



Programmed Cellular Immunotherapies

*Transforming the Treatment of Cancer and Autoimmune Diseases with
Off-the-shelf, Multiplexed-engineered, iPSC-derived Cellular Immunotherapy*

May 2023

Forward-Looking Statements



This presentation contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, including statements regarding the safety and therapeutic potential of the Company's product candidates, the advancement of and plans and timelines related to the Company's ongoing and planned clinical studies and the clinical investigation of its product candidates, the timing for the Company's receipt and announcement of data from its clinical trials and preclinical studies, the Company's clinical development and regulatory strategy, and the Company's expectations regarding progress and timelines, and potential payments under its collaborations, and the objectives, plans and goals of its collaborations. These and any other forward-looking statements in this presentation are based on management's current expectations of future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. These risks and uncertainties include, but are not limited to, the risk that results observed in studies of the Company's product candidates, including interim results and results from earlier studies, may not be predictive of final results or results observed in ongoing or future studies involving these product candidates, the risk of a delay in the initiation of, or in the enrollment or evaluation of subjects in, any clinical studies, and the risk that the Company may cease or delay manufacture, or preclinical or clinical development, of any of its product candidates for a variety of reasons (including regulatory requirements, difficulties in manufacturing or supplying the Company's product candidates, prioritization of other of its product candidates for advancement, and any adverse events or other negative results that may be observed during preclinical or clinical development). These statements are also subject to other risks and uncertainties as further detailed in the Company's most recently filed periodic report, and subsequent periodic reports filed by the Company, under the Securities Exchange Act of 1934, as amended, any of which could cause actual results to differ materially from those contained in or implied by the forward-looking statements in this presentation. The Company is providing the information in this presentation as of the date hereof and does not undertake any obligation to update any forward-looking statements contained in this presentation unless required by applicable law.

Changing the Game in Cell Therapy

Transforming the Cell Therapy Field with a Drug-like Product Paradigm



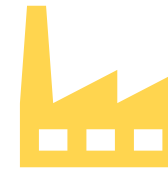
Multiplexed Engineering

Multiple mechanisms of attack against cancer incorporated into cell product



Drug-like Treatment

Multi-dose schedules administered in the outpatient setting



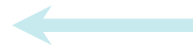
Mass Production

Scalable GMP operations yielding 100s of doses in single campaign



Uniform Products

Batch-to-batch consistency of cell product features and functionality



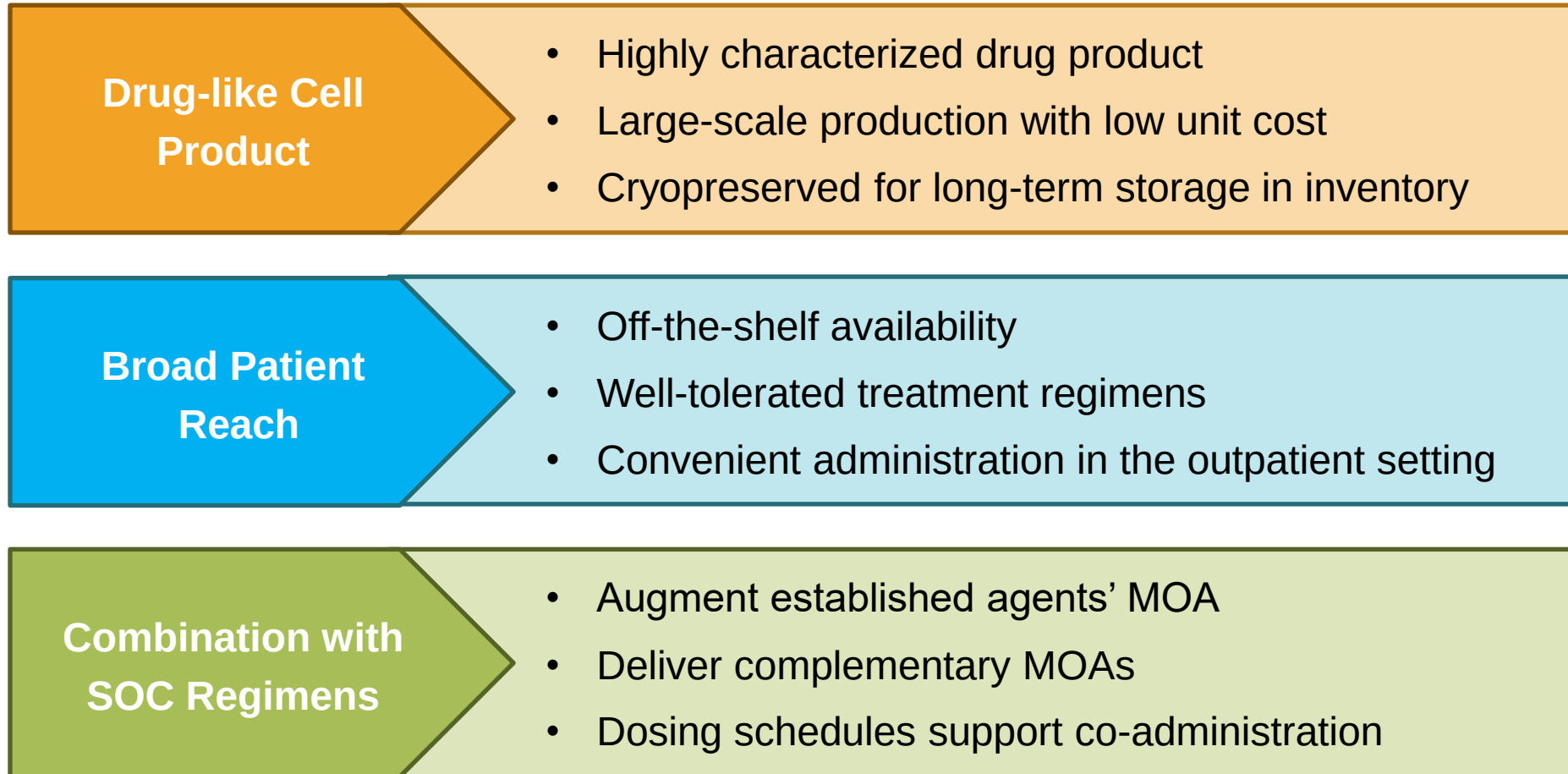
Off-the-Shelf

Cryopreserved with long-term stability for storage and on-demand availability



Changing the Game in Cell Therapy

To Make Cell Therapy Look Like Monoclonal Antibody Therapy



MOA = Mechanism of Action

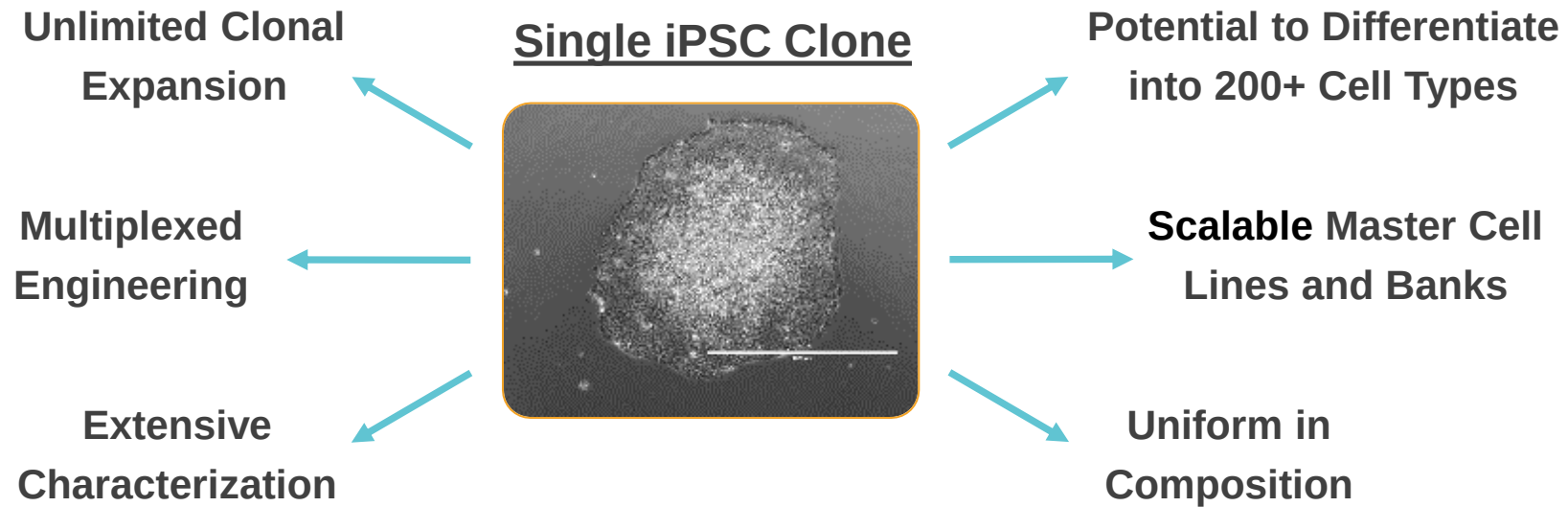
Disruptive iPSC Product Platform

Creating Multiplexed-engineered iPSC-derived Cell Products



A Single Human Induced Pluripotent Stem Cell (iPSC)

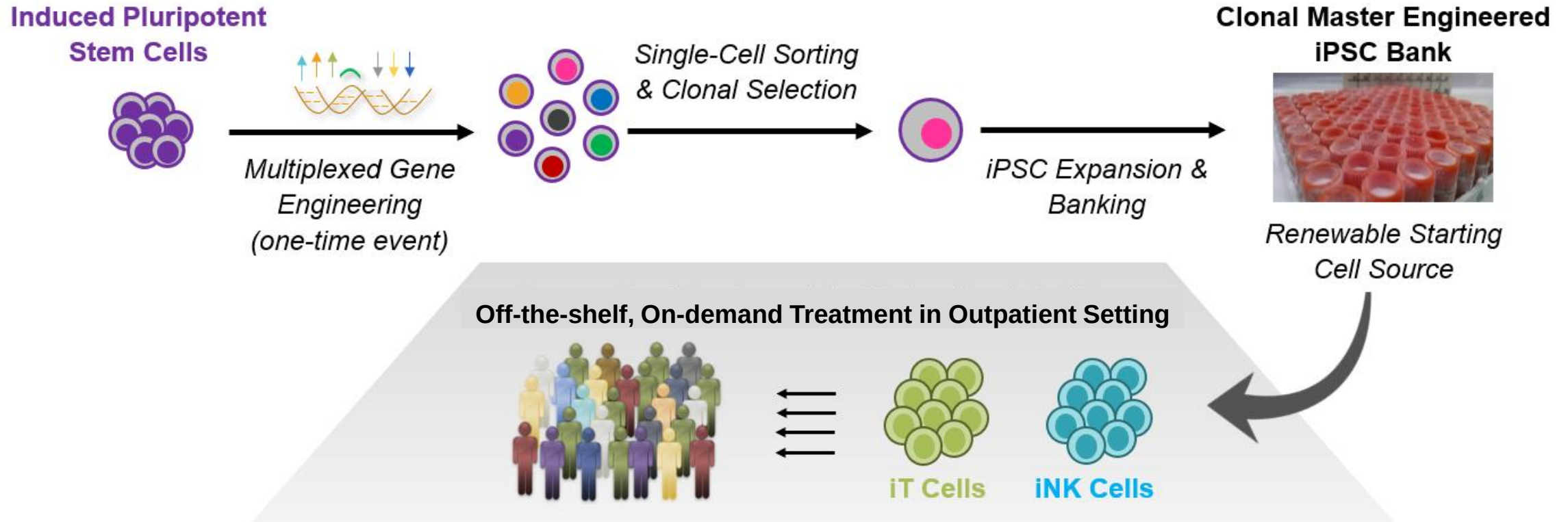
A renewable source for mass production of cell products



