



# **Off-the-shelf Cell-based Cancer Immunotherapy**

*Developing First-of-kind Cell Products using Clonal Master iPSC Lines*

*November 2019*

[www.fatetherapeutics.com](http://www.fatetherapeutics.com)

# Forward-Looking Statements

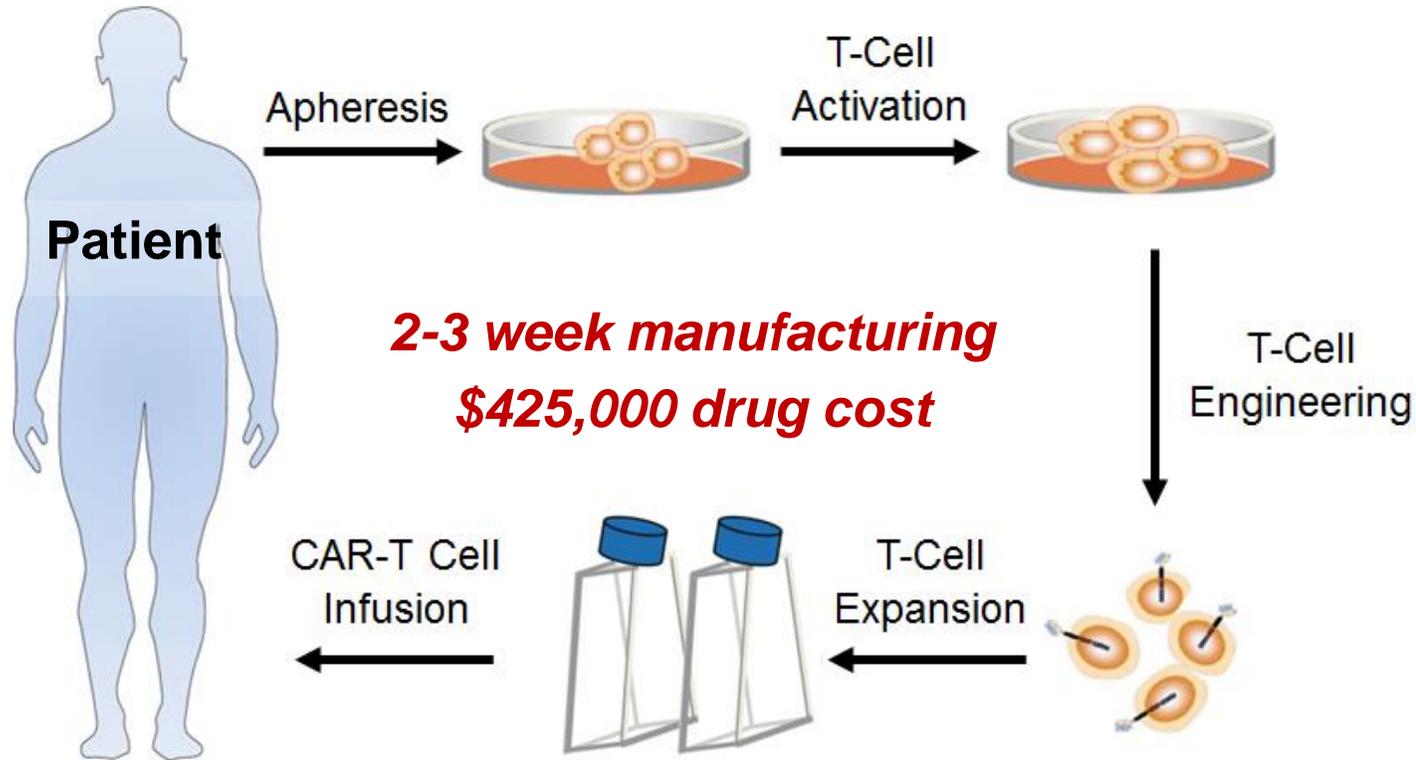
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*This presentation contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, including statements regarding the Company's research and development activities and its progress, plans and timelines for its manufacture, preclinical development and clinical investigation of its product candidates, the timing for the Company's receipt of data from its clinical trials and preclinical studies, the Company's clinical development and regulatory strategy, and the therapeutic and market potential of the Company's product candidates. 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 prior studies of its product candidates will not be 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, 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.*

# First Innings of Cell Therapy Development

## Patient-derived CAR-T Cell Immunotherapy



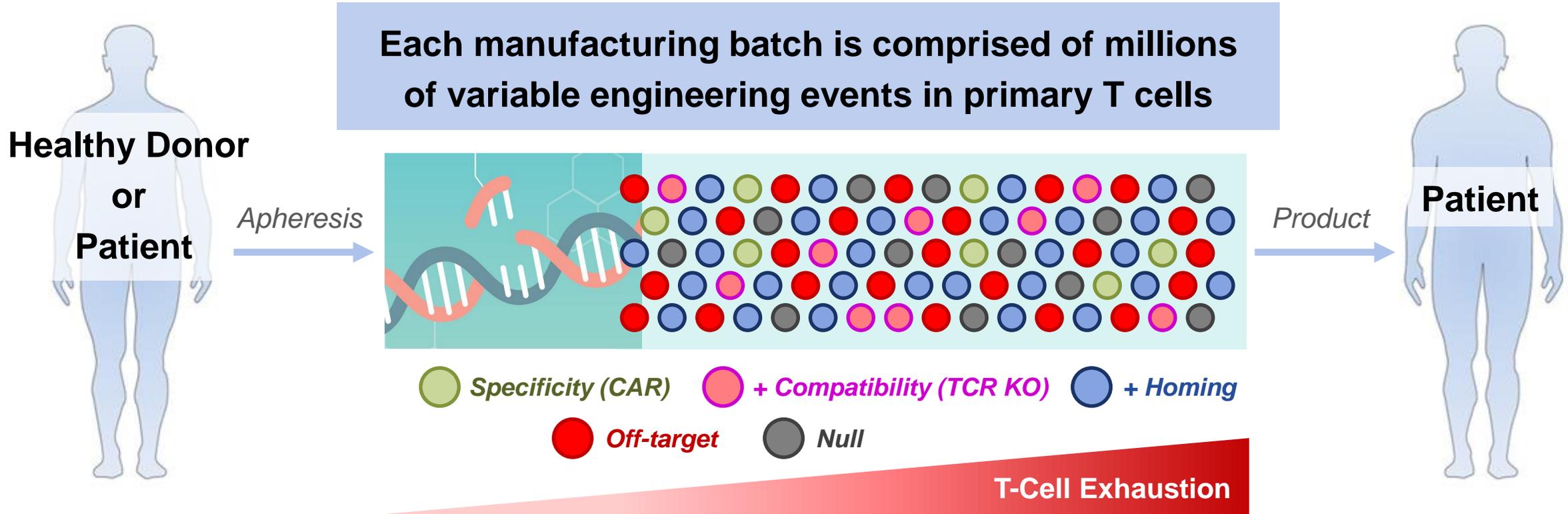
*"When factoring in all the costs associated with CAR T-cell therapy, hospitals may charge as much as \$1.5 million or more to avoid losing money."*

Richard T. Maziarz, MD  
Professor of Medicine, Oregon Health & Science University's Knight Cancer Institute

**Impaired** Starting Material | **Random & Variable** Engineering | **Complex** Logistics  
**Heterogeneous** Drug Product | **Expensive** | **Single-dose** Limitation

# First Innings of Cell Therapy Development

*Batch-to-Batch Engineering is Expensive and Results in Significant Product Heterogeneity*



How do we build on early successes and transition from a heterogenous process to the cost-effective delivery of optimized cell products?

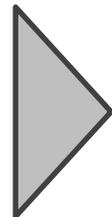
# First Innings of Cell Therapy Development

Example: Multiplexed CRISPR / Cas9 Gene Editing of Patient T Cells



## 49 First-in-Human Assessment of Feasibility and Safety of Multiplexed Genetic Engineering of Autologous T Cells Expressing NY-ESO -1 TCR and CRISPR/Cas9 Gene Edited to Eliminate Endogenous TCR and PD-1 (NYCE T cells) in Advanced Multiple Myeloma (MM) and Sarcoma

- **Patient-specific Engineered TCR T-cell Therapy (University of Pennsylvania)**
  - Multiplexed CRISPR / Cas9 editing
    - Removal of TCR $\alpha$  (TRAC), TCR $\beta$  (TRBC) and PD-1 (PDCD1)
    - Transduced to express NY-ESO-1-specific TCR
- **Reported CRISPR / Cas9 Gene Disruption Efficiency**
  - TRAC = 44.3 to 49.4%
  - TRBC = 3.61 to 15.7%
  - PDCD1 = 15.6 to 20.2%



**Significant inefficiencies  
and heterogeneity**

# Changing the Game in Cell-based Cancer Immunotherapy

*The Potential to Characterize, Select and Renewably Use a Single Cell*



*What if we had the opportunity to engineer, characterize, select, and renewably use a single cell?*

# Changing the Game in Cell-based Cancer Immunotherapy

*Universal, Off-the-Shelf Cell Products Derived from Renewable Master Cell Lines*



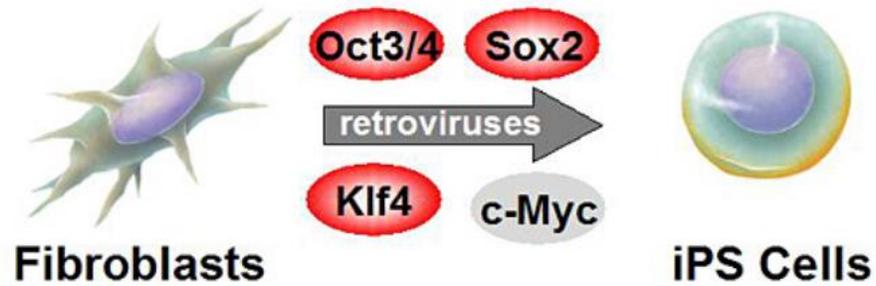
<b>Key Features</b>	<b>Cell Therapy 1.0 and 2.0</b>	<b>Cell Therapy 3.0</b>
Cell Source	Patient and Donor Cells	Renewable Master Cell Line
Genetic Engineering	Random & Variable	Uniform & Complete
Characterization	Imprecise	Well-defined
Product Identity	Heterogeneous	Homogeneous
Manufacturing	Limited Dose Availability	Off-the-Shelf Availability
Cost-per-Dose	High	Low
Dosing	Single Dose	Multiple Doses / Multiple Cycles
<b>Overall Paradigm</b>	<b>Process-centric</b>	<b>Product-centric</b>

