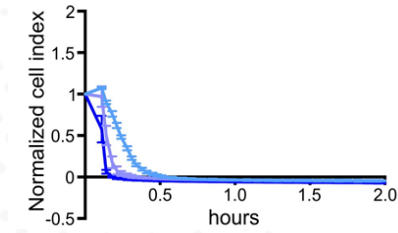
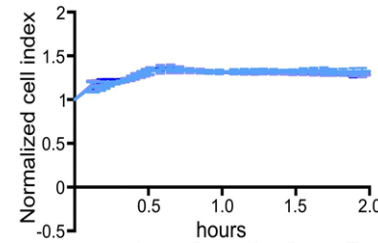
NK Cell Killing

No NK cell killing with HIP

Wildtype Unmodified Cells

MHC Class I/II Disruption

MHC Class I/II Disruption
& CD47 Overexpression



No killing of unmodified
cells by NK cells

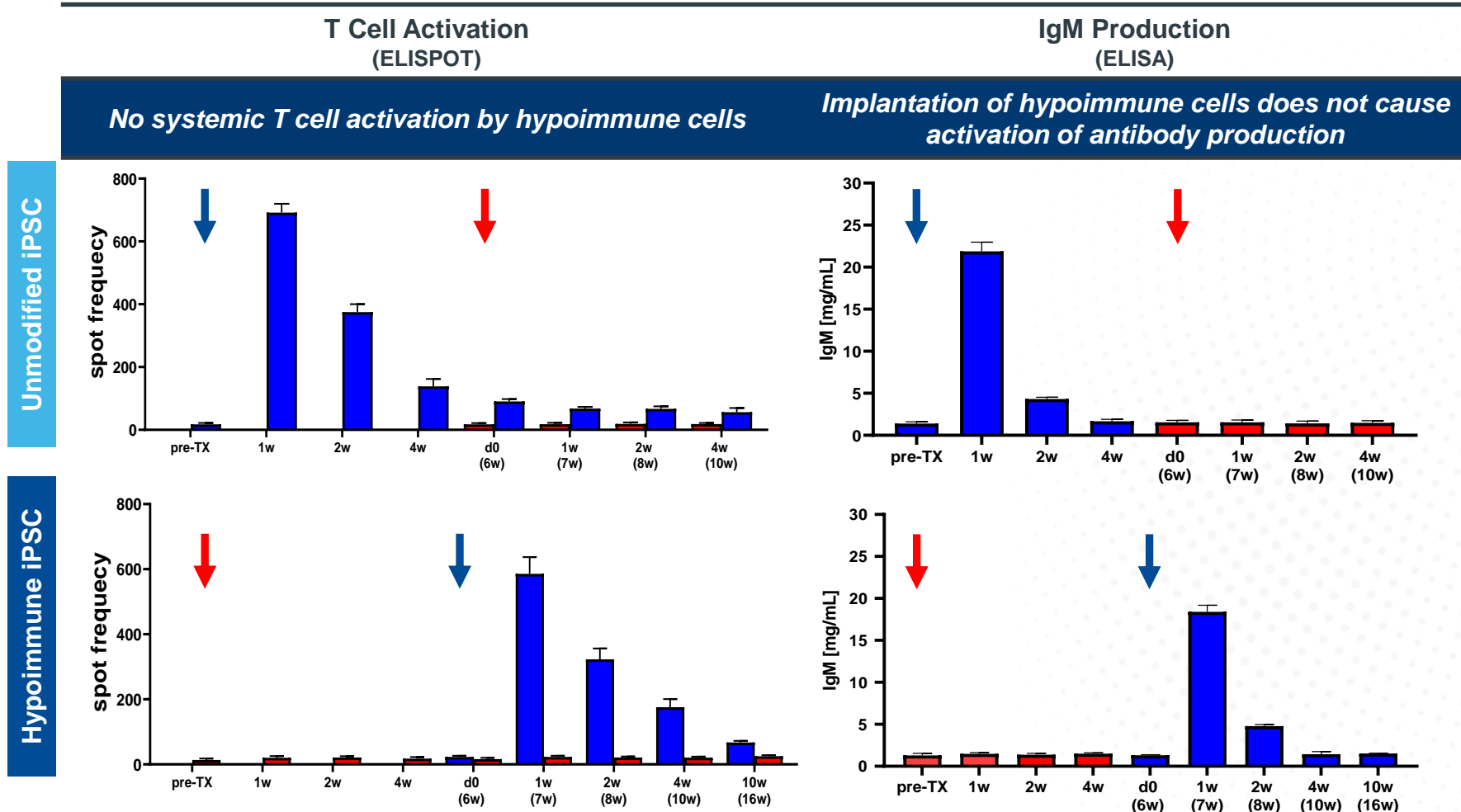
Killing of partially edited
iPSC; HLA I/II knockout
by NK cells