Fate Therapeutics' iPSC product platform is supported by an IP portfolio with 400+ issued patents and 450+ pending patent applications

Disruptive iPSC Product Platform

Mass Production of Multiplexed-engineered Cell Products for Off-the-shelf Patient Treatment



Multiplexed engineering to incorporate multiple MOAs

Clonal master iPSC bank to mass produce uniform and well-characterized drug product

Off-the-shelf availability to enable broad patient access

First-in-class Cell Product Pipeline

Multiplexed-engineered, iPSC-derived CAR NK Cell and CAR T-cell Product Candidates



Program (Cell Type)	Indication	CAR Target(s)	Research	Preclinical	Phase 1	Partner
Oncology						
FT576 (iNK)	Multiple Myeloma	BCMA				
FT522 (iNK)	B-cell Lymphoma	CD19, 41BB				
FT819 (iT)	B-cell Malignancies	CD19				
FT825 (iT)	Solid Tumors	HER2				 ONO PHARMACEUTICAL CO.,LTD.
Undisclosed	Solid Tumors	Undisclosed				
Autoimmune Disorders						
FT522 (iNK)	Undisclosed	CD19, 41BB				

iPSC = induced pluripotent stem cell *iNK* = iPSC-derived NK Cell *iT* = iPSC-derived T cell **CAR** = chimeric antigen receptor

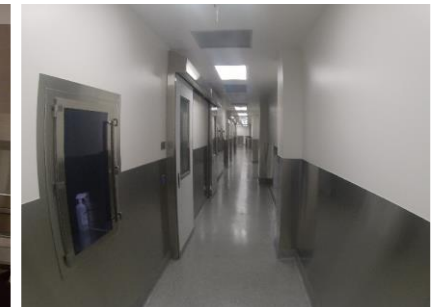
Integrated Technology Operations

Advanced Manufacturing Capabilities to Provide Clinical and Early Commercial Supply



Launch of primary in-house GMP facility (Poway, CA)

- 40,000 SF cGMP cell manufacturing facility co-located with corporate headquarters
- Launched in 3Q22 with end-to-end capabilities and controls
 - Licensed by the State of California, Department of Health Services, Food and Drug Branch
 - Commissioned and qualified with first drug product manufacturing runs completed
 - On-site integration with quality, assay development, and process development
- Designed to support US and international clinical development as well as initial commercial launch

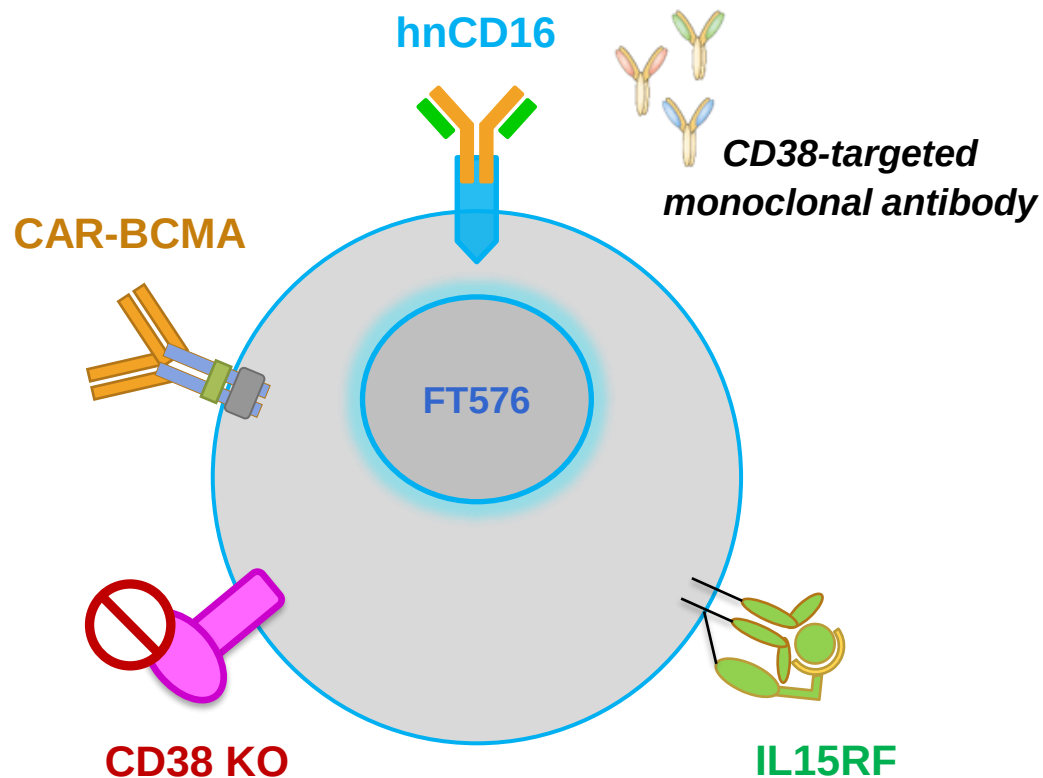




iPSC-derived CAR NK Cell Programs for Cancer

FT576: Multi-antigen Targeted CAR NK Cell Product Candidate

Targeting BCMA and CD38 for Multiple Myeloma



hnCD16 = high affinity, non-cleavable CD16 Fc receptor

IL15-RF = IL15 receptor fusion

CD38-KO = CD38 knock-out

CAR-BCMA = chimeric antigen receptor

Multi-antigen targeting

- **BCMA:** CAR construct with novel binding domain targeting BCMA; designed to trigger target cell lysis at low expression levels
- **CD38:** proprietary hnCD16 receptor designed to augment antibody-dependent cellular cytotoxicity in combination with CD38-targeted mAb

Mitigate rejection with CD38-targeted mAb combination

- **hnCD16 + CD38KO + CD38-targeted mAb:** novel configuration intended to: 1) selectively deplete host NK and T cells to mitigate rejection; 2) prevent fratricide; 3) enhance metabolic fitness; and 4) potentiate cell activation through CD3-zeta signaling

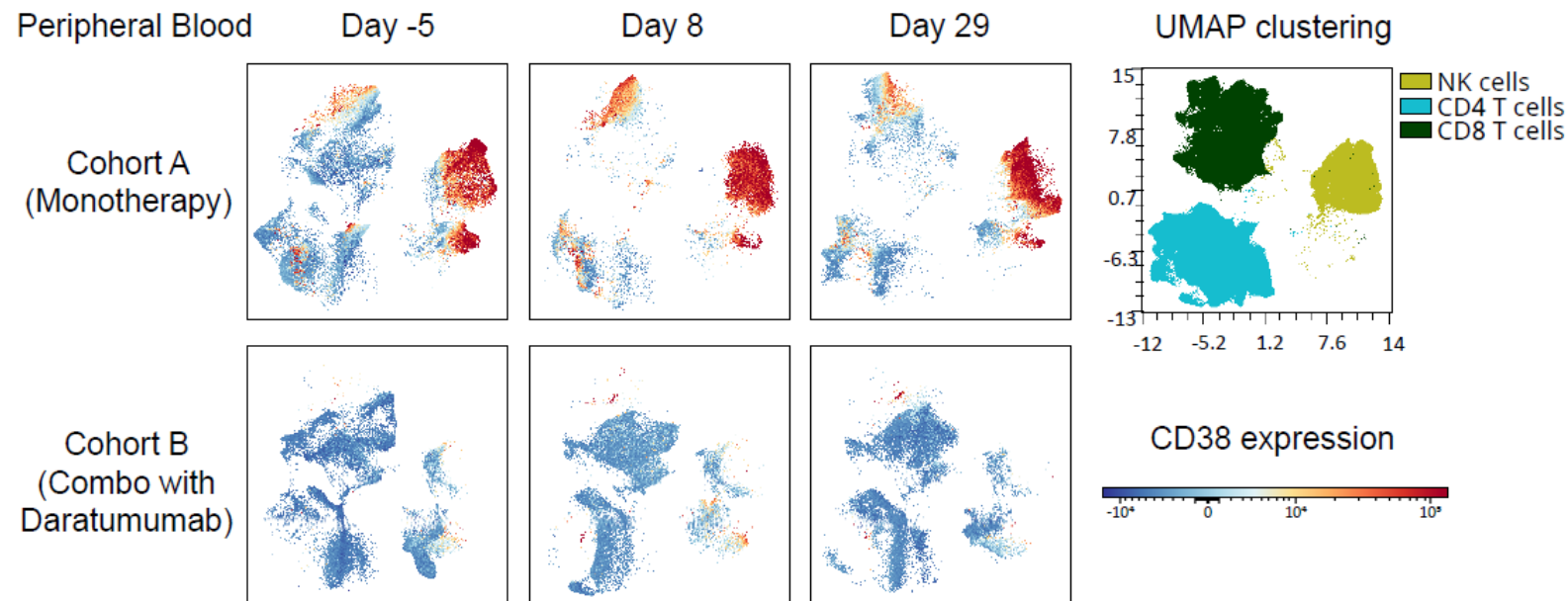
Functional persistence

- **IL15RF:** promotes cell survival and proliferation to extend functional persistence

FT576: Multi-antigen Targeted CAR NK Cell Product Candidate

CD38-targeted mAb Combination to Mitigate Allo-rejection and Promote Functional Persistence

- FT576 combination with CD38-targeted mAb therapy is designed to confer multiple therapeutic advantages, including mitigating allo-rejection through selective depletion of activated host immune cells and promoting functional persistence



Monotherapy vs. Combination

Selective depletion of CD38+ host immune cells through Day 29

FT576: Multi-antigen Targeted CAR NK Cell Product Candidate

Single-dose, Low-dose Administration Shows Early Evidence of Anti-Myeloma Activity



Table 2. Patient Safety, Response, and Disposition

Oct 7, 2022 data cutoff	Patient #	FT576 (Millions of Cells/Dose)	Safety					Best Overall Response	Follow-up Time (Days) ^a
			DLTs	CRS	ICANS	Related Grade ≥3 AEs	Related SAEs		
Monotherapy	1	100	N	N	N	Y	N	PD	29
	2	100	N	N	N	Y	N	PD	159
	3	100	N	N	N	N	N	SD	130
	4	300	N	N	N	N	N	SD	200+
	5	300	N	N	N	N	N	VGPR	88
	6	300	N	N	N	N	N	SD	29
Combination with mAb	7	100	N	N	N	N	N	MR	101
	8	100	N	N	N	N	N	PR	151+
	9	100	N	N	N	N	N	SD	89

^a For subjects who have progressed, died, or started subsequent anti-systemic cancer therapy, the follow-up is from Day 1 to the earliest date of progression, death, or start of subsequent anti-systemic cancer therapy, whichever occurs first. For subjects who are ongoing, the follow-up is from Day 1 to the last on study assessment date. The "+" indicates that patients are continuing in active follow-up.