# Human Induced Pluripotent Stem Cells (iPSCs)

*Reprogramming Adult Somatic Cells to a Pluripotent State*



## Generation of Human iPSCs



Mouse iPS cells reported in 2006  
Human iPS cells reported in 2007

## Fate Scientific Founders



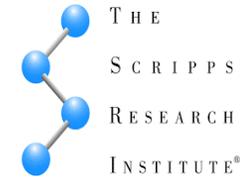
Rudolf Jaenisch, MD



WHITEHEAD INSTITUTE



Sheng Ding, PhD



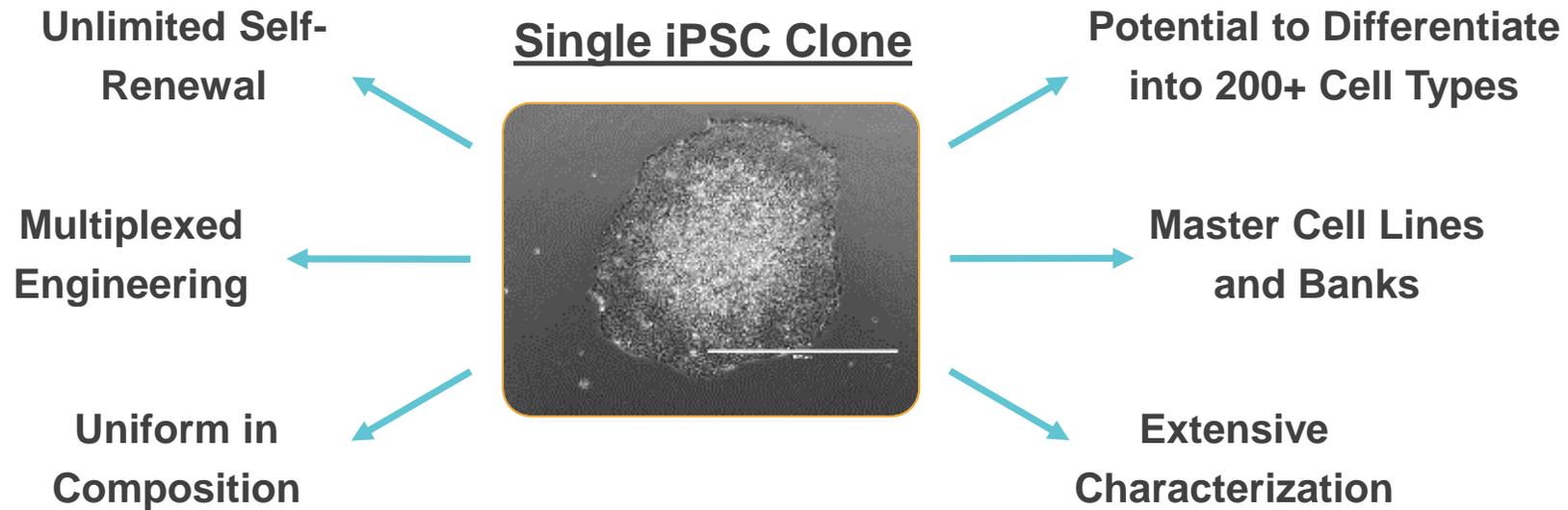
# Unique Advantages of Human iPSCs

*Isolation, Characterization & Selection of a Single iPSC Clone*



## A Single Human Induced Pluripotent Stem Cell (iPSC)

*A renewable source for making cells*



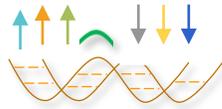
*Fate Therapeutics' iPSC product platform is supported by an IP portfolio of 250+ issued patents and 150+ pending patent applications*

# Off-the-Shelf Cell-based Cancer Immunotherapy

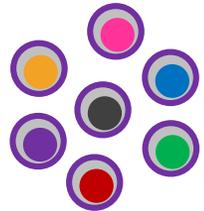
*iPSC Product Platform for Mass Production of Universal NK Cell and T-Cell Products*



Induced Pluripotent  
Stem Cells



Multiplexed Gene  
Engineering  
(one-time event)



Single-Cell Sorting  
& Clonal Selection



iPSC Expansion &  
Banking

Clonal Master Engineered  
iPSC Bank

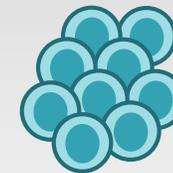


Renewable Starting  
Cell Source

**'On-Demand' Delivery to Reach More Patients**



iT Cells



iNK Cells

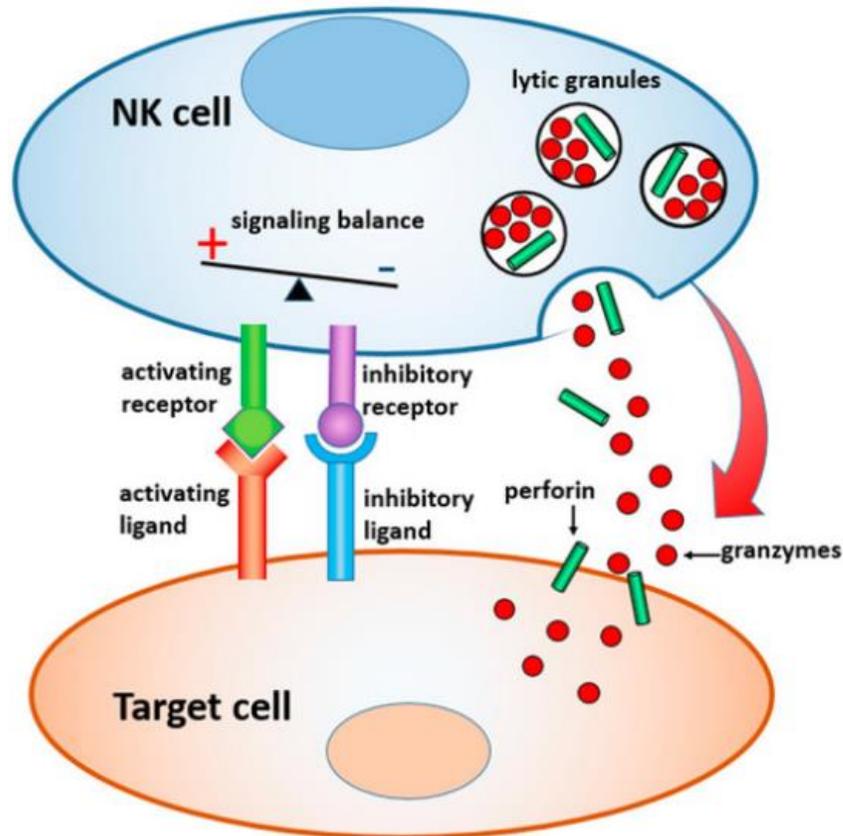
**Clonal master iPSC lines are a renewable cell source that can be repeatedly used to mass produce homogeneous, cryopreserved cell product in a cost-effective manner**

# Natural Killer (NK) Cells

*First Line of Defense against Tumors and Diverse Range of Pathogens*



## Array of Activating and Inhibitory Surface Receptors Mediate NK Cell Activity



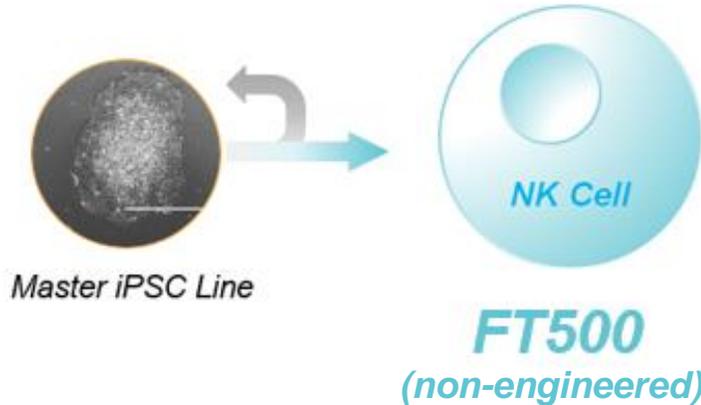
- **Activating receptors convey multi-faceted effector function against tumor cells**
  - Unique ability to recognize stressed / transformed cells, leaving healthy cells unharmed
  - Engage and lyse antibody-coated tumor cells through CD16 Fc receptor (antibody-dependent cellular cytotoxicity, or ADCC)
  - Direct killing through release of cytotoxic granules
  - Trigger adaptive immune response through cytokine production
- **Inhibitory receptors can override activating signals**
  - KIR receptors balance activation through MHC-I molecule interactions
  - Multiple immune checkpoint receptors (e.g., TIGIT, PD-1)

# FT500 Off-the-Shelf NK Cell Product Candidate

First-ever iPSC-derived Cell Therapy to Advance to Clinical Investigation in the U.S.



## FT500 Product Candidate



- High levels of expression of potent activating receptors (NKG2D, NKp30/40/46)
- High levels of secretion of cytolytic proteins (perforin and granzyme B)
- Low levels of expression of inhibitory receptors (KIR, TIGIT, PD-1)

## FT500 cGMP Manufacture

FT500 Cell Product	
Identity, CD45+	100%
Identity, CD45+CD56+	98%
Viability	80%
Residual iPSCs	Not detected
Packaging	Cryopreserved
Availability	On-site
Administration	Thaw-and-infuse 'on demand'
Delivery	Outpatient setting