No killing of HIP
cells by NK cells

Deuse T, ..., Schrepfer S. *Nat Biotechnology*. 2019; 37:252-258

Hypoimmune cells in NHP: no systemic adaptive immune activation after transplantation of hypoimmune iPSCs into naïve and sensitized NHPs

Transplantation of NHP iPSCs into allogeneic NHPs: immune evasion is achieved even after prior sensitization



- HIP cells did not activate the systemic adaptive immune system (T cells and B cells)
- HIP cells evaded immune responses in a crossover experiment in NHP with pre-existing immunity
- Data suggest the potential to treat autoimmune disorders such as type 1 diabetes

Hypoimmune cells do not elicit an innate immune response in allogeneic NHP recipients

Transplantation of NHP iPSCs into allogeneic NHPs (n=4/group)

Killing by macrophages

Killing by NK cells

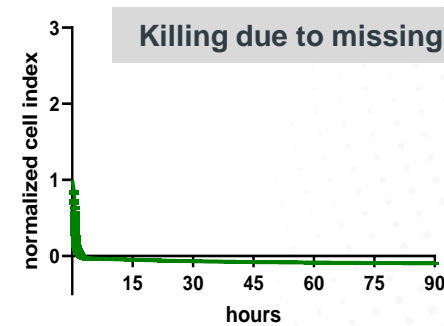
Hypoimmune cells do not activate the "missing self" response from the macrophages

Anti-CD47 safety switch

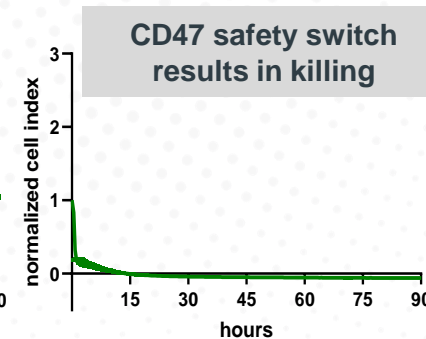
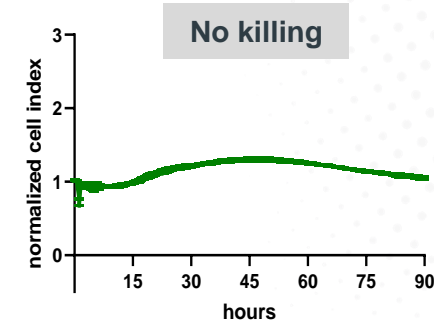
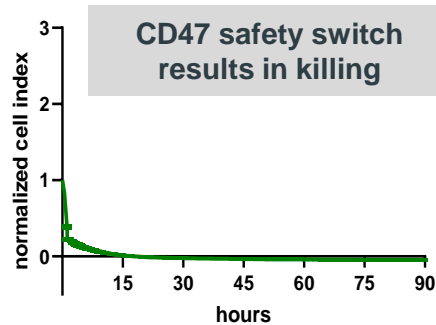
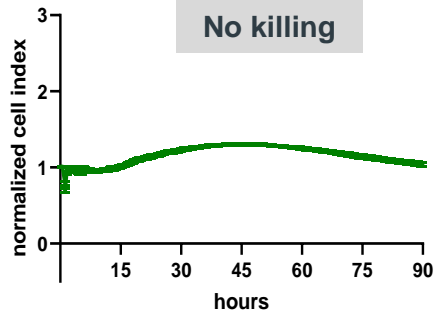
Hypoimmune cells do not activate the "missing self" response from the NK cells