AE = Adverse event; CRS = Cytokine release syndrome; DLT = Dose limiting toxicity; ICANS = Immune cell associated neurotoxicity syndrome; MR = Minimal response; N = None; PD = Progressive disease; PR = Partial response; SAE = Serious adverse event; SD = Stable disease; VGPR = Very good partial response

Safety

- No DLTs, and no events of any grade of CRS, ICANS, or GvHD were observed.
- 2 patients had Gr ≥3 TEAEs related to FT576:
 - 1 Grade 3 diarrhea
 - 1 patient experienced 2 episodes of Gr 3 through 4 neutropenia and 3 episodes of Gr 3 anemia
 - All episodes of Gr ≥3 TEAEs related to FT576 resolved; there were no serious AEs related to FT576
- Gr ≥3 TEAEs not related to FT576 in ≥2 patients included: anemia, neutropenia, and white blood cell decreased.

Tolerability

- There were no study discontinuations or deaths due to treatment-emergent AEs.

Anti-tumor Activity

- Of 9 efficacy evaluable patients, 3 had a decrease in their myeloma disease burden (38%-97% decrease), with 2 confirmed objective responses.
- 1 patient, who had been treated with 5 prior lines of therapy and was triple refractory to an IMiD, PI, and anti-CD38 mAb, was treated with FT576 as monotherapy in the second dose cohort (300M cells) and achieved a VGPR.

Dhakal et al.
2022 ASH Annual Conference

FT576: Phase 1 Dose Escalation Schema

Single- and Multi-dose Schedule as Monotherapy and in Combination with CD38-targeted mAb

FT576 Monotherapy and FT576 + CD38-targeted mAb Combination

Single-dose Cycle

100M Cells

300M Cells

Two-dose Cycle

*Ongoing Dose
Escalation*

300M Cells

Three-dose Cycle

*Planned Dose
Escalation*

1B Cells

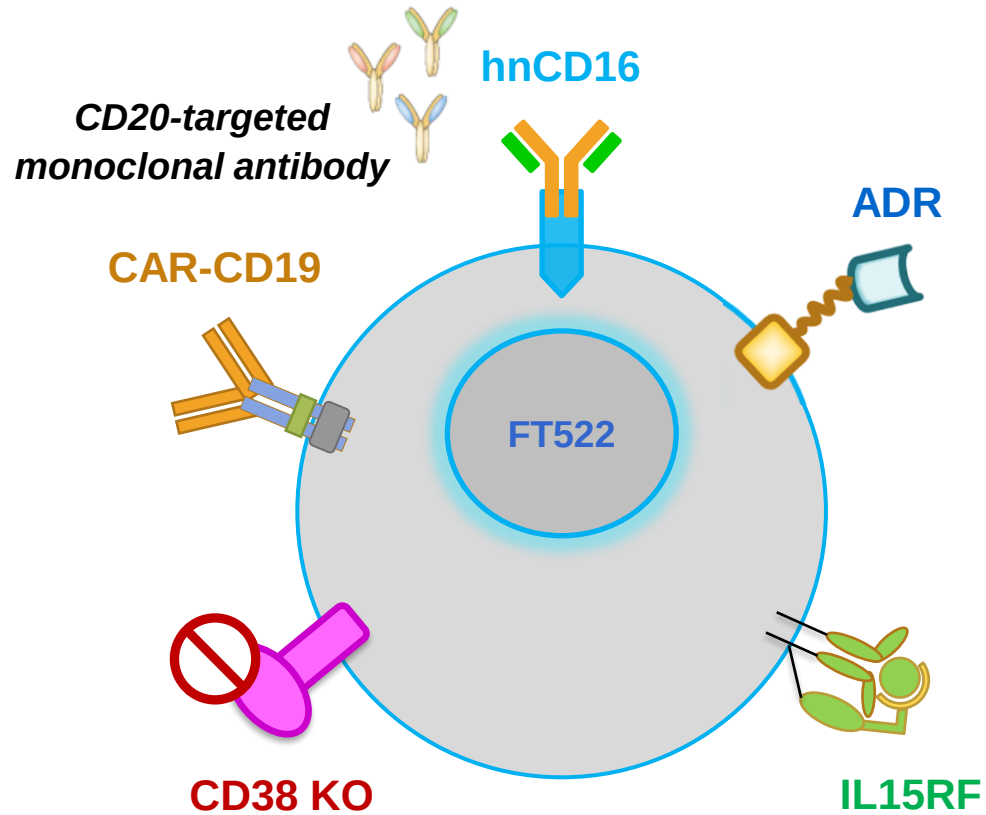
Up to 3B Cells



- Patient Conditioning: 300 mg/m² Cy x 3 days + 30 mg/m² Flu x 3 days
- 30-day treatment cycle
- Additional treatment cycles permitted subject to FDA consent

FT522: Multi-antigen Targeted CAR NK Cell Product Candidate

Targeting CD19 and CD20 for B-cell Lymphoma



hnCD16 = high affinity, non-cleavable CD16 Fc receptor

IL15-RF = IL15 receptor fusion

CD38-KO = CD38 knock-out

CAR-CD19 = chimeric antigen receptor

ADR = allo-defense receptor targeting 4-1BB

Multi-antigen targeting

- **CD19:** CAR construct targeting CD19
- **CD20:** proprietary hnCD16 receptor designed to augment antibody-dependent cellular cytotoxicity in combination with CD20-targeted mAb

Allo-defense technology

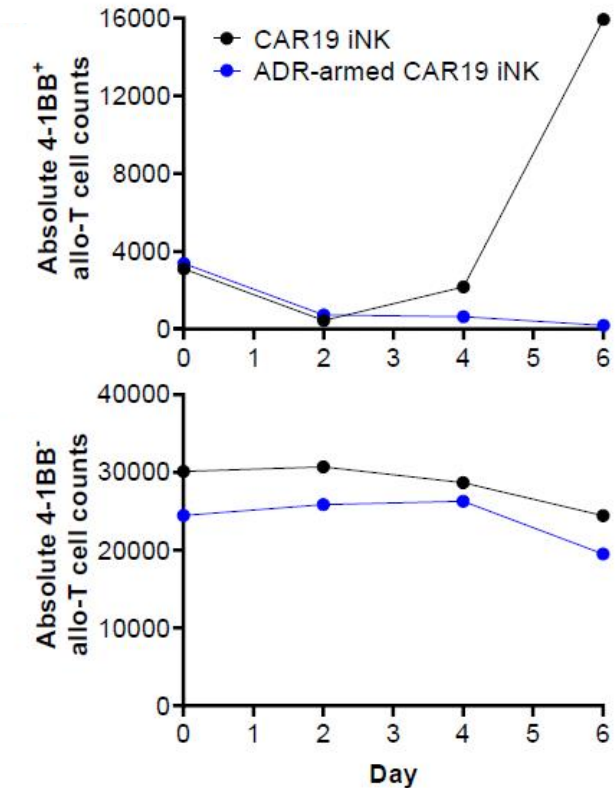
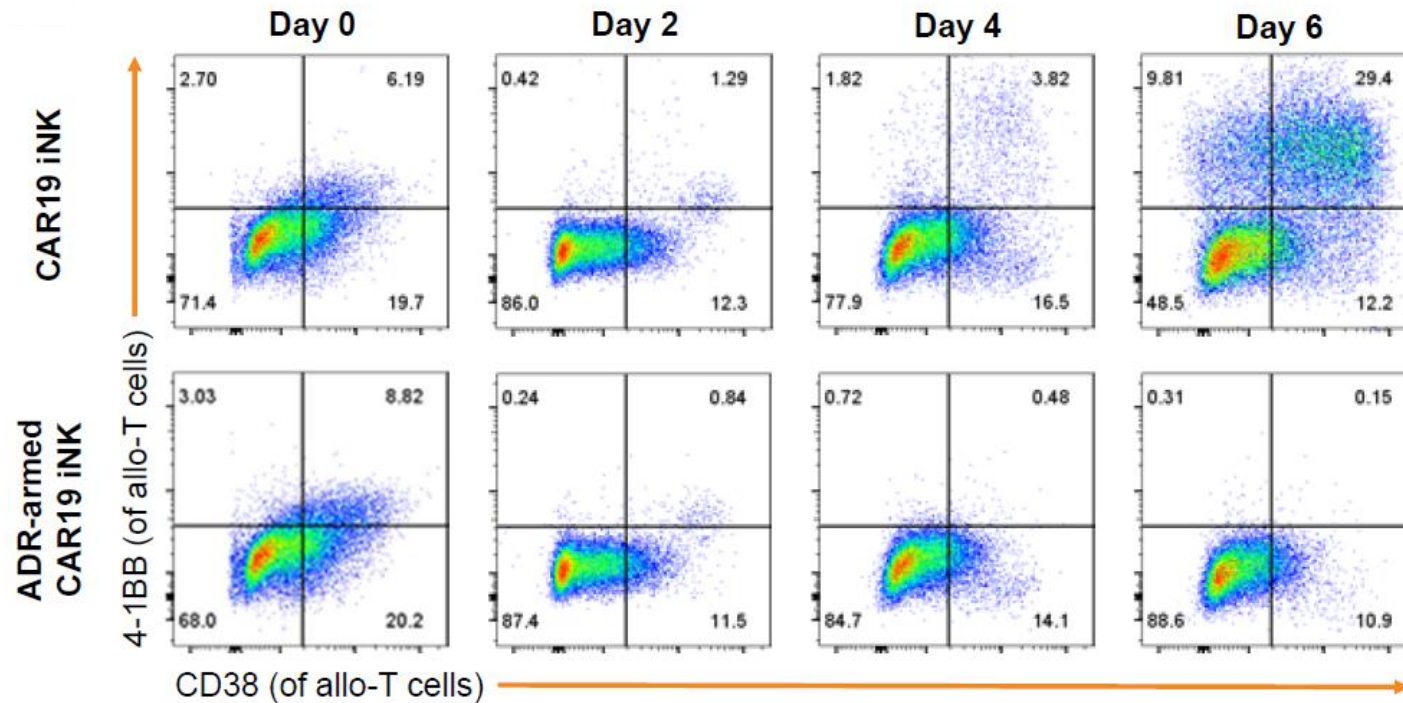
- **ADR:** novel synthetic receptor designed to: 1) selectively deplete host NK and T cells to mitigate rejection; and 2) potentiate cell activation through CD3-zeta signaling