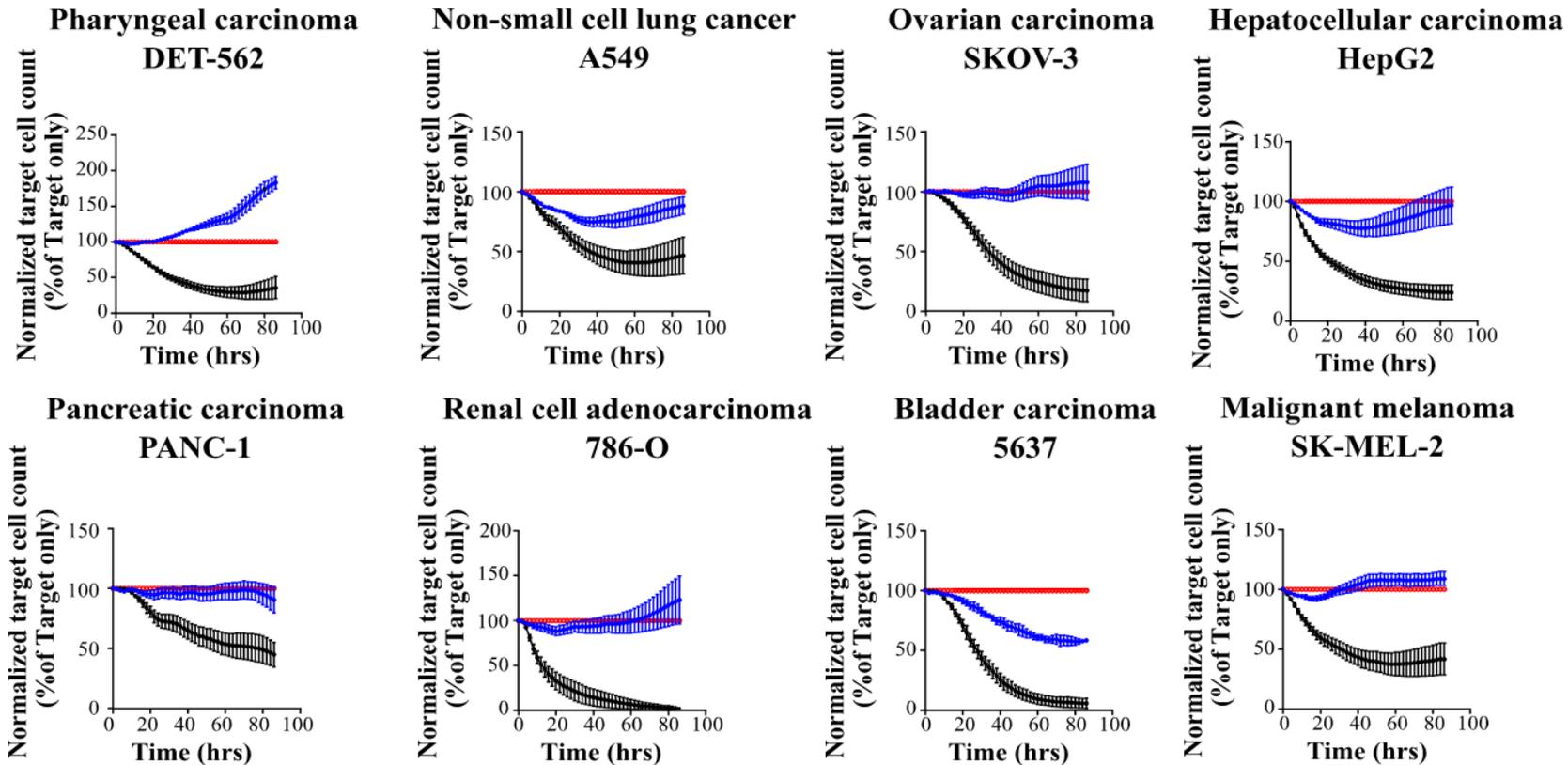
- *Homogeneous cell product*
- *Low-cost per dose cGMP production*
- *Cryopreserved with high post-thaw viability*
- *Administered off-the-shelf in outpatient setting*

# FT500 Off-the-Shelf NK Cell Product Candidate

*In Vitro Cytotoxicity – Head-to-Head Comparison against Healthy Donor NK Cells*



## Enhanced Cytotoxicity vs. Healthy Donor NK Cells



**Target Cells**

**Donor NK Cells  
(fresh)**

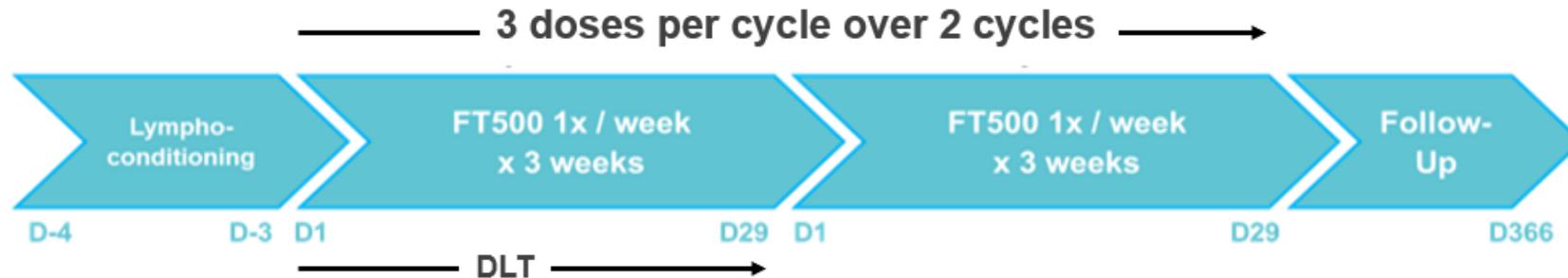
**FT500  
(cryopreserved)**

# FT500 Off-the-Shelf NK Cell Product Candidate

Phase 1 Dose Escalation – Monotherapy and Combination with Checkpoint Inhibitor Therapy



## Phase 1 Dose Escalation in Advanced Solid Tumors



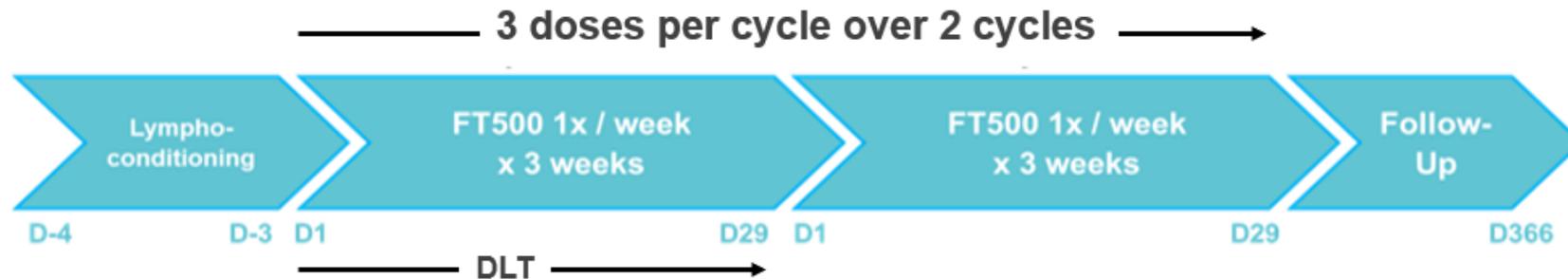
- **Regimen A: Monotherapy**
  - Salvage setting with patients having progressed or failed all FDA-approved therapies
- **Regimen B: Combination with checkpoint blockade therapy (CBT)**
  - Tumor types where CBT is approved
  - Salvage setting with patients having progressed or failed CBT
- **Two dose levels**
  - 100M cells / dose and 300M cells / dose x up to 6 doses

# FT500 Off-the-Shelf NK Cell Product Candidate

Phase 1 Dose Escalation – Monotherapy and Combination with Checkpoint Inhibitor Therapy



## Phase 1 Dose Escalation in Advanced Solid Tumors



### Assess Novel Treatment Paradigm

- First-ever U.S. clinical investigation of iPSC-derived cell
- Universal starting material (e.g., no patient matching)
- Multi-dose, multi-cycle treatment strategy
- One-time, outpatient lympho-conditioning
- No exogenous cytokine support

### Key Read-outs: Safety and Tolerability

- Clinical
  - No DLTs or FT500-related SAEs (11 subjects)
- Molecular (i.e., patients' immunological response)
  - Immune cell recovery
  - Cytokine levels (e.g. CRS, GvHD)
  - Anti-cell immunogenicity

# FT500 Off-the-Shelf NK Cell Product Candidate

Phase 1 Dose Expansion – Overcome Resistance to Checkpoint Inhibitor Therapy

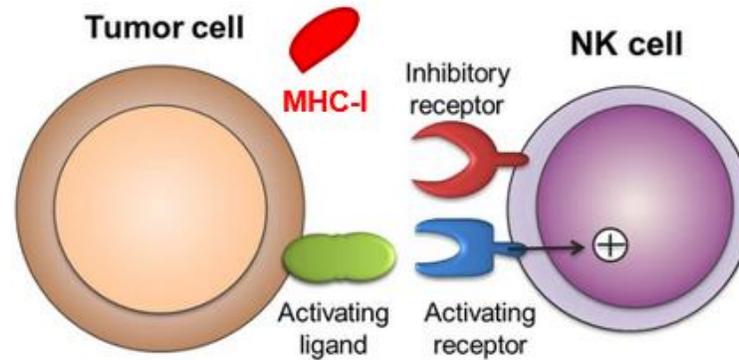
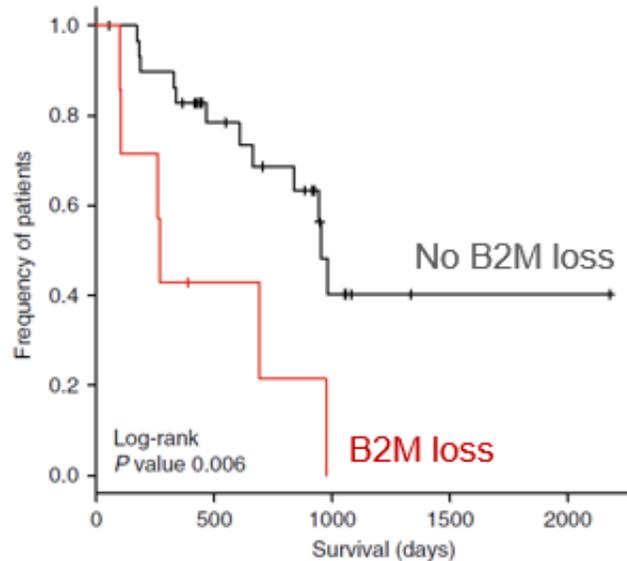


## Phase 1 Dose Expansion – Target Loss of MHC-I Tumor Escape Mechanism



DOI: 10.1038/s41467-017-01062-w

Resistance to checkpoint blockade therapy through inactivation of antigen presentation