Anti-CD47 safety switch

MHC-I/II KO iPSC

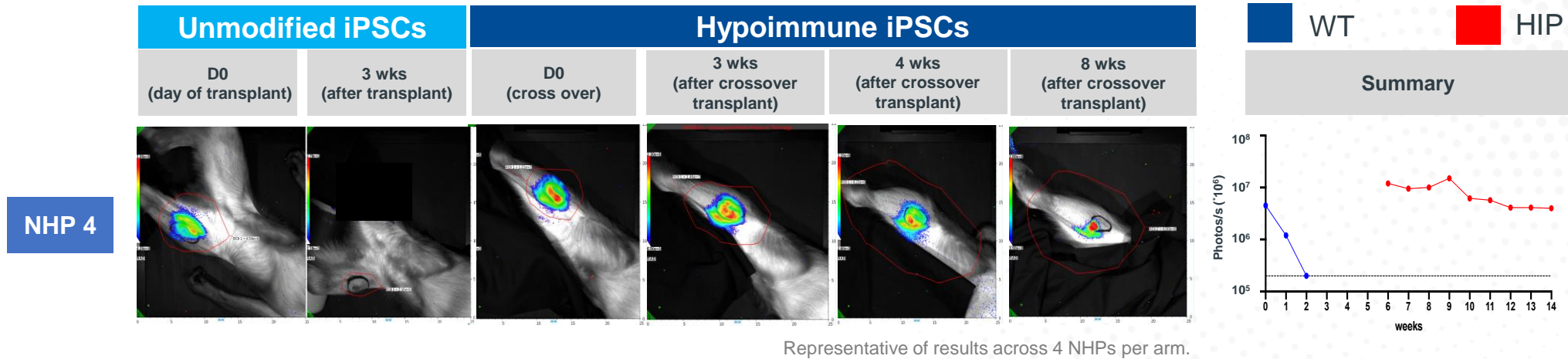


Hypoimmune iPSC



- HIP cells do not activate the "missing self" response from macrophages and NK cells
- "Safety switch": CD47 blockade results in killing by innate cells, providing a possible "safety switch"

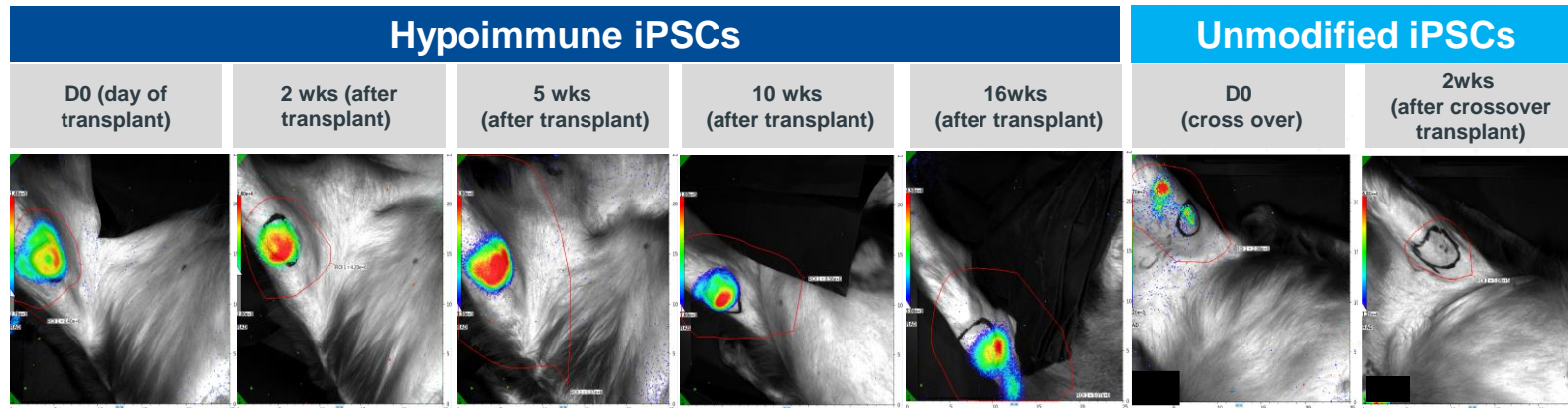
Hypoimmune cells survive and proliferate in allogeneic sensitized NHPs without immunosuppression



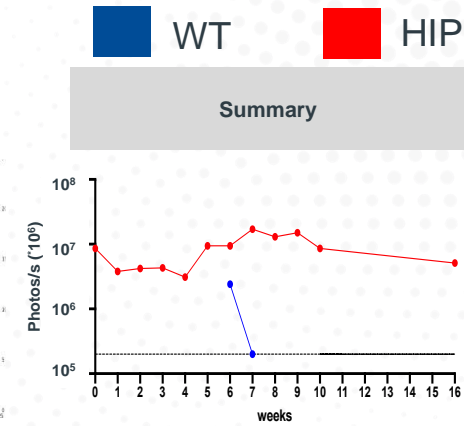
- Unmodified cells were rejected within 3 weeks
- Hypoimmune cells survive in a crossover experiment in NHPs with pre-existing immunity
- Data suggest the potential to treat autoimmune disorders such as type 1 diabetes

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

NHP 5



Representative of results across 4 NHPs per arm.