Functional persistence

- **IL15RF:** promotes cell survival and proliferation to extend functional persistence
- **CD38KO:** enhances metabolic fitness

FT522: Multi-antigen Targeted CAR NK Cell Product Candidate

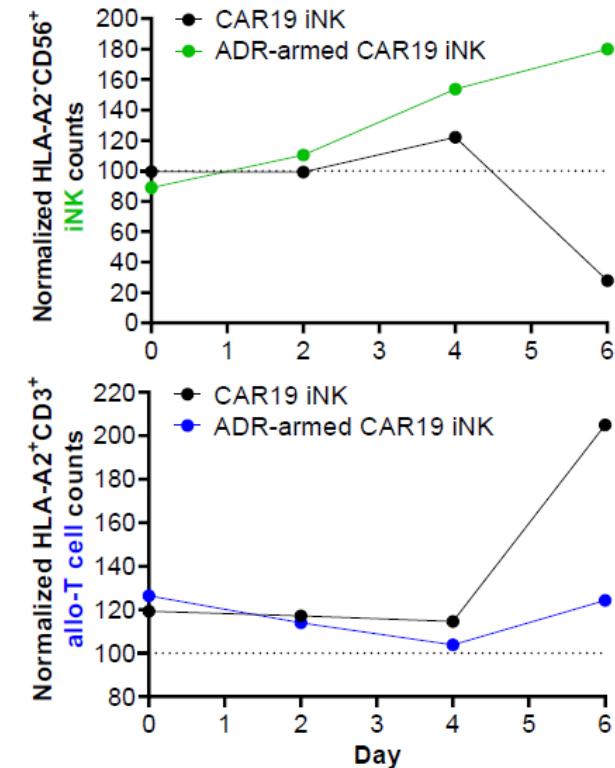
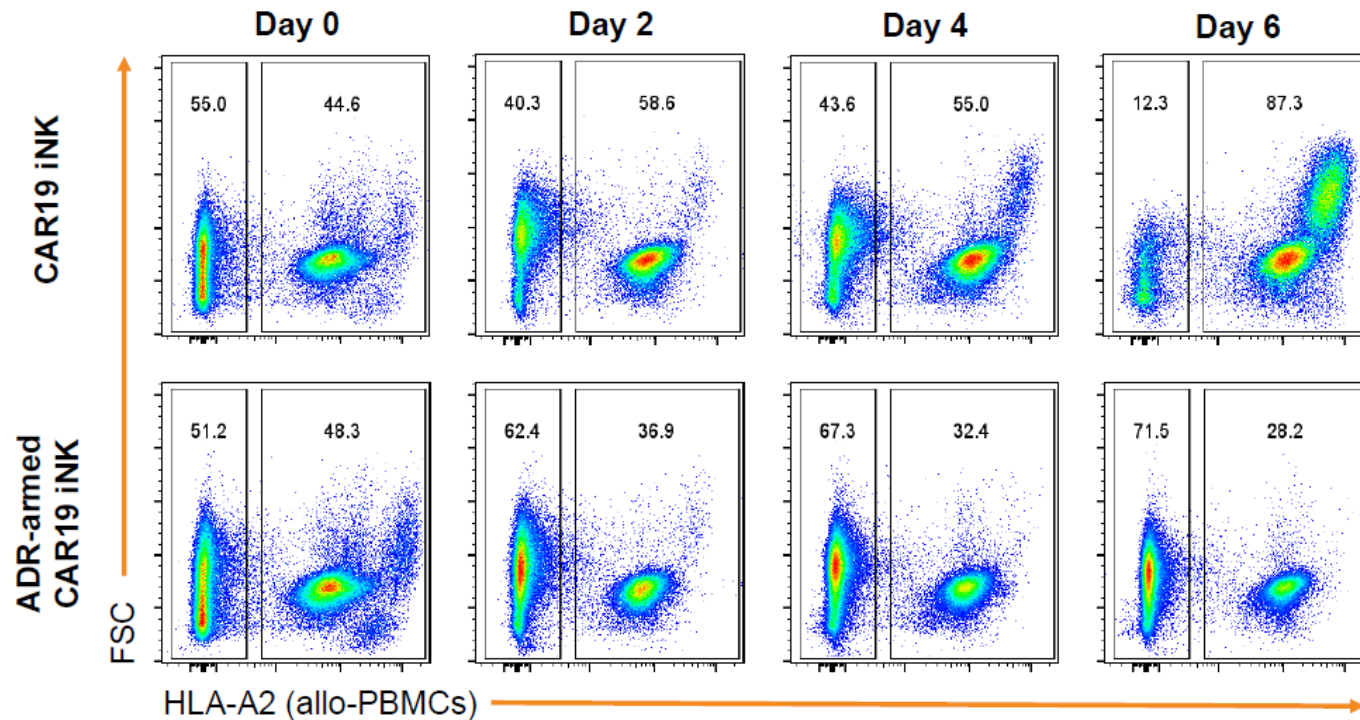
Synthetic ADR Receptor to Increase NK Cell Potency and Reduce Patient Conditioning



**ADR-armed, iPSC-derived CAR NK cells selectively deplete
alloreactive immune cells expressing 4-1BB**

FT522: Multi-antigen Targeted CAR NK Cell Product Candidate

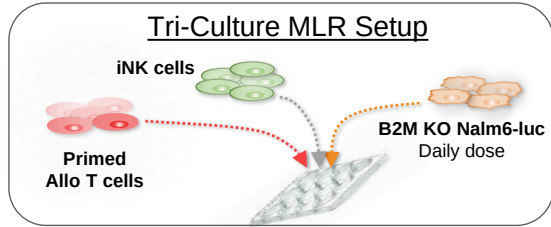
Synthetic ADR Receptor to Increase NK Cell Potency and Reduce Patient Conditioning



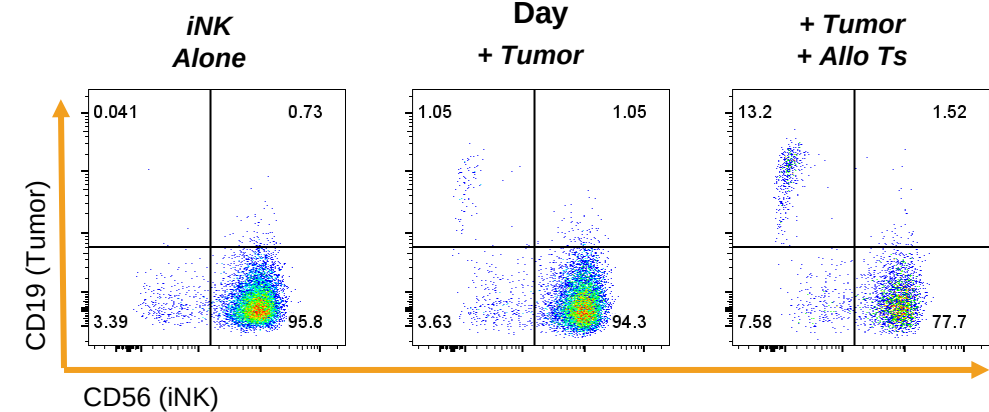
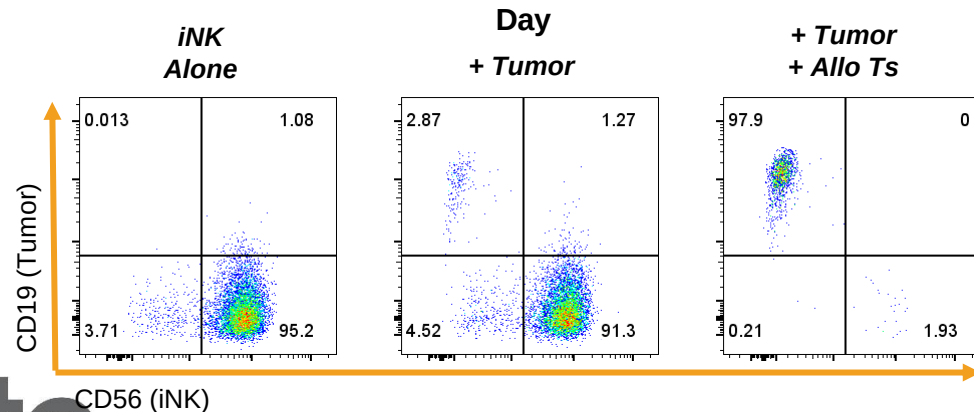
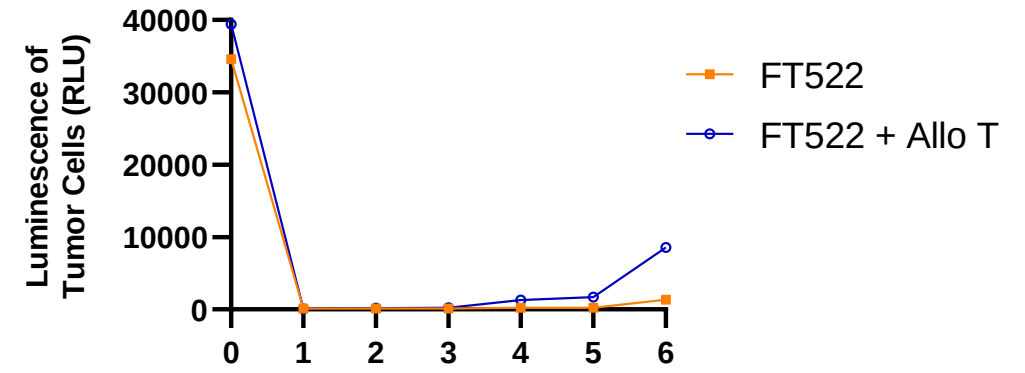
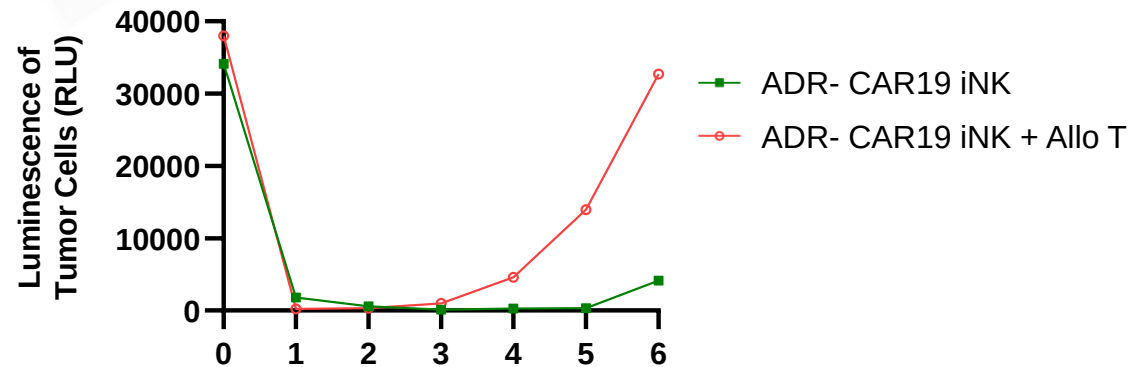
While alloreactive immune cells expressing 4-1BB are selectively depleted, ADR-armed, iPSC-derived CAR NK cells are potentiated and expand