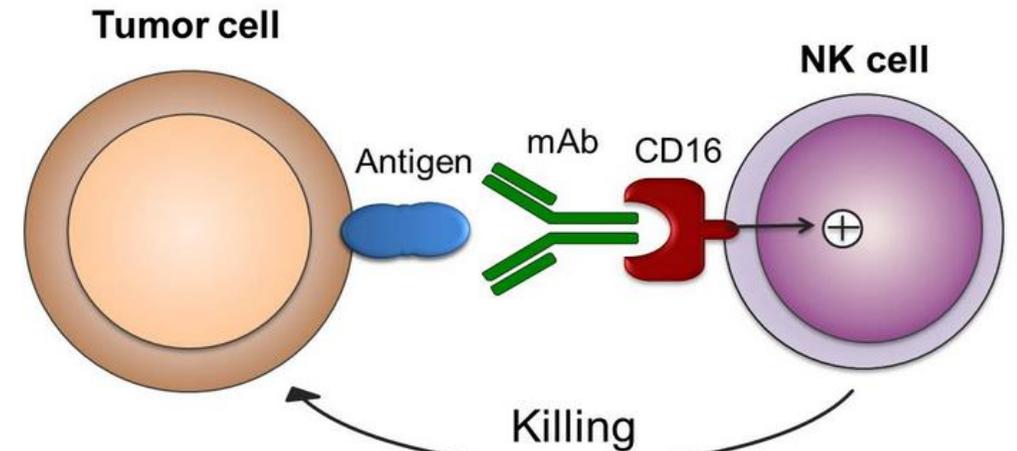
*NK cells have the unique ability to recognize and kill cancer cells that have down-regulated MHC Class I, a major tumor escape mechanism*

- Loss or down-regulation of MHC Class I is a major tumor escape mechanism in patients having progressed / failed checkpoint inhibitor therapy
- Several tumor cell mutations, including in B2M gene, disrupt MHC Class 1 expression
- B2M mutations are enriched in patients who are resistant to checkpoint blockade (~30%) and are associated with poor survival

# FT516 Off-the-Shelf hnCD16 NK Cell Product Candidate

## CD16 Fc Receptor Mediates Antibody-Dependent Cellular Cytotoxicity (ADCC)

- **CD16 is an activating receptor expressed on NK cells**
  - Mediates antibody-dependent cellular cytotoxicity (ADCC), a potent anti-tumor mechanism by which NK cells recognize, bind and kill antibody-coated cancer cells
- **CD16 occurs in two variants: high (158V) or low (158F) affinity for the Fc domain of IgG1 antibodies**
  - Only ~15% of patients are homozygous for 158V
  - Numerous clinical studies with FDA-approved tumor-targeting antibodies have demonstrated that patients homozygous for 158V have improved clinical outcomes
- **CD16 shedding in the tumor microenvironment can significantly limit NK cell anti-tumor activity**



**Rituxan**  
Rituximab

**GAZYVA**  
obinutuzumab

**DARZALEX**  
(daratumumab)

**Herceptin**  
trastuzumab  
Precision • Power • Promise

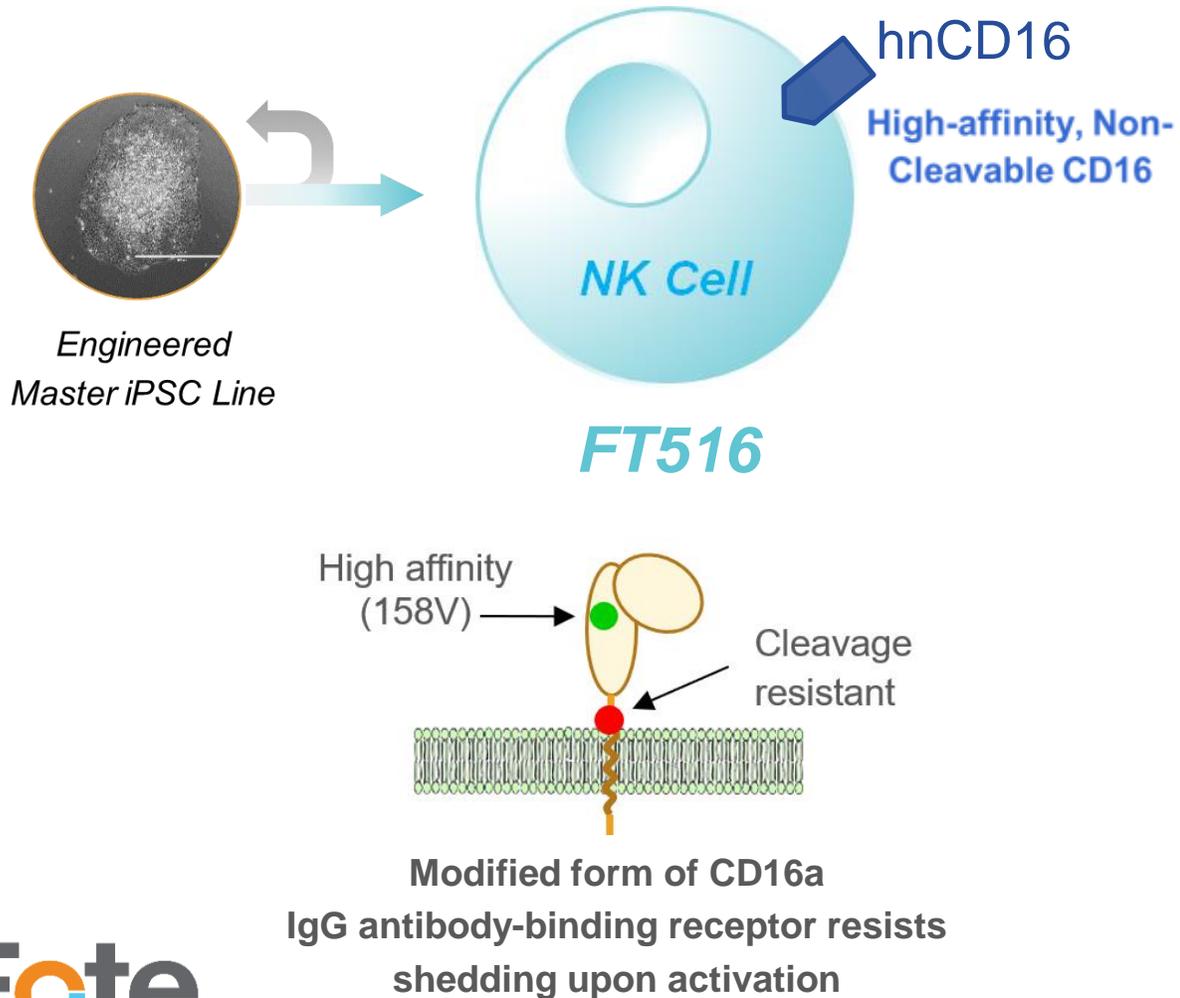
**ERBITUX**  
Cetuximab

**BAVENCIO**  
avelumab injection

*How to bring the 158V CD16 NK cell experience to all patients?*

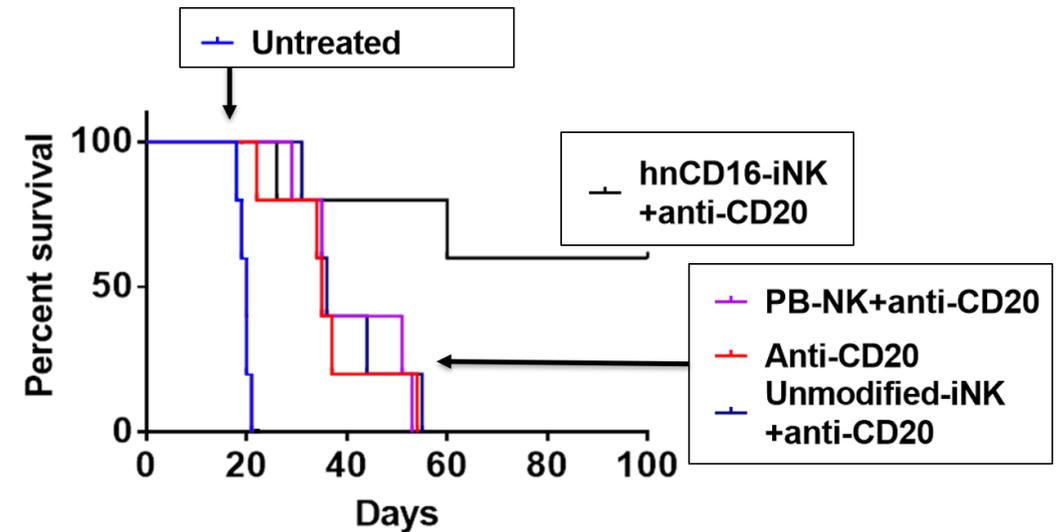
# FT516 Off-the-Shelf hnCD16 NK Cell Product Candidate

High-Affinity 158V, Non-Cleavable CD16 Fc Receptor for Enhanced ADCC



## Enhanced Survival *In Vivo* with Rituximab

Mouse model of human lymphoma (Raji cells)



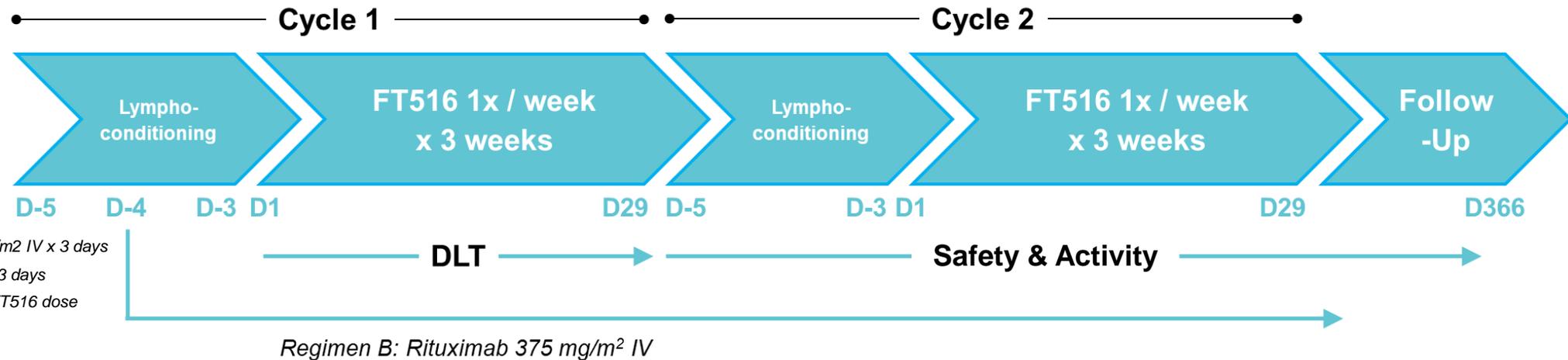
Median survival time for FT516 + anti-CD20 was not reached at Day 100