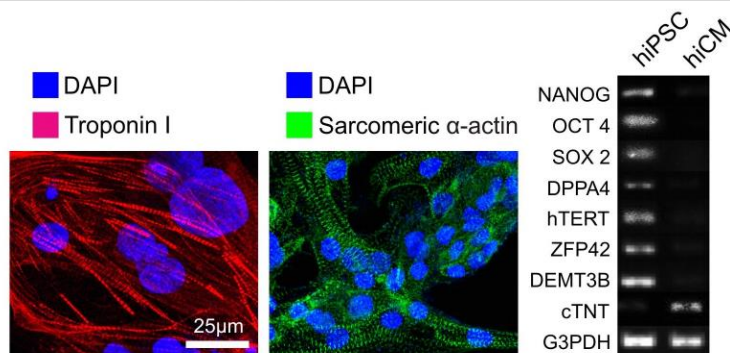


- Hypoimmune cells survive in allogeneic NHPs
- Unmodified cells get rejected while hypoimmune cells continue to survive

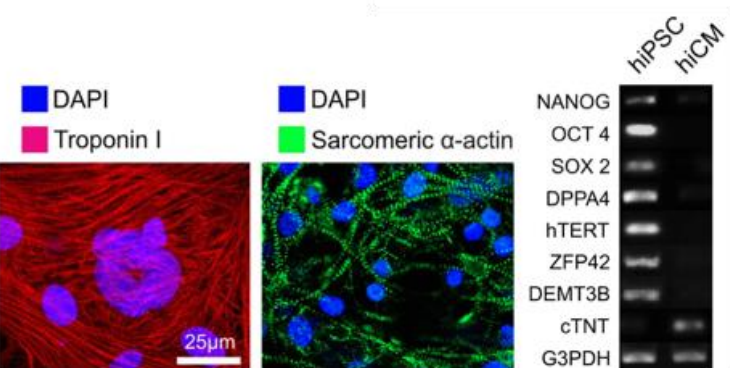
Human hypoimmune cells differentiate into various cell types

Hypoimmune edits (HLA-I knockout, HLA-II knockout, CD47tg) do not affect differentiation capacity nor intrinsic cell function.