FT522: Multi-antigen Targeted CAR NK Cell Product Candidate

Maintains Potent CAR Activity In Vitro in Allogeneic Background



In a tumor cell restimulation assay, FT522 maintains potent CAR activity alone and during allogeneic T-cell attack



FT522: Multi-antigen Targeted CAR NK Cell Product Candidate

Targeting Dosing of First Patient in 2H23 for r/r B-cell Lymphoma



FT522 + CD20-targeted mAb Combination

DRAFT Clinical Protocol

**Cy / Flu Conditioning
Chemotherapy**

x Cells / dose

3x Cells / dose

9x Cells / dose

**No Conditioning
Chemotherapy**

x Cells / dose

3x Cells / dose

9x Cells / dose

- Patient Conditioning: 500 mg/m² Cy x 3 days + 30 mg/m² Flu x 3 days
- 30-day treatment cycle
- Additional treatment cycles permitted subject to FDA consent



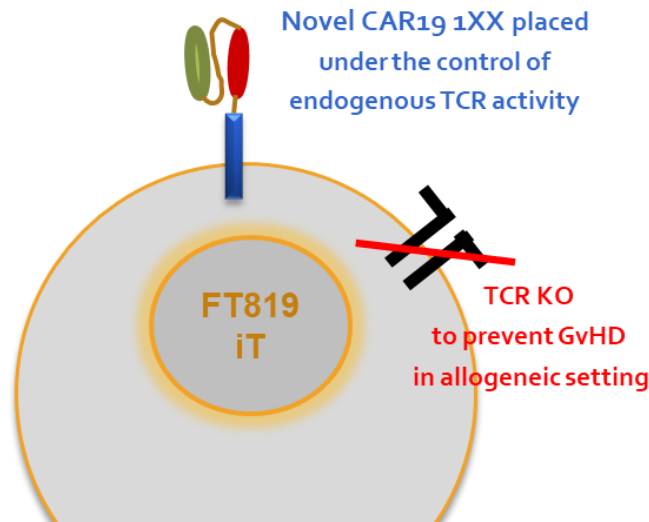
iPSC-derived CAR T-cell Programs for Cancer

FT819: Off-the-Shelf CAR19 T-Cell Product Candidate

Collaboration with Memorial Sloan Kettering Cancer Center



First-of-Kind Off-the-Shelf CAR T-cell Therapy Derived from Renewable Master iPSC Line Engineered to Uniformly Express Novel 1XX CAR19 and Knock-out TCR



nature
biomedical engineering

van der Stegen, et al.
<https://doi.org/10.1038/s41551-022-00915-0>

Generation of T-cell-receptor-negative CD8 $\alpha\beta$ -positive CAR T cells from T-cell-derived induced pluripotent stem cells

1XX CAR19: Novel chimeric antigen receptor consisting of CD28 costimulatory domain and modified CD3z signaling domain for optimal effector cell persistence and anti-tumor potency

TRAC targeted CAR: Chimeric antigen receptor integrated into the T Cell Receptor Alpha Constant region to be regulated by endogenous control of TCR expression for optimal CAR performance

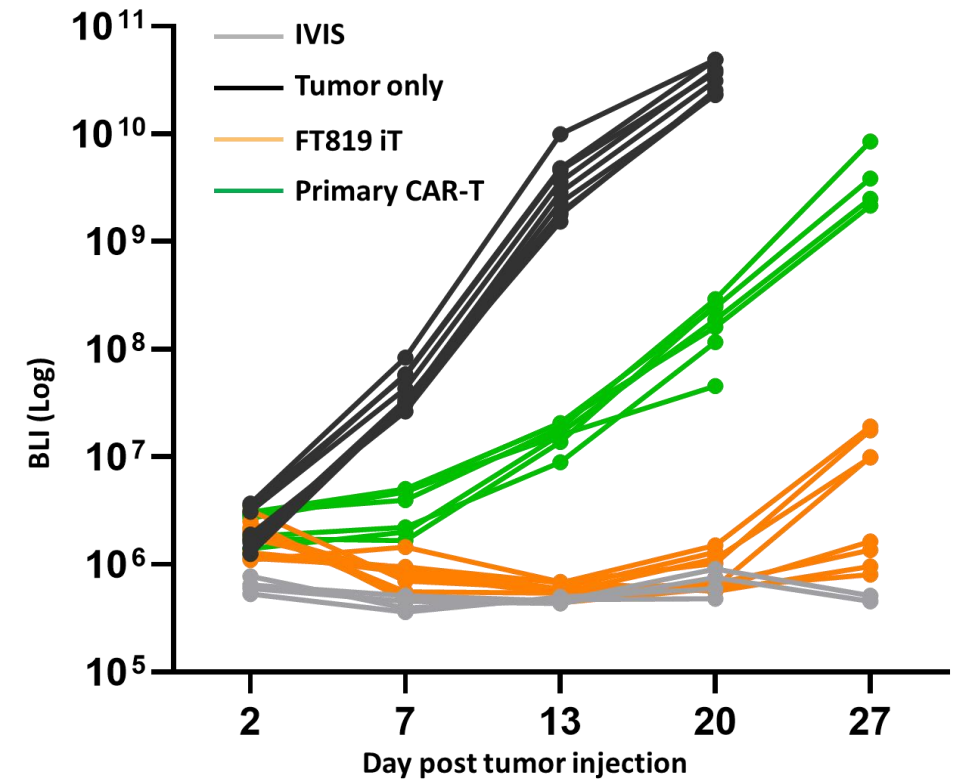
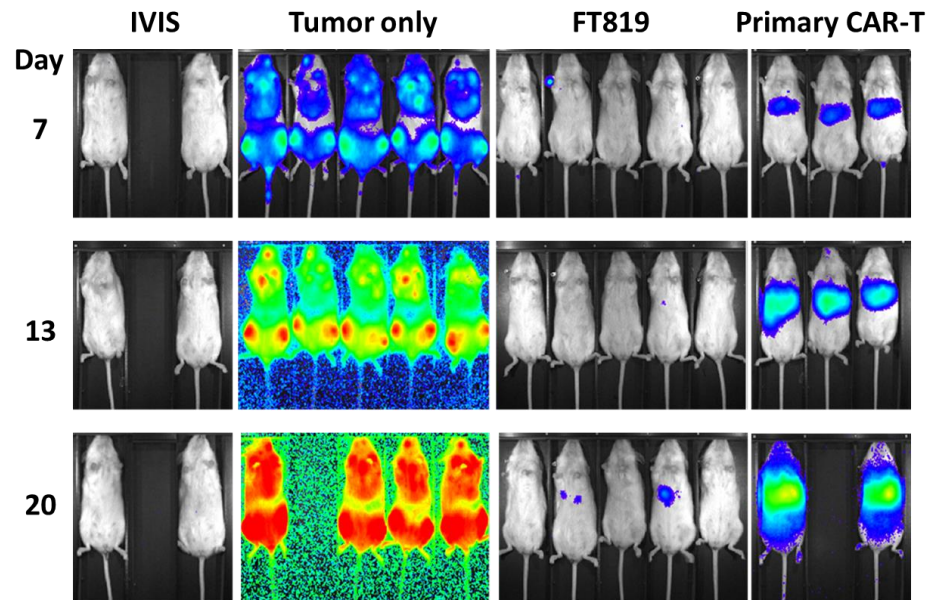
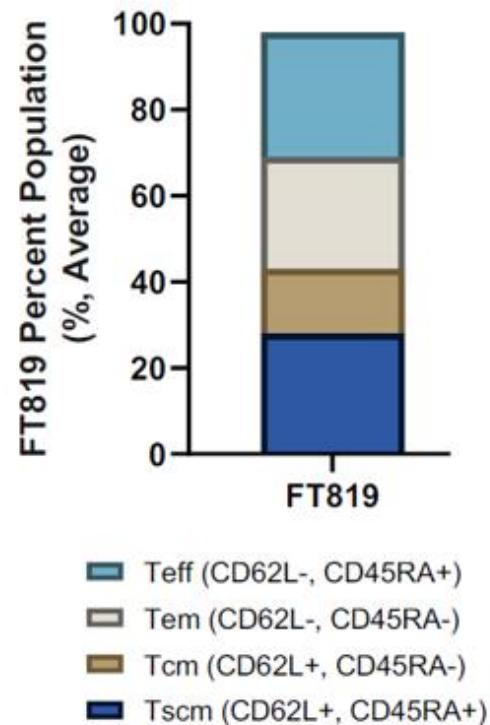
TCR null: Bi-allelic disruption of TRAC at the clonal level for complete removal of TCR expression and the elimination for the possibility of GvHD in allogeneic setting

FT819: Enhanced Tumor Control vs. Primary CAR T Cells

Disseminated Xenograft Model of Lymphoblastic Leukemia



FT819 Consists of Memory Phenotype and Outcompetes Primary CAR T Cells In Vivo



FT819: Off-the-Shelf CAR19 T-Cell Product Candidate

Clinical Responses in a Difficult to Treat Aggressive B-cell Lymphoma Population



Table 2. Patient Safety, Response, and Disposition

Table 2. Patient Safety, Response, and Disposition								
Patient #	FT819 (Millions of Cells/Dose)	Safety					Best Overall Response	Follow-Up Time (Days) ^a
		DLTs	CRS	ICANS	Related Grade ≥3 AEs	Related SAEs		
Regimen A: Single-Dose Day 1								
Aggressive Lymphoma (DLBCL and HGBCL), CAR T-Cell Therapy Naïve								
4	90	N	N	N	N	N	SD	72
11	360	N	N	N	N	N	CR	25+
Aggressive Lymphoma (DLBCL and HGBCL), Prior CAR T-Cell Therapy								
2	90	N	N	N	N	N	PD	29
3	90	N	N	N	N	N	CR	113
5	90	N	N	N	N	N	PR	163+
6	90	N	N	N	N	N	SD	136
9	180	N	Gr 2	N	N	Gr 2 (CRS)	PD	28
10	360	N	N	N	N	N	PD	22
Other (Grade 3A FL, Richter Transformation)								
1	90	N	Gr 2	N	N	N	PD	29
7	180	N	N	N	N	N	PD	28
8	180	N	N	N	N	N	CR	121

As of the September 8, 2022 data cutoff

Baseline Characteristics

- Patients were heavily pre-treated with median of 5 prior lines of therapy (range 3-8)
- 7 patients (5 with DLBCL, 1 with HGBCL, and 1 with Grade 3A FL) relapsed or progressed on prior CAR T-cell therapy

Safety

- No dose-limiting toxicities (DLTs) and no events of immune effector-cell associated neurotoxicity syndrome (ICANS) or GvHD were observed
- No Grade ≥3 treatment-emergent adverse events (AEs) related to FT819
- No patients experienced Grade ≥3 cytokine release syndrome (CRS)

Anti-tumor Activity

- Naïve to CAR T-cell therapy (n=2): 1/2 achieved an objective response, which was a CR in a patient with DLBCL previously treated with 5 prior lines of therapy
- Previously treated with CAR T-cell therapy (n=6): 2/6 achieved an objective response, which included a CR in a patient with DLBCL previously treated with 7 prior lines of therapy who did not respond to autologous CD19-targeted CAR T-cell therapy.