# FT516 Off-the-Shelf hnCD16 NK Cell Product Candidate

Phase 1 Study Design: Multiple Doses over Multiple Cycles for AML & Lymphoma



## First-ever Clinical Trial in World of Engineered iPSC-derived Cell Therapy



### Regimen A – Monotherapy

- Relapsed / refractory AML
- Dose Escalation: 90M, 300M, 900M cells per dose
- Dose Expansion: up to 15 subjects

### Regimen B – Rituximab Combination

**Rituxan**  
Rituximab

- Relapsed / refractory B-cell lymphoma
- Dose Escalation: 30M, 90M, 300M, 900M cells per dose + mAb
- Dose Expansion: up to 15 subjects

*First Patients Treated in October 2019*

# FT516 Off-the-Shelf hnCD16 NK Cell Product Candidate

Supported by Clinical POC in Hematologic Malignancies and Solid Tumors

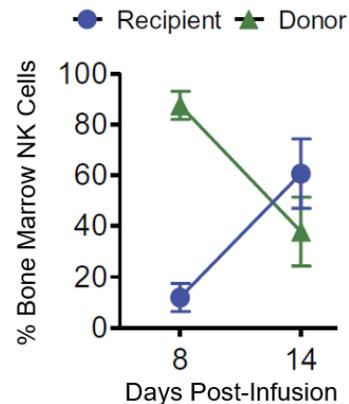


## Donor NK Cell Therapy for AML

Phase 1 clinical trial in relapsed / refractory AML

- Cytokine-primed, donor-derived NK cell therapy
- Single-dose administration (0.5M, 1.0M, 10.0M per kg)
- 5 of 9 patients had clinical responses (4 CRs)
  - No DLTs / GvHD

UPN	Dose level	Number of previous therapies	Pretreatment BM blast (%)	IWG response	DLT	GVHD
001	1	2	16	TF-PD	No	No
006	1	3	28	TF-PD	No	No
007	1	1	47	CR	No	No
008	2	3	17	TF-PD	No	No
009	2	3	80	MLFS	No	No
012	2	3	15	CR	No	No
017	3	3	69	TF-PD	No	No
019	3	4	15	CR	No	No
020	3	1	13	CRi	No	No

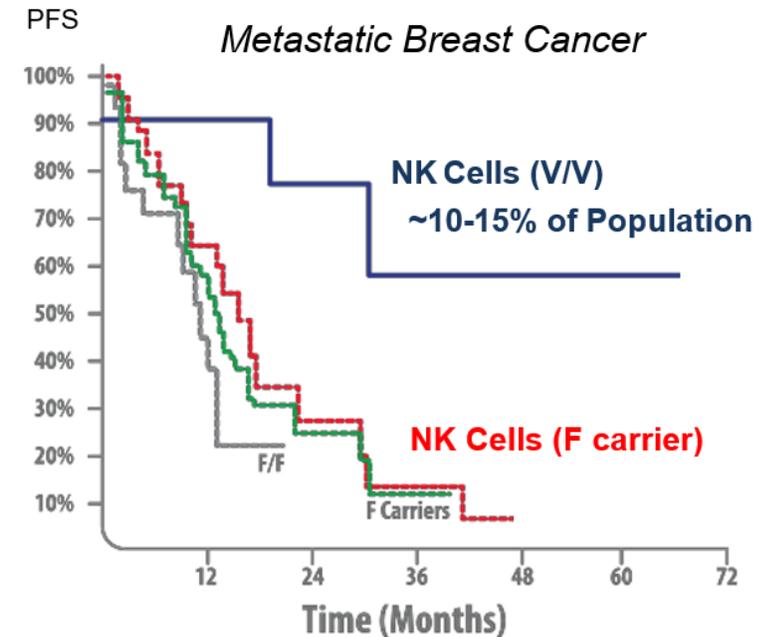


Fehniger et al, Science Translational Medicine, 8, 357, 2016

## Monoclonal Antibody for Solid Tumors

### Herceptin

Metastatic Breast Cancer



Musolino et al, J. Clin Oncol, 26, 1789, 2008

# FT596 Off-the-Shelf Multi-Targeted CAR NK Cell Product Candidate

Potential Best-in-Class Cell-based Cancer Immunotherapy for B-cell Malignancies



**First-ever Cell Therapy Engineered with Three Active Anti-tumor Modalities  
Cleared for U.S. Clinical Investigation**

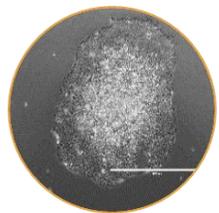
High-affinity, Non-Cleavable CD16

**Rituxan**  
Rituximab

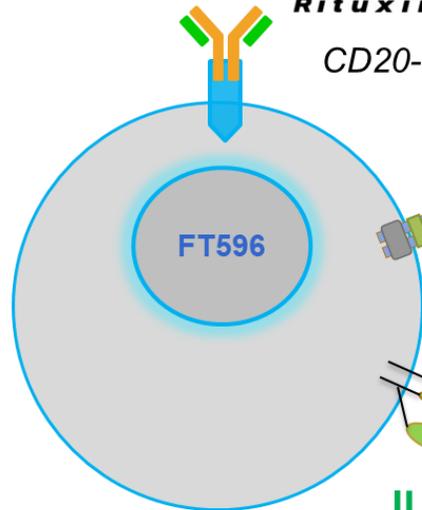
**GAZYVA**  
obinutuzumab

CD20-targeted mAbs

**hnCD16:** High-affinity 158V, non-cleavable CD16 Fc receptor that has been modified to augment antibody-dependent cellular cytotoxicity by preventing CD16 down-regulation and enhancing CD16 binding to tumor-targeting antibodies



Engineered Master iPSC Line



**CAR19**

**CAR19:** Chimeric antigen receptor optimized for NK cell biology, which contains a NKG2D transmembrane domain, a 2B4 co-stimulatory domain and a CD3-zeta signaling domain, that targets B-cell antigen CD19

**IL15 Receptor Fusion**

**IL-15RF:** Interleukin-15 receptor fusion, a potent cytokine complex that promotes survival, proliferation and trans-activation of NK cells and CD8 T cells

# **FT596 Off-the-Shelf Multi-Targeted CAR NK Cell Product Candidate**

*IND Application Cleared for Clinical Investigation by FDA*



## **Fate Therapeutics Announces FDA Clearance of IND Application for FT596 Off-the-Shelf, iPSC-derived CAR NK Cell Cancer Immunotherapy**

*FT596 Product Candidate Derived from Clonal Master iPSC Line Engineered with Three Anti-Tumor Functional Components*

*Designed to Overcome CD19 Antigen Escape and Improve Durability of Response by Targeting Multiple Tumor-associated Antigens*

*Off-the-Shelf Availability of FT596 Enables Rapid Time-to-Patient Treatment and Broader Patient Access*

**San Diego, CA – September 3, 2019** – Fate Therapeutics, Inc. (NASDAQ: FATE), a clinical-stage biopharmaceutical company dedicated to the development of programmed cellular immunotherapies for cancer and immune disorders, announced today that the U.S. Food and Drug Administration (FDA) has cleared the Company’s Investigational New Drug (IND) application for FT596, the Company’s first off-the-shelf chimeric antigen receptor (CAR) natural killer (NK) cell cancer immunotherapy which targets multiple tumor-associated antigens. FT596 is derived from a clonal master induced pluripotent

### ***Clonal Master iPSC Line***

Renewable source  
One-time iPSC engineering  
Scalable, cost-effective manufacture

### ***Off-the-Shelf***

Rapid time-to-patient treatment  
Broader patient access  
Multi-cycle availability