Cardiac cell differentiation



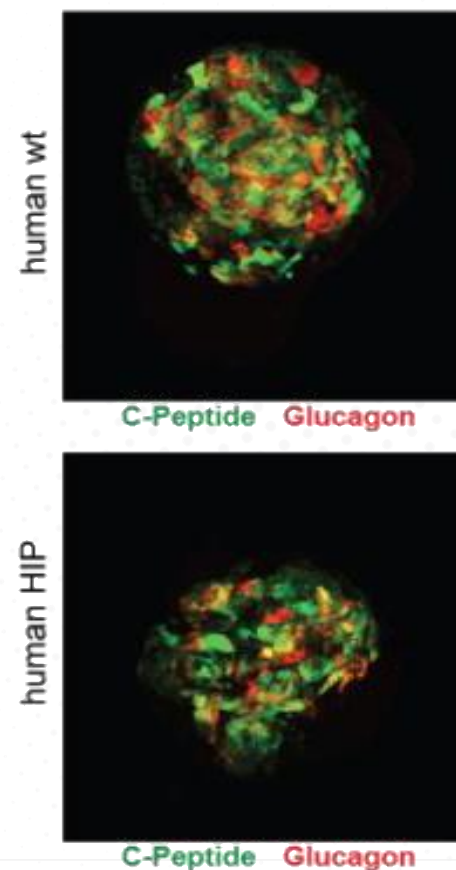
Unmodified iPSC



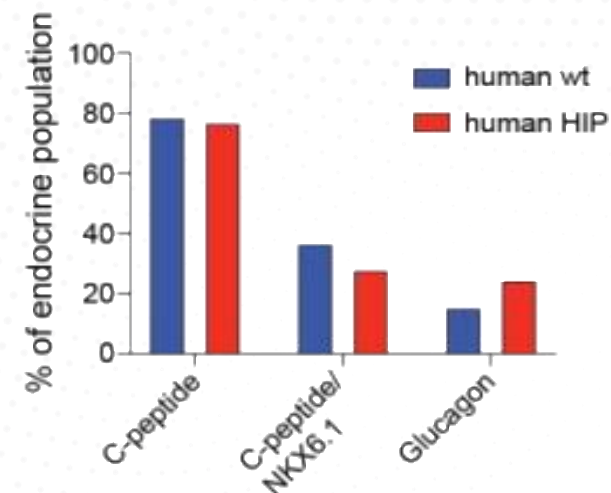
Hypoimmune iPSC

Deuse T, Hu X, ..., Schrepfer S. *Nat Biotechnology*. 2019; 37:252-258

Islet cell differentiation



Immunofluorescence on day 22

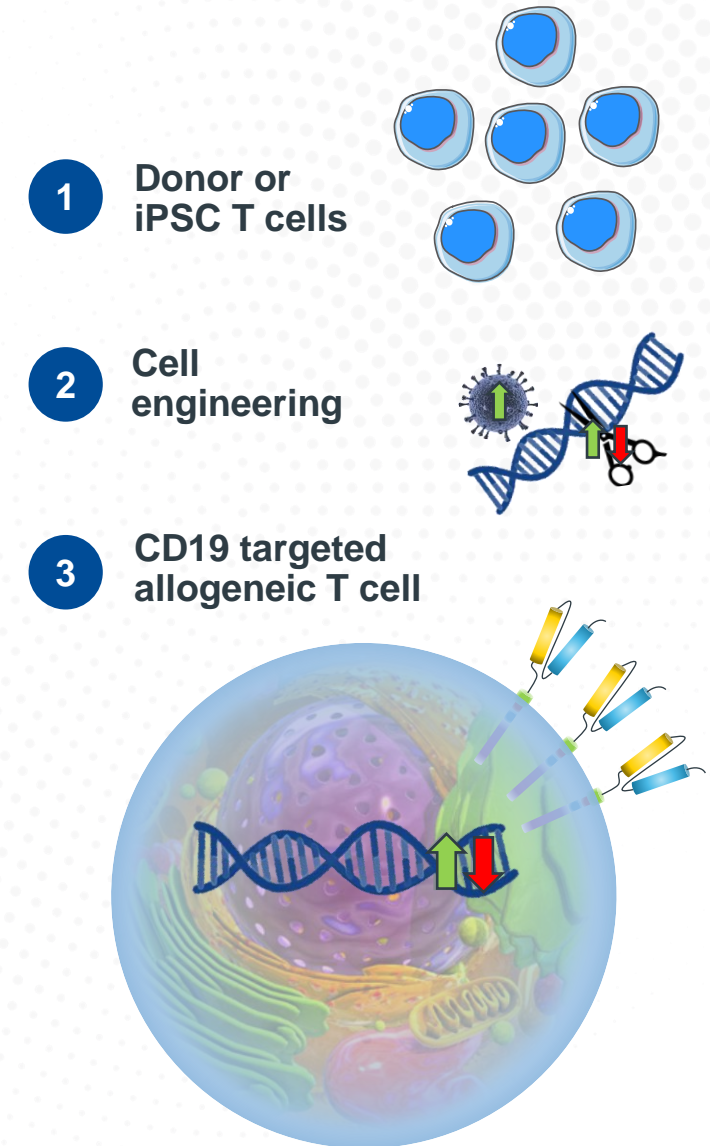