FT819: Off-the-Shelf CAR19 T-Cell Product Candidate

Phase 1 Study in Aggressive B-cell Lymphoma and Chronic Lymphocytic Leukemia



FT819 Monotherapy: *Single-dose Cycle*

Aggressive B-cell
Lymphoma

90M Cells

180M Cells

360M Cells

540M Cells

Up to 1B Cells

Dose escalation ongoing at 540M cells ----->

Chronic Lymphocytic
Leukemia

90M Cells

180M Cells

360M Cells

540M Cells

Up to 1B Cells

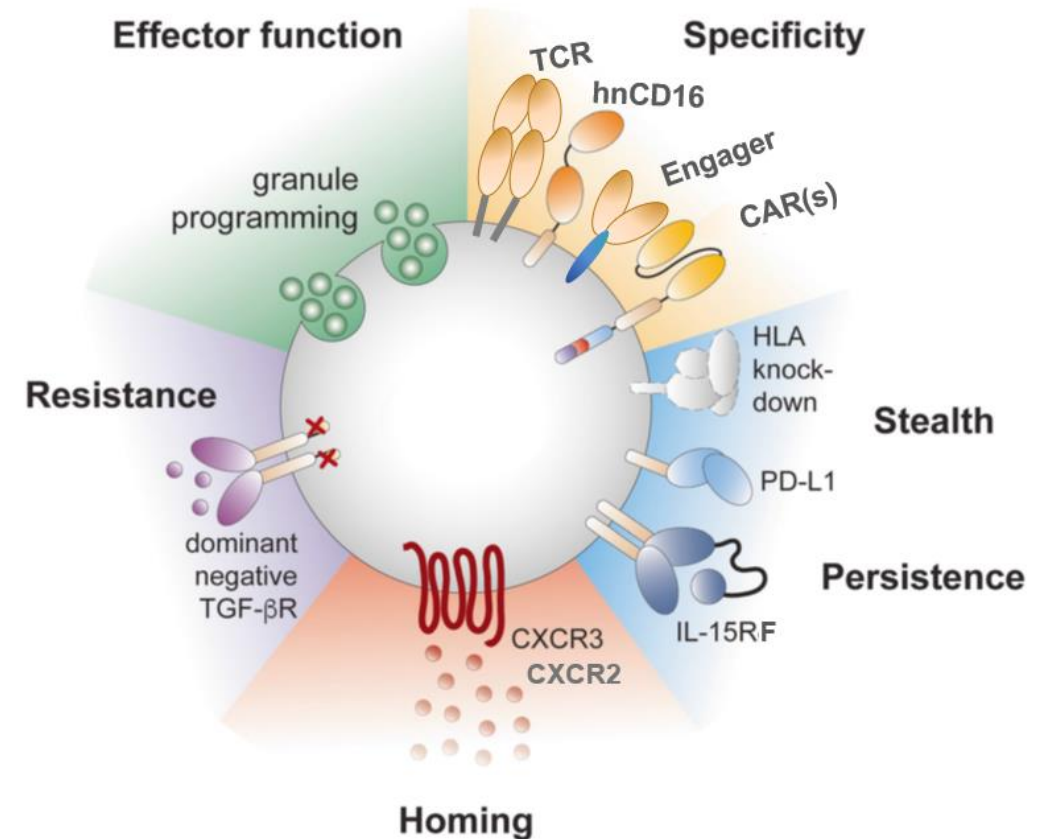
Dose escalation ongoing at 180M cells ----->

- Patient Conditioning: 500 mg/m² Cy x 3 days + 30 mg/m² Flu x 3 days
- 30-day treatment cycle
- Additional treatment cycles permitted subject to FDA consent
- Potential to co-administer FT819 with IL-2 cytokine support at then-highest cleared dose level

Off-the-shelf Cell-based Cancer Immunotherapies for Solid Tumors

Developing Multiplexed-engineered, iPSC-derived Synthetic Killer Cells for Solid Tumors

- Developing next-generation cancer immunotherapies must address numerous challenges that limit the effectiveness of today's agents in treating solid tumors.
 - Depleted / dysfunctional immune cells
 - Immuno-suppressive microenvironment
 - Tumor heterogeneity and escape
- Cell-based cancer immunotherapies have the unique potential to bring rejuvenated immune cells to the fight against cancer.
 - Address deficiencies in patients' endogenous immune system, mount multi-pronged attack, and synergize with complementary agents
- Fate Therapeutics has built a robust pipeline of off-the-shelf, multiplexed-engineered cell therapies for solid tumors.
 - Incorporate synthetic features specifically designed to exploit novel MOAs, synergize with approved agents, and overcome mechanisms of resistance



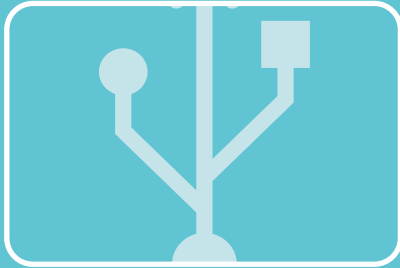
Modified after Saetersmoen et al. *Seminars in Immunopathology* 2019

ONO Cancer Immunotherapy Collaboration

Off-the-shelf, iPSC-derived CAR NK Cell and CAR T-Cell Collaboration for Solid Tumors



ONO PHARMACEUTICAL CO.,LTD.



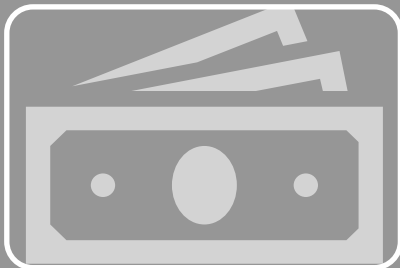
Oncology Innovation for Solid Tumors

- Proprietary antigen binding domains contributed by Ono
- Multiplexed-engineered, CAR-targeted product candidates
- Incorporating multiple MOAs to address solid tumor microenvironment



Strategic Collaboration

- FATE leads preclinical development to pre-IND milestone
- Ono maintains option to worldwide development and commercialization
- FATE retains right to opt-in to 50-50 arrangement in US and Europe

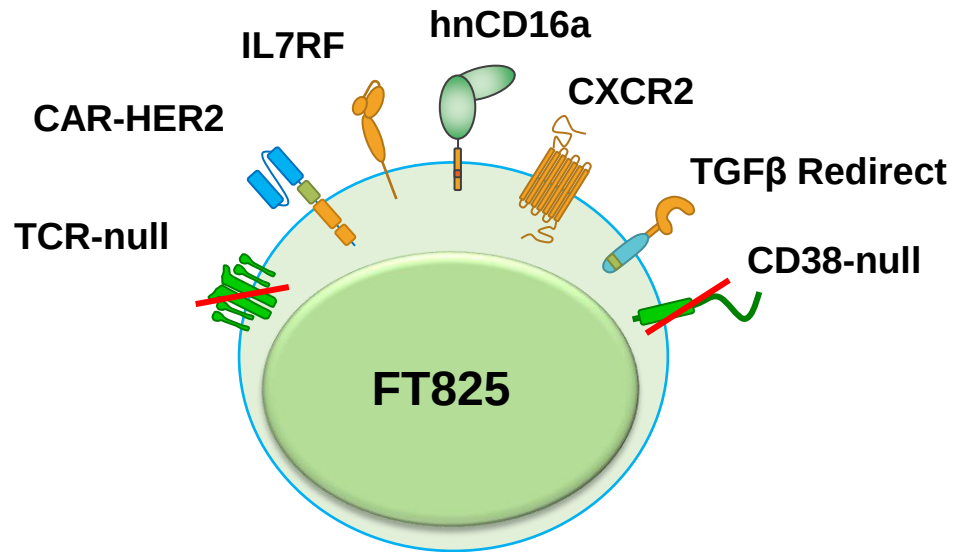


Financial Terms

- \$10m upfront
- 50-50 cost sharing to pre-IND milestone
- Up to \$840 million in milestones, mid-single to low double-digit royalties

FT825/ONO-8250: iPSC-derived CAR T-cell for Solid Tumors

Incorporates Seven Novel Synthetic Controls of Cell Function



HER2-targeted CAR T-cell designed to overcome tumor heterogeneity, improve cell trafficking, and resist suppression in the tumor microenvironment

IND Submission Planned for 2H23

CAR-HER2: Novel 1XX CAR targeting HER2; controlled by TRAC locus

TCR KO: Complete loss of TCR surface expression to eliminate potential of GvHD in allogeneic setting

hnCD16: High-affinity 158V, non-cleavable CD16 Fc receptor to maximize ADCC

IL-7RF: Interleukin-7 receptor fusion to support stemness properties and increase persistence

CD38 KO: Resistance to anti-CD38 mAb-mediated fratricide opens new opportunities in conditioning; enhanced effector cell metabolic fitness and persistence.