### ***Best-in-Class Profile***

3 anti-tumor modalities  
Multi-antigen targeted  
Address antigen escape

# FT596 Off-the-Shelf Multi-Targeted CAR NK Cell Product Candidate

*Uniformly Engineered with Three Active Anti-Tumor Functional Components*



## 3 Active Anti-Tumor Modalities

High-affinity, Non-Cleavable CD16

**Rituxan**  
Rituximab

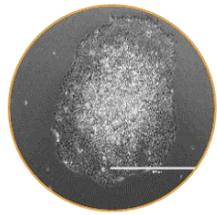
**GAZYVA**  
obinutuzumab

CD20-targeted mAbs

CAR19

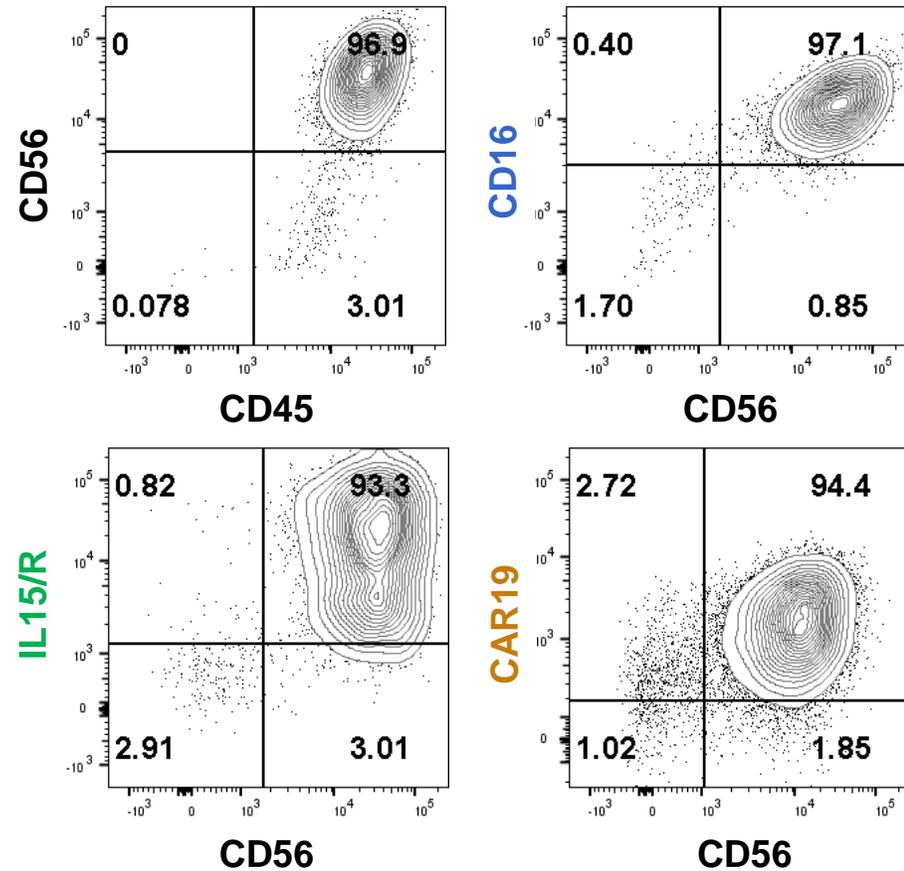
IL15 Receptor Fusion

FT596



Engineered Master iPSC Line

## Uniformly Engineered Product Profile

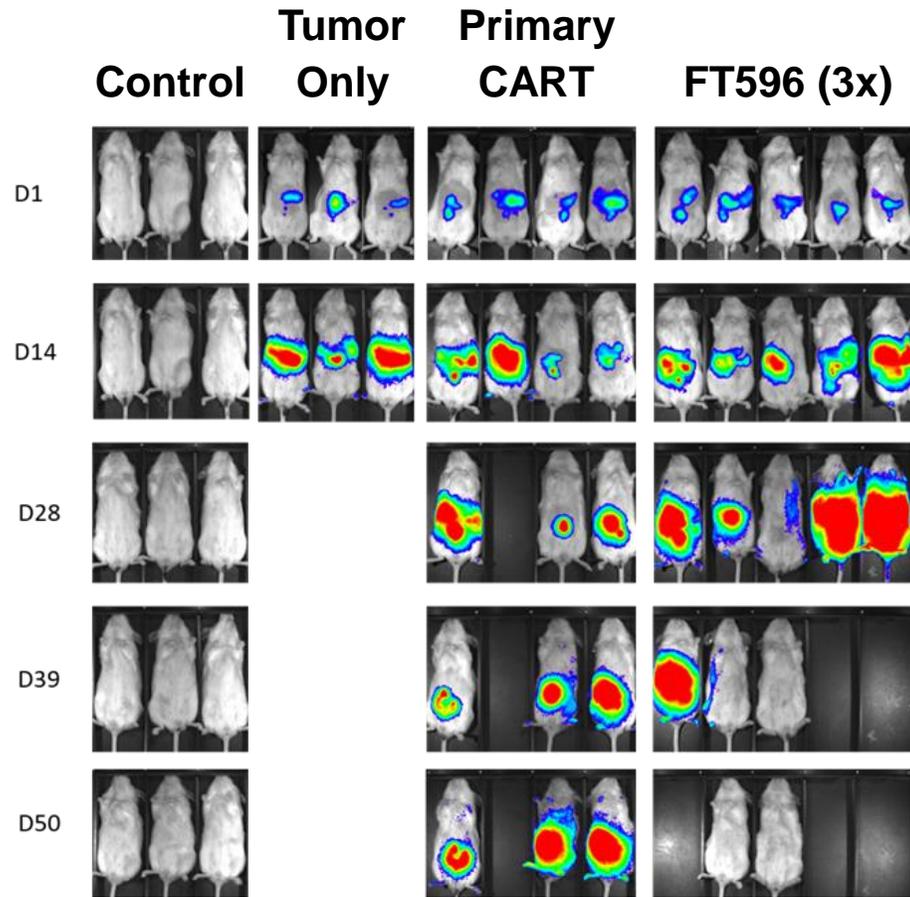


# FT596 Off-the-Shelf Multi-Targeted CAR NK Cell Product Candidate

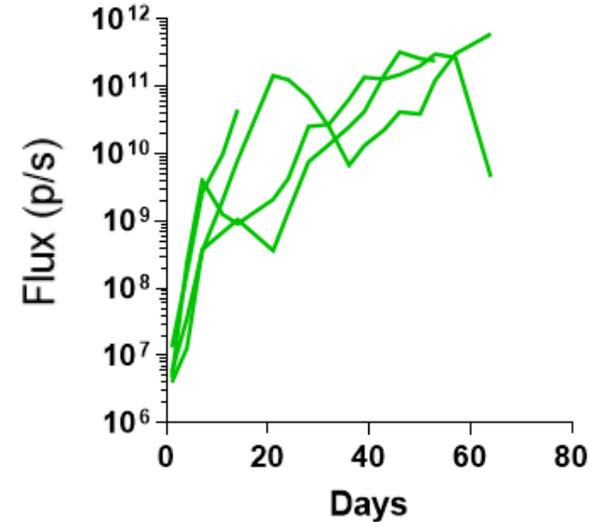
*In Vivo* Anti-Tumor Activity – Head-to-Head Comparison against Primary CAR T Cells



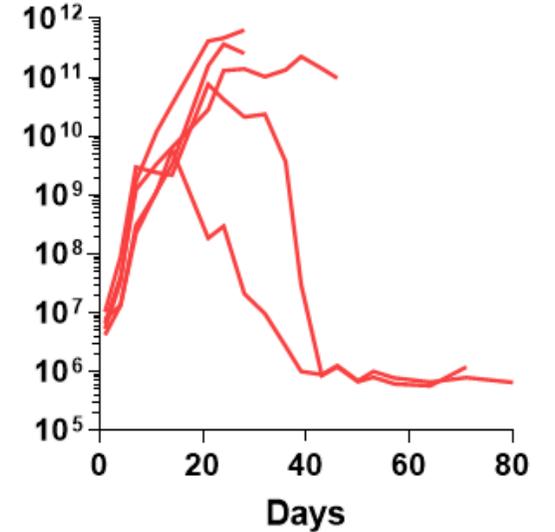
## Single-Antigen Targeting of CD19 in Humanized Mouse Model of Lymphoma



### Primary CART



### FT596



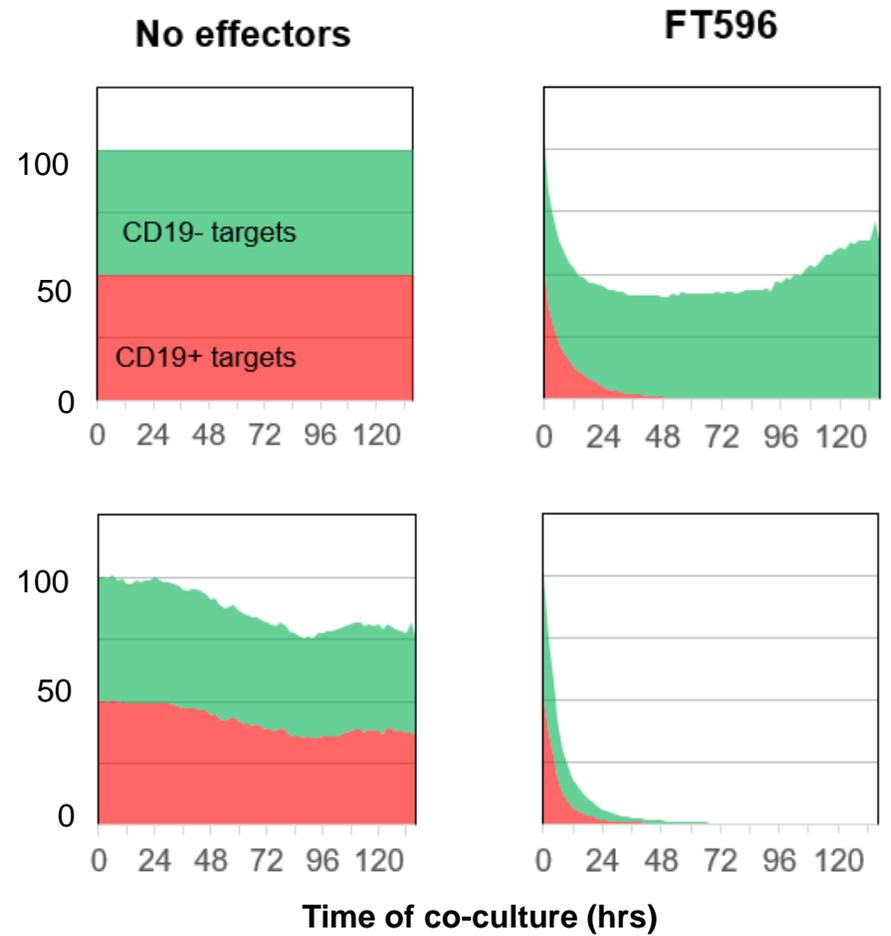
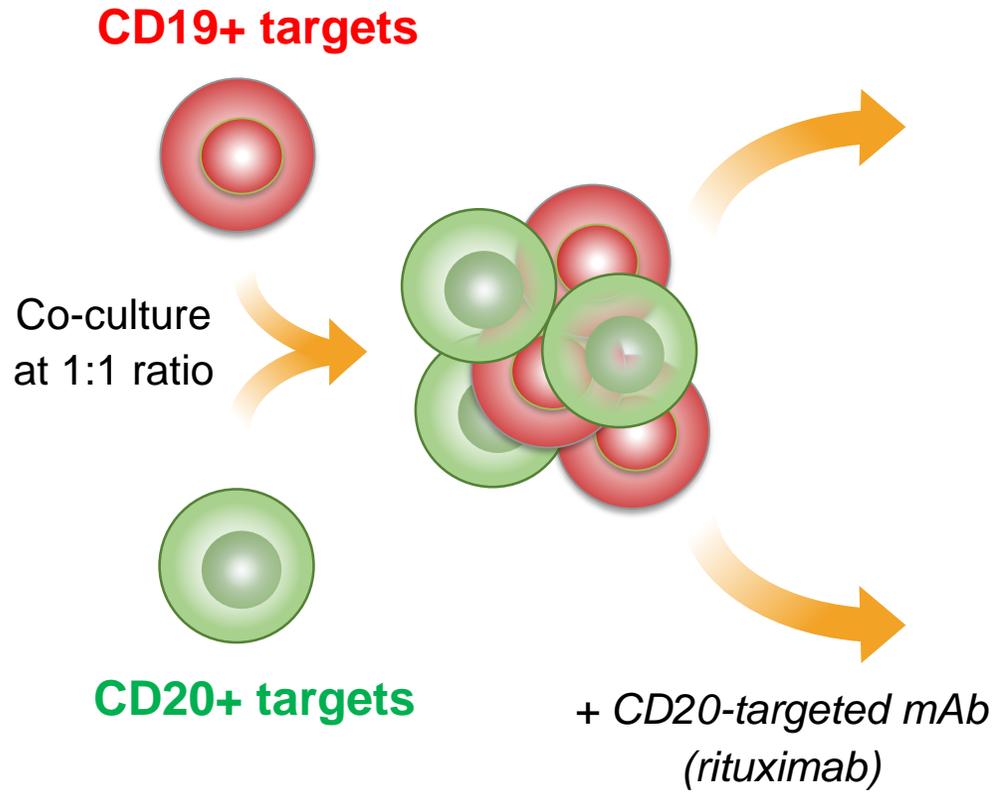
*Does not include addition of CD20-targeted mAb*