Sana's hypoimmune allo T: potential best-in-class opportunity

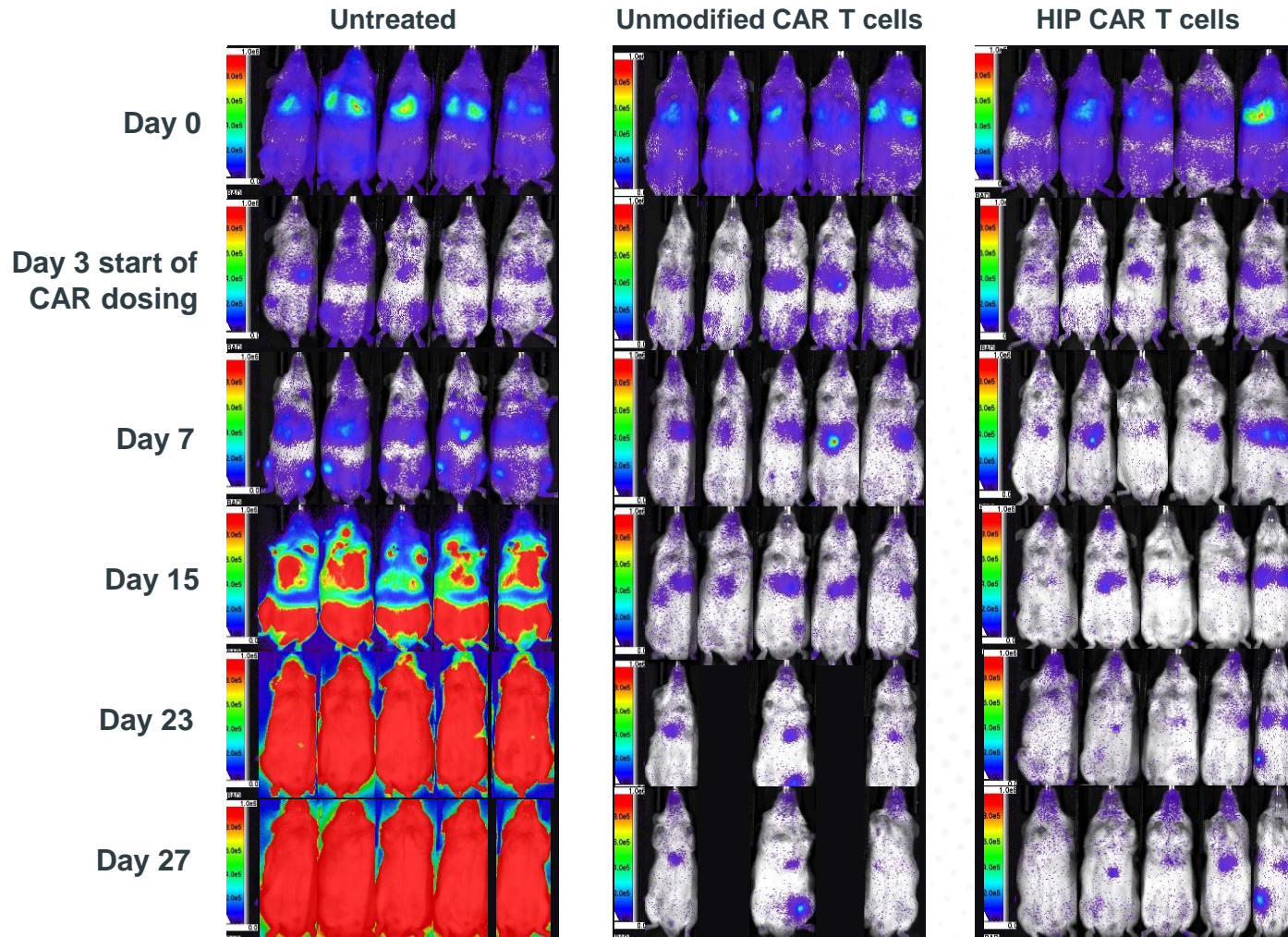
IMMUNE CHALLENGES	CURRENT ALLO T	SANA'S HYPOIMMUNE ALLO T
GvHD		
HvGD: Adaptive Immune System		
HvGD: Innate Immune System		

We believe we are better positioned to overcome immune challenges versus existing allo T therapies