TGFβ Redirect: Redirect receptor with the unique ability to overcome TME suppression mediated by TGFβ signaling

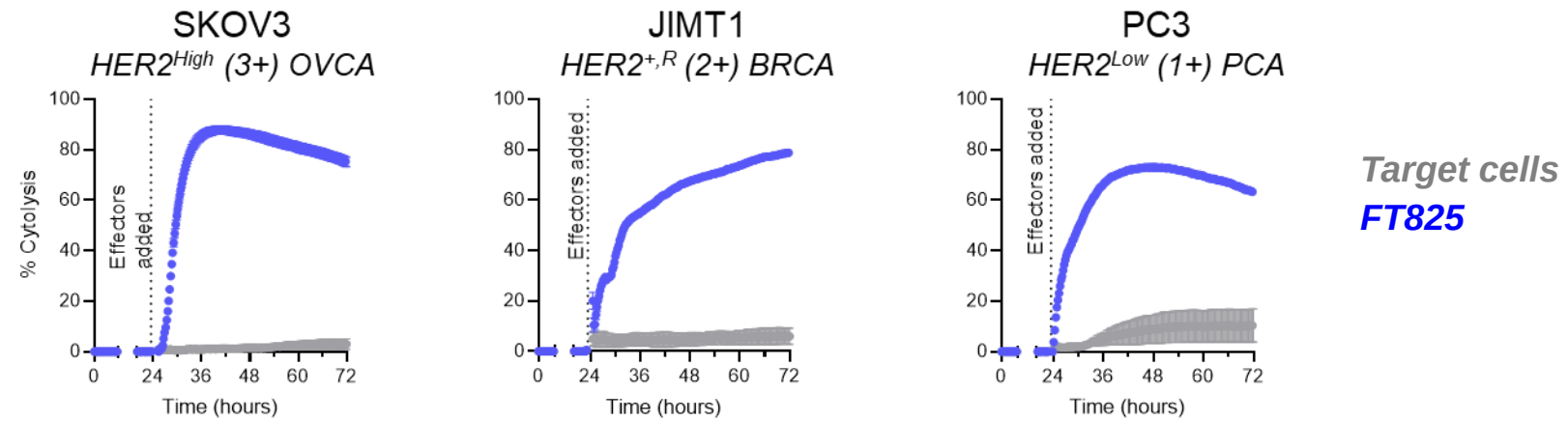
CXCR2: Expression of synthetic chemokine receptor to promote chemotaxis to sites of inflammation and tumor

FT825/ONO-8250: iPSC-derived CAR T-cell for Solid Tumors

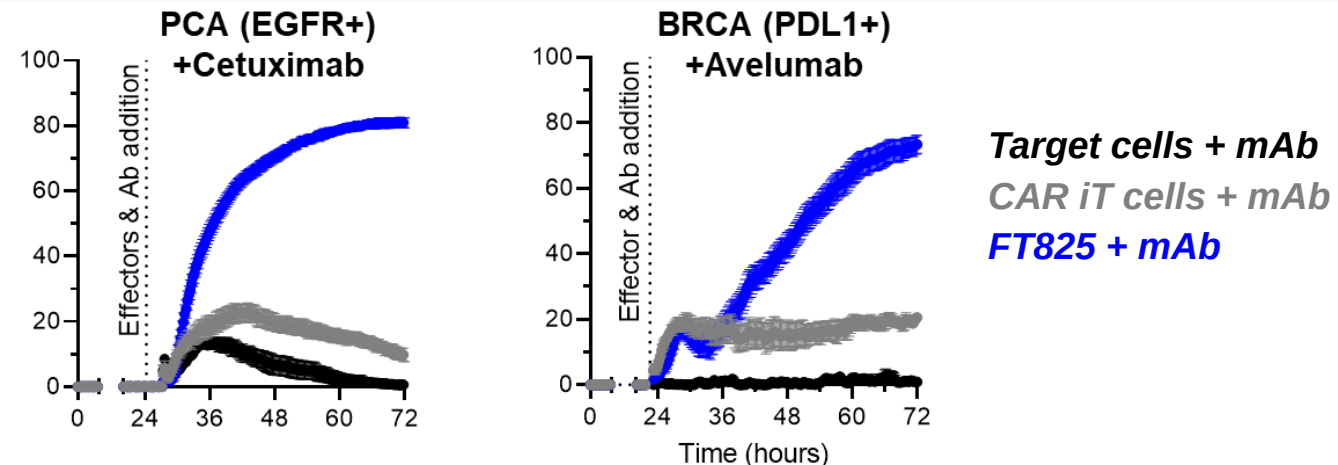
Differentiated Tumor-Targeting Activity



Robust HER2 Targeting Across a Wide Range of Antigen Expression Density



hnCD16 Synthetic Control Enables Potential for Multi-antigen Targeting

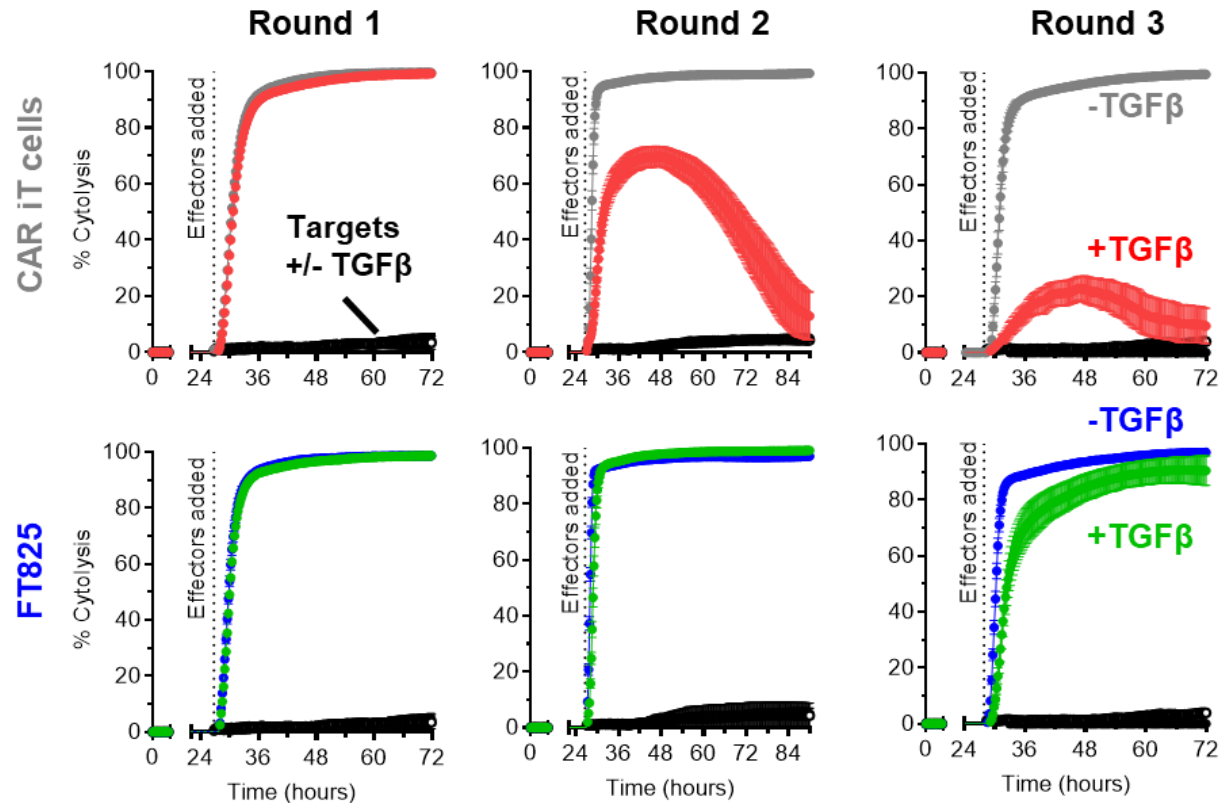


FT825/ONO-8250: iPSC-derived CAR T-cell for Solid Tumors

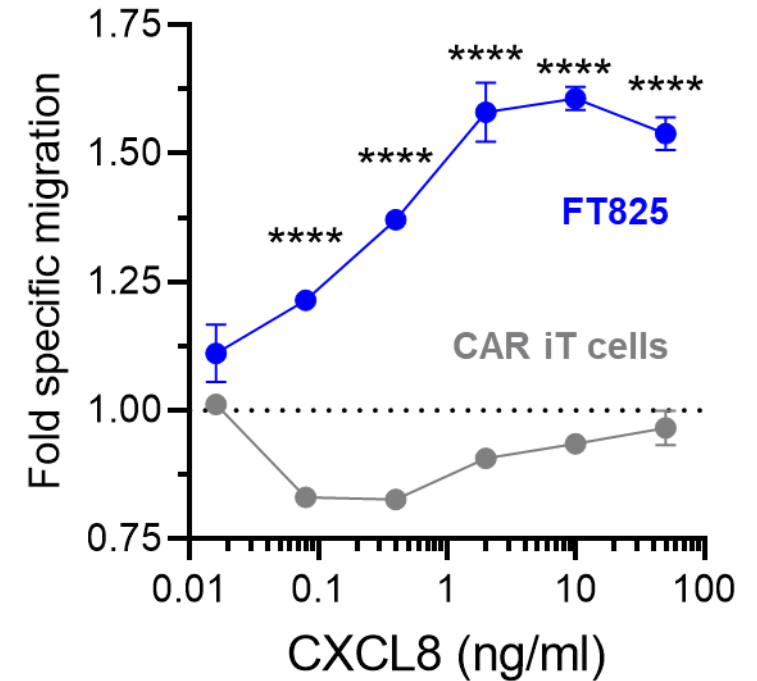
Novel Synthetic Controls to Promote Trafficking and Resistance to TME Suppression



Resistance to TGF β Suppression over Multiple Rounds of Tumor Challenge



CXCR2 Expression Enables Ligand-specific Migration

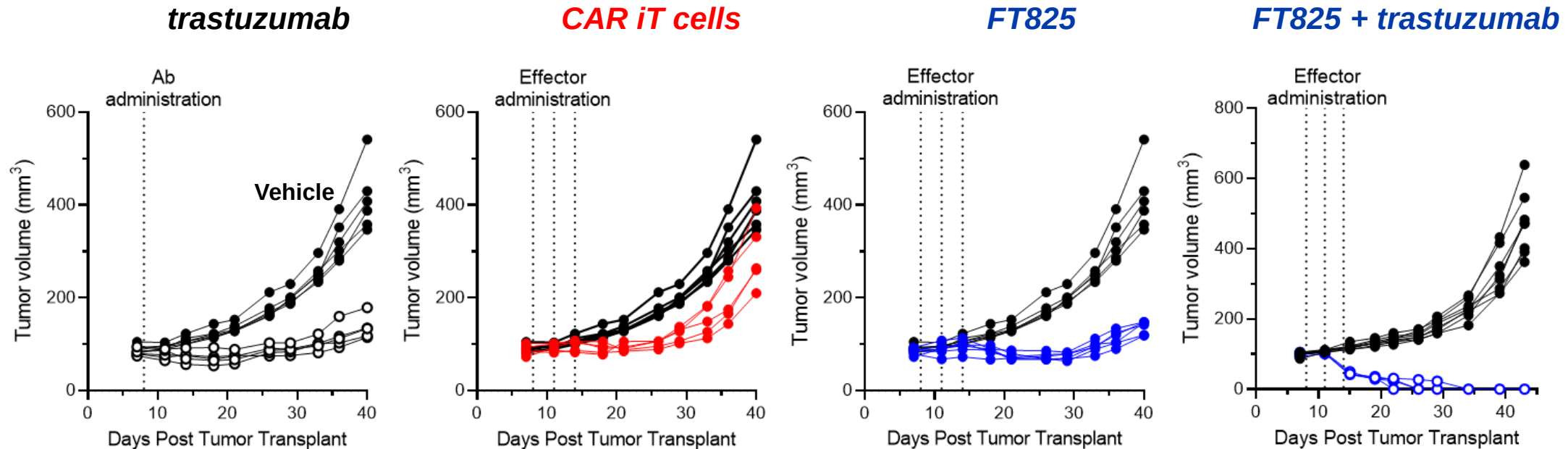


FT825/ONO-8250: iPSC-derived CAR T-cell for Solid Tumors

In Vivo Anti-Tumor Activity as Monotherapy and in Combination



In Vivo Anti-tumor Activity by CAR and by CAR+hnCD16
Aggressive subcutaneous xenograft model of ovarian cancer