# FT596 Off-the-Shelf Multi-Targeted CAR NK Cell Product Candidate

Leveraging CAR + *hnCD16* to Overcome Tumor Heterogeneity and Antigen Escape



## Targeting Multiple Tumor-Associated Antigens

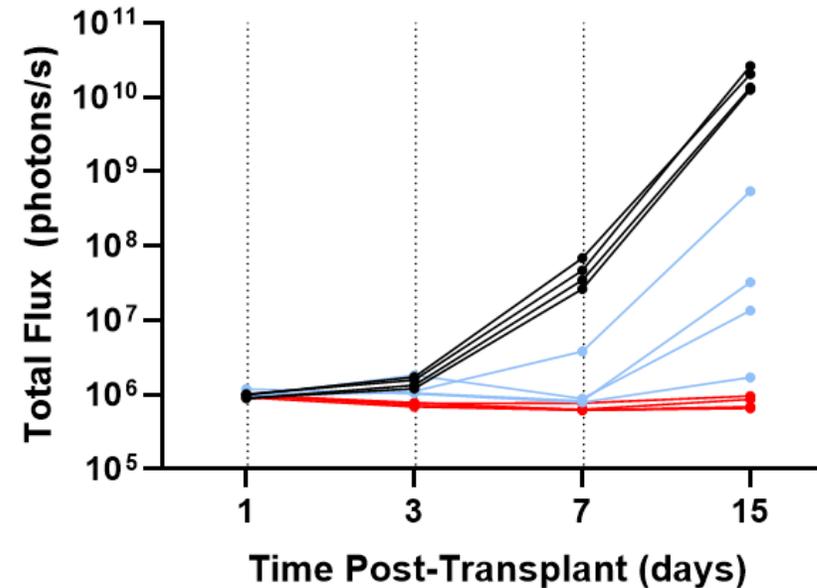
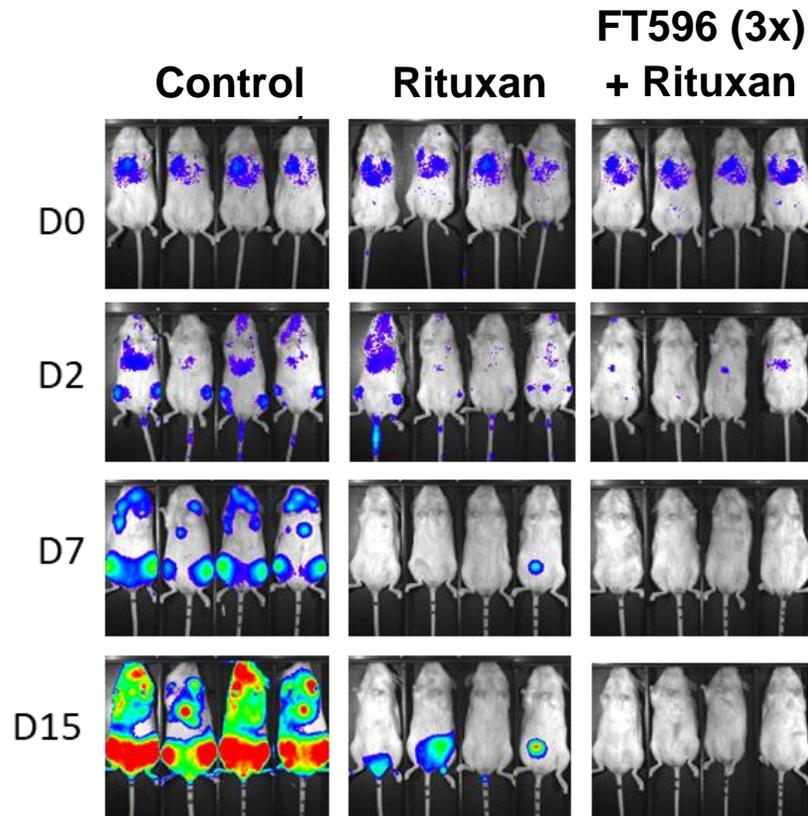


# FT596 Off-the-Shelf Multi-Targeted CAR NK Cell Product Candidate

Leveraging CAR + *hnCD16* to Overcome Tumor Heterogeneity and Antigen Escape



## Dual-Antigen Targeting of CD19 and CD20 in a Xenograft Model of Lymphoma



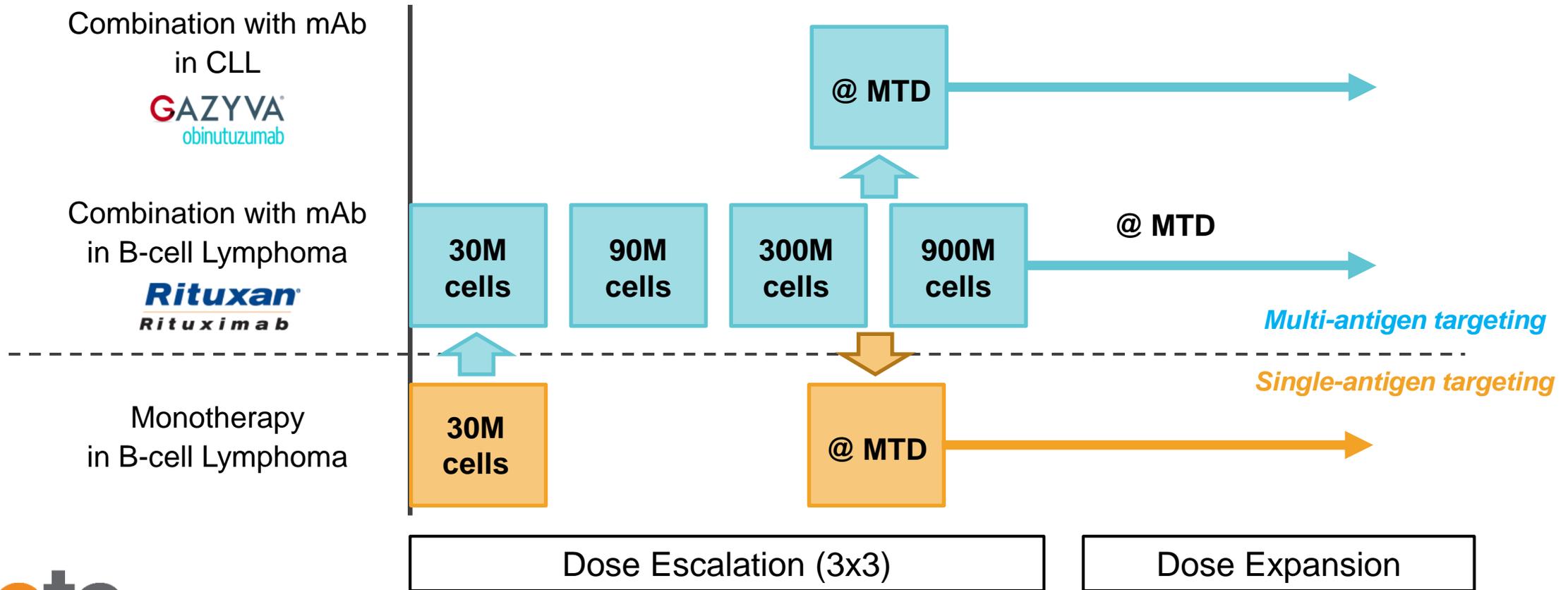
- Raji only
- Rituximab
- FT596 + Ritux

# FT596 Off-the-Shelf Multi-Targeted CAR NK Cell Product Candidate

Phase 1 Study Design in Relapsed / Refractory B-cell Lymphoma and CLL

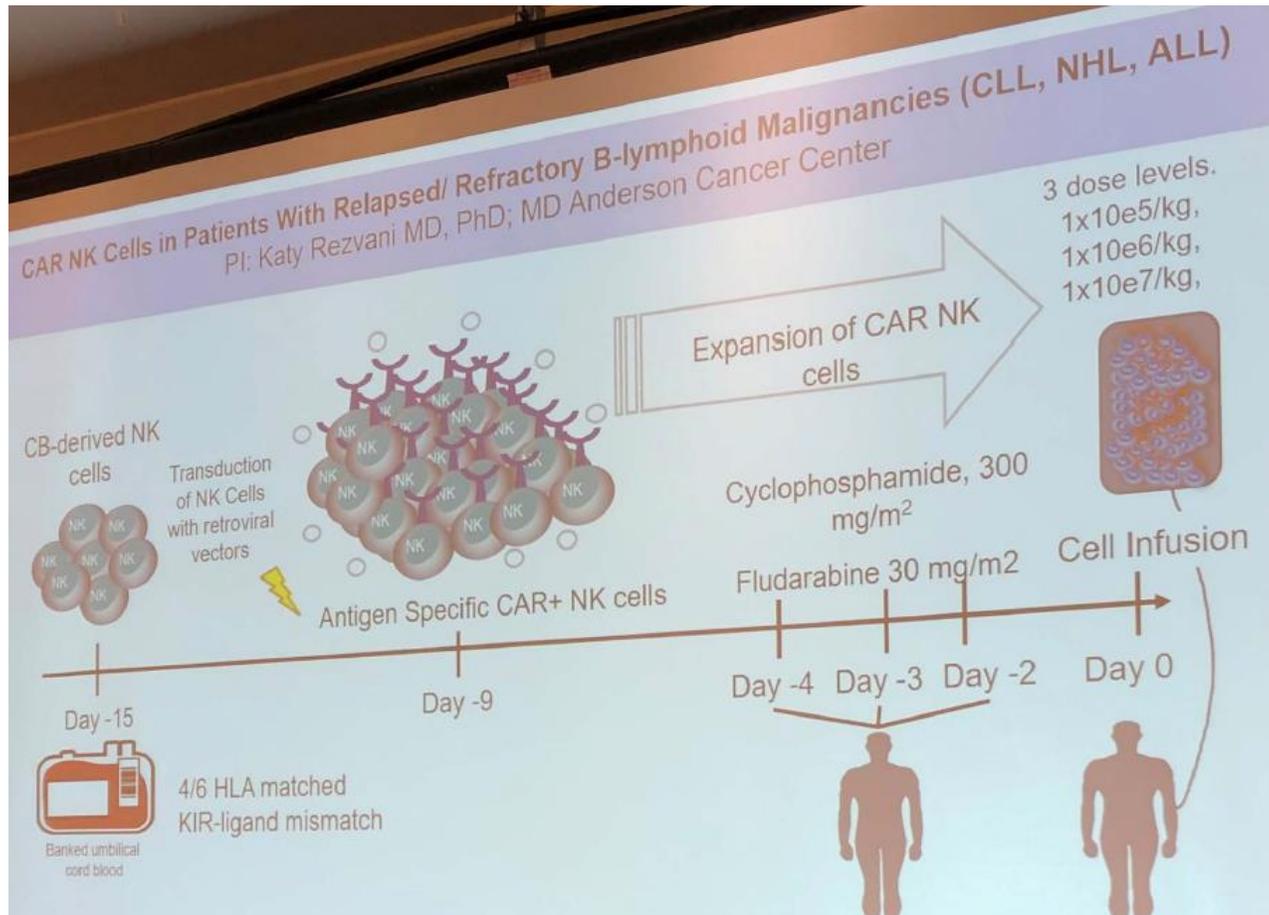


## Phase 1 Dose Escalation – Monotherapy and mAb Combination



# FT596 Supported by Clinical POC with Donor-derived CAR19 NK Cells

M.D. Anderson Cancer Center, Katy Rezvani, M.D., Ph.D. (NCT03056339)