Note:
GvHD: Graft versus Host Disease
HvGD: Host versus Graft Disease

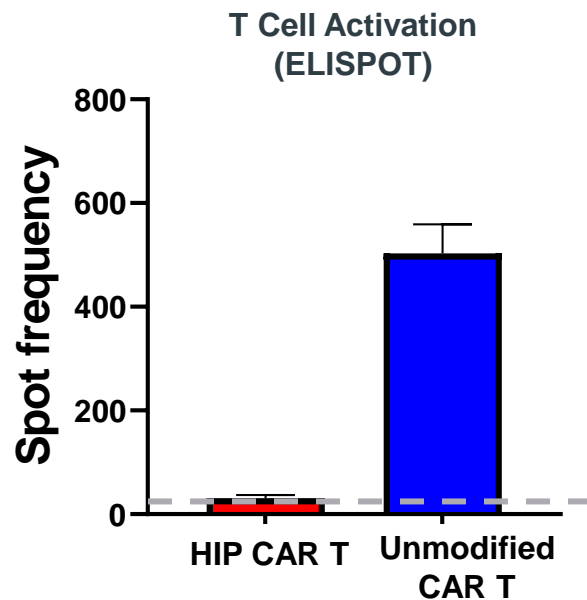


CD19 HIP CAR T cells clear tumor *in vivo*

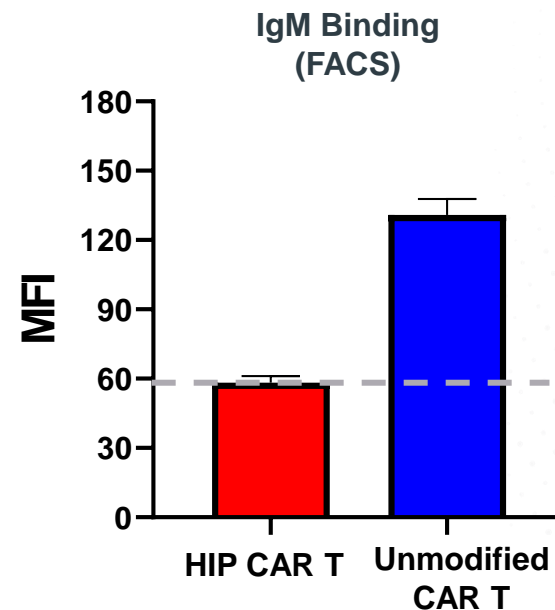


CD19 HIP CAR T cells do not activate adaptive or innate immune responses

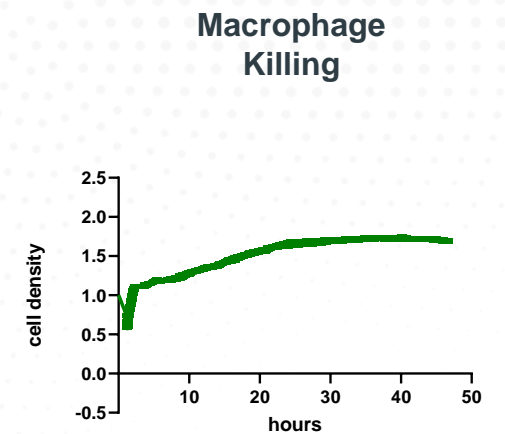
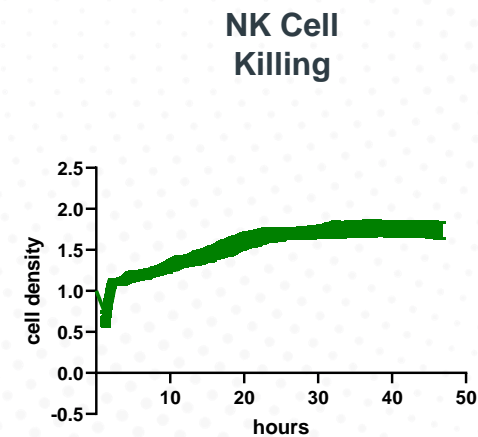
T cells are not activated by HIP CAR T cells



HIP CAR T cells do not incite an antibody response



HIP CAR T cells evade innate cell “missing self” response



Allogeneic CAR T cells: potential best-in-class CAR T platform for off-the-shelf therapies

Next Steps for SC291

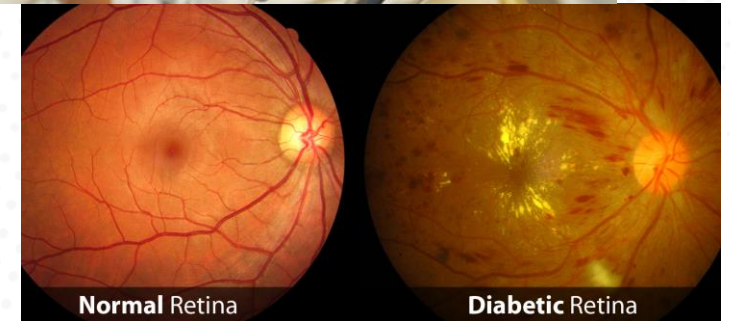
- Develop GMP gene editing and manufacturing processes
- Finalize development plan – expect initial indication in NHL

Future Development

- SC291 for other B cell malignancies
- SC255 for multiple myeloma
- Targets beyond CD19 and BCMA

Type 1 diabetes represents a large unmet need with a loss of approximately 15 years of life

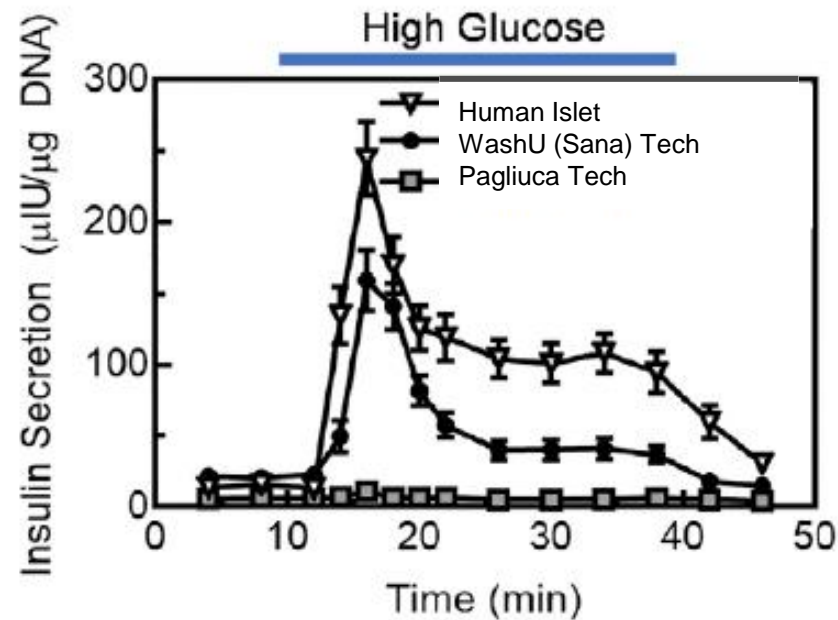
- Autoimmune disease where destruction of insulin-producing beta cells results in inability to control glucose
- 1.6 million patients with type 1 diabetes in the US and 2.4 million in Europe; 51k new patients/year combined
- Approximately 15-year shorter life expectancy*
- Long term complications: end-organ damage, including heart attack, stroke, peripheral vascular disease, retinopathy, nephropathy
- Our goal is to produce hypoimmune beta cells that evade the immune system and normalize glucose