First-in-class Cell Products for Autoimmunity

Cell-based Immunotherapies for Autoimmunity

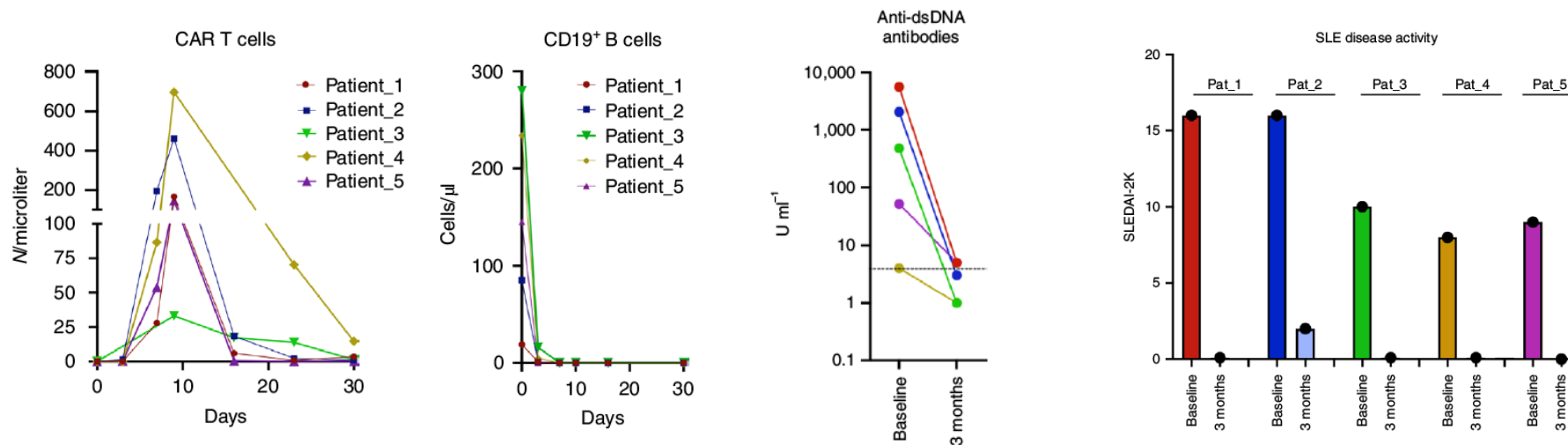
Clinical Proof-of-Concept with Autologous CD19-targeted CAR T-cell Therapy

nature
medicine

Schett et al., 28, 2124-2132 (2022)

Anti-CD19 CAR T cell therapy for refractory systemic lupus erythematosus

- Systemic lupus erythematosus (SLE) patients with moderate / severe disease refractory to immunosuppressive drug treatments (n=5)
- Rapid clinical and serologic responses achieved with autologous CD19-targeted CAR T-cell therapy
 - Deep depletion of B cells
 - Auto-antibodies against ds-DNA were undetectable
- Observed deep reset of the immune system by Day 100
 - Achieved drug-free remissions with reconstitution of healthy B cells

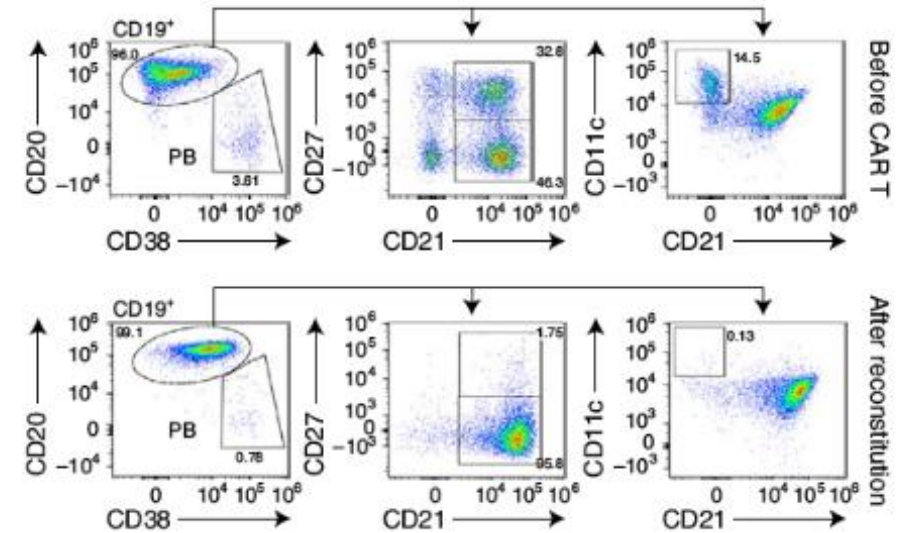


FT522: Multi-antigen Targeted CAR NK Cell Product Candidate

Unique Product Configuration for Addressing Severe Autoimmune Diseases

- FT522 contains a series of unique targeting capabilities for the treatment of autoimmunity and inflammation
 - *NK cell*: has activating receptors known to target pathologic cells, including alloreactive immune cells
 - *CAR-targeted*: targets CD19 to eliminate pathologic B cells
 - *ADCC-competent*: potential to combine with mAb to target additional antigens
 - *CD38KO*: enables combination with anti-CD38 mAb, which is often found on autoimmune cells and pathologic hematological cells
 - *ADR*: targets 41BB, a selective antigen expressed on reactive immune cells and their memory counterparts

**SLE cells are CD19+ / CD20+ / CD38+
and their removal is curative**

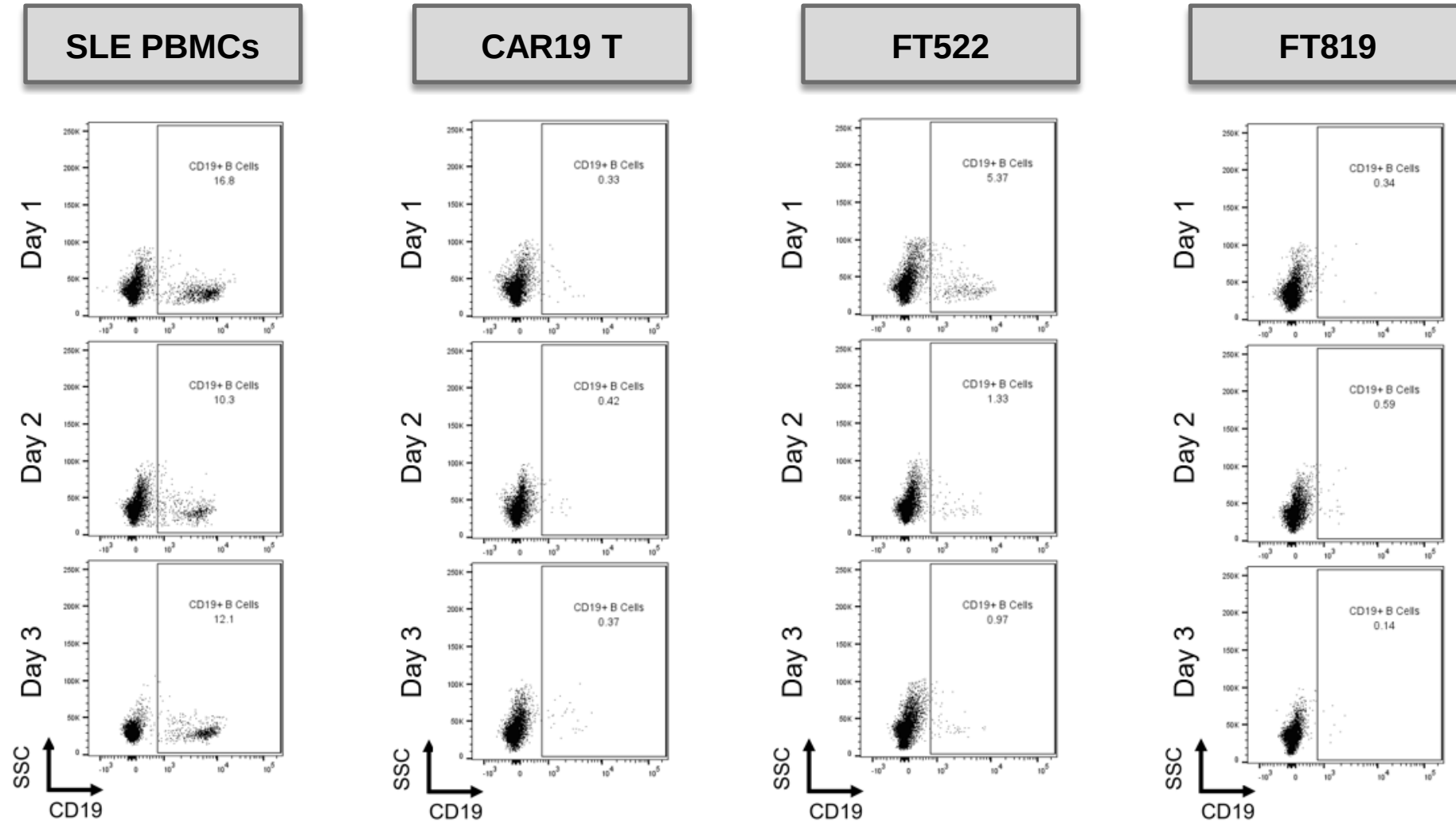


Mackensen et al. 2022

**Combination with CD38-targeted mAb uniquely enables three-pronged attack
against B cells, plasma cells, and activated T cells**

Cell-based Immunotherapies for Autoimmunity

In Vitro B-cell Depletion in Systemic Lupus Erythematosus (SLE) PBMCs



Unpublished data of Fate Therapeutics



Corporate Highlights

Fate Therapeutics

Changing the Game in Cell Therapy



>200 Patients

treated with iPSC-derived NK and T cells across hematologic malignancies and solid tumors

40,000_{sf} GMP

in-house manufacturing facility designed to US and international commercial standards

400+ Patents

covering engineering, manufacture, and compositions of iPSC-derived cell therapies

~\$415 million

*in cash, cash equivalents, and investments
(as of March 31, 2023)*

Established Leadership

*Position for Off-the-shelf,
Multiplexed-engineered,
iPSC-derived Cellular
Immunotherapy*