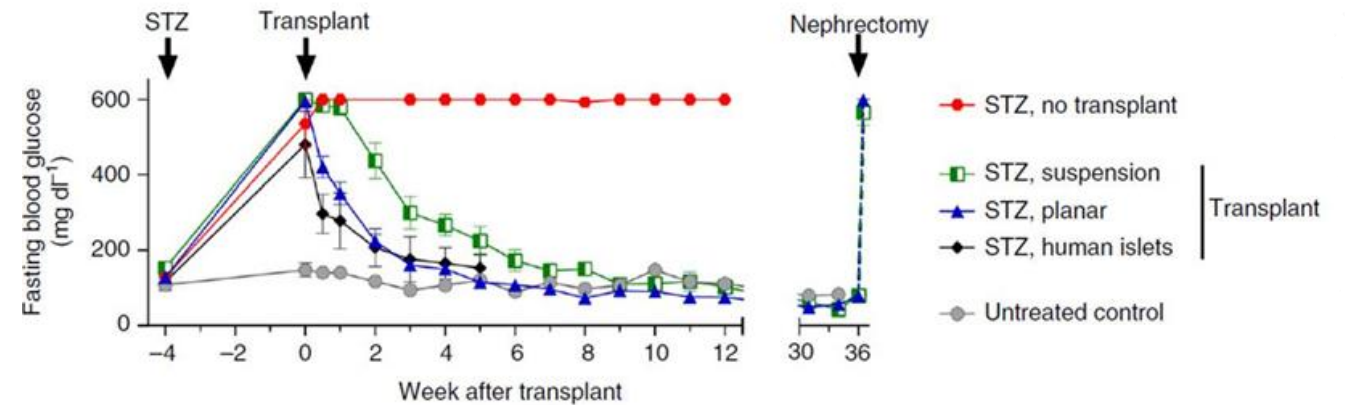
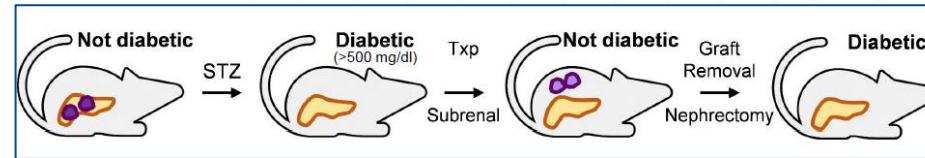
*Rawshani *et al*, Lancet 2018

SC451: combining HIP edits with leading beta cells protocol offers transformative potential for type 1 diabetes patients

Superior insulin secretion and faster kinetics *in vitro*



Robust rescue of type 1 diabetes mouse model



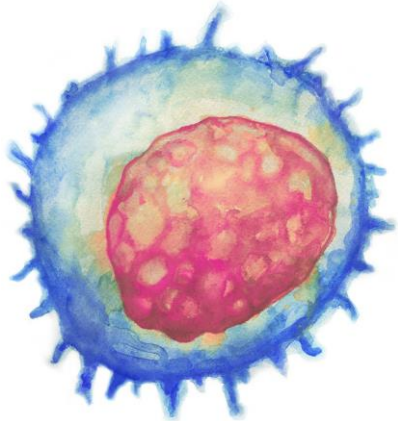
Beta cells: potential to transform global diabetes pandemic with curative treatment

Next Steps for SC451

- GMP hypoimmune iPSC cell line
- Develop scalable GMP manufacturing process
- IND-enabling studies

Sana aspiration: engineered cells as medicines

The challenge:



Almost all diseases result from damage to or dysfunction in a cell

Sana: engineered cells to treat a broad set of diseases

Address obstacles to using engineered cells as medicines

Validate platforms and create important medicines

- Fusosome for CD19 CAR T *in vivo*
- Fusosome for BMCA CAR T *in vivo*
- Hypoimmune allo CD19 CAR T
- Hypoimmune allo BCMA CAR T

Unlock the potential of engineered cells as medicines in multiple diseases

- Hypoimmune cells for:
 - Type 1 diabetes
 - Heart disease
 - CNS disorders
- Fusosomes delivering payloads for other diseases

Thank You

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