- First-in-human clinical trial testing the safety and efficacy of donor-derived CAR NK cell therapy
  - Cord blood derived
  - Transduced with CAR19 (28z) / IL15 (secreted) / iCas9 (suicide)
- Treated 11 patients with r/r B-cell malignancies
  - r/r DLBCL (4); r/r CLL (5); r/r Follicular (2)
  - 3 dose levels (0.1M, 1.0M, 10M cells / kg)
- CR in 8/11 patients
  - CRs observed at all dose levels
  - CRs observed across all disease sub-types
- No CRS / neurotoxicity

# Off-the-Shelf NK Cell Cancer Immunotherapy Franchise

Systematic Build of Industry-Leading iPSC-derived NK Cell Product Pipeline



## Universal, Off-the-Shelf NK Cell Cancer Immunotherapy Pipeline

Clonal Master iPSC Line	Synthetic Biology	FT500	FT516	FT596	FT538	FT576
Multi-faceted Innate Immunity		✓	✓	✓	✓	✓
+ High-Affinity, Non-cleavable CD16	<i>Augment mAb therapy</i>		✓	✓	✓	✓
+ IL-15 Receptor Fusion	<i>Enhance NK cell function</i>			✓	✓	✓
+ CAR Insertion	<i>Target tumor-associated antigen</i>			CD19		BCMA
+ CD38 Knock-out	<i>Resist CD38-mediated fratricide</i>				✓	✓
	<b>Total # of Synthetic Elements</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>4</b>

# Off-the-Shelf CAR T-Cell Cancer Immunotherapy

Memorial Sloan Kettering Collaboration



Dr. Michel Sadelain, MD, PhD  
Director, Center for Cell Engineering  
Memorial Sloan Kettering Cancer Center

## LETTERS

Generation of tumor-targeted human T lymphocytes from induced pluripotent stem cells for cancer therapy

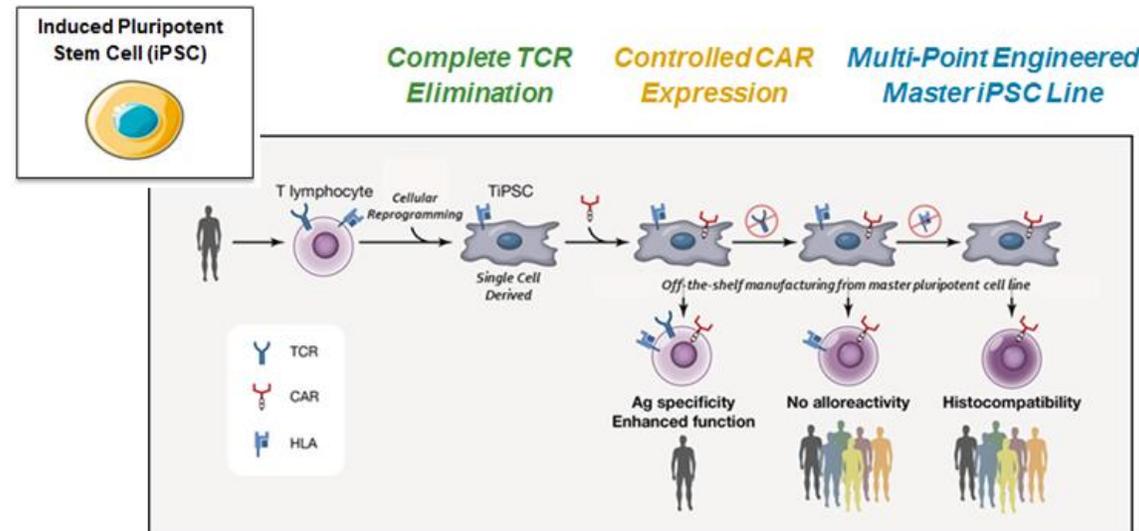
nature  
biotechnology

Cell Stem Cell  
Perspective



New Cell Sources for T Cell Engineering and Adoptive Immunotherapy

*“Engineering therapeutic attributes into pluripotent cell lines is a breakthrough approach to renewably generate potent T-cell immunotherapies. This unique approach offers the prospect for off-the-shelf delivery of T-cell therapies with enhanced safety and therapeutic potential at the scale necessary to serve significant numbers of patients.”*



Adapted from: Themeli, Riviere & Sadelain, Cell Stem Cells, 2015

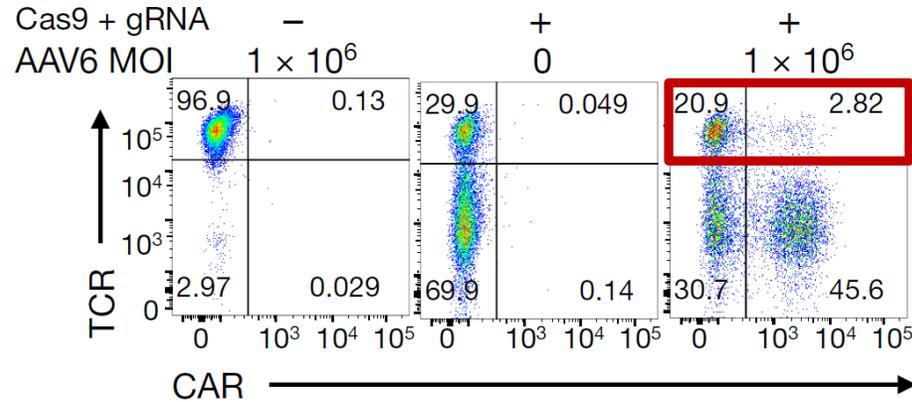
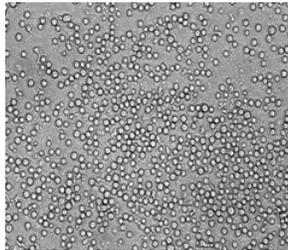
# FT819 TRAC-encoded CAR 1XX Expression

Engineering Primary T Cells vs. Single iPSC Clone for TCR Elimination



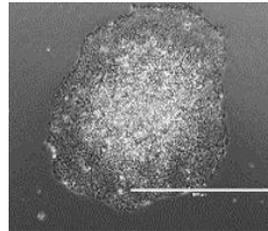
## CRISPR Engineering: TCR Disruption + TRAC-encoded CAR Expression

**Primary T Cell Batch**

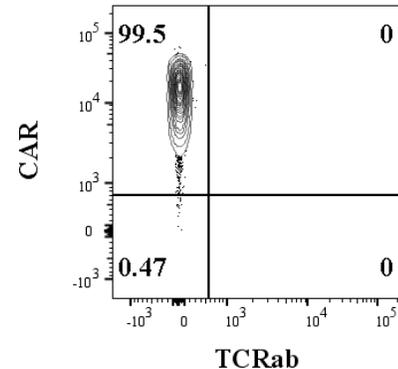


- ✓ 20% of T cells express allo-reactive TCR
- ✓ Only 45% of T cells have TCR KO + CAR expression

**Single iPSC Clone**



**CAR-iT cell Profile**



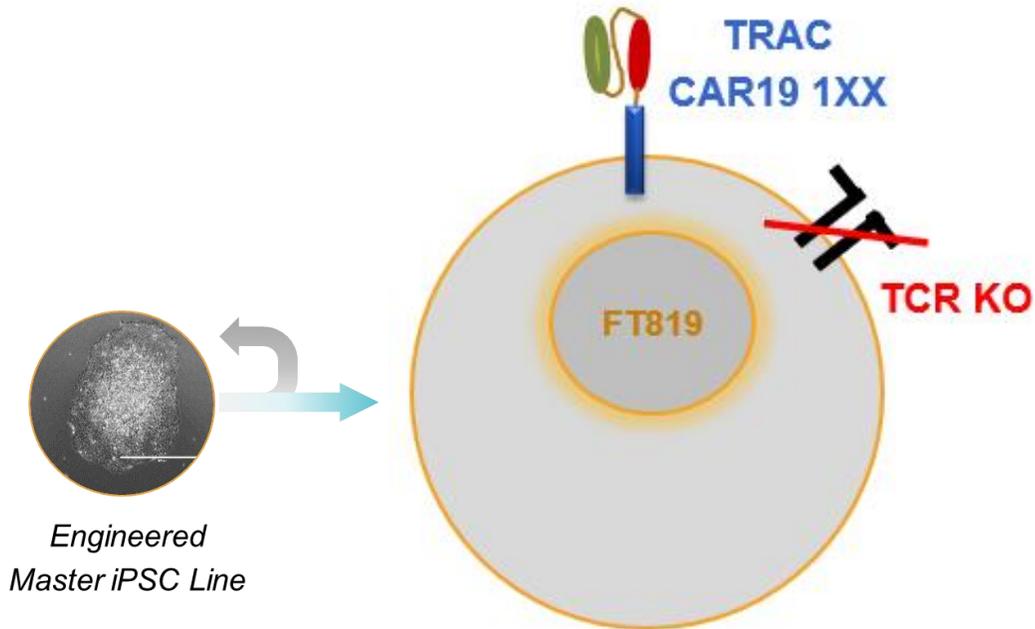
- ✓ Complete elimination of TCR expression
- ✓ Uniform and controlled CAR expression through TRAC

# FT819 Off-the-Shelf CAR19 T-Cell Product

Novel CAR19 Targeted to the TRAC Locus for Improved Safety and Efficacy



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



**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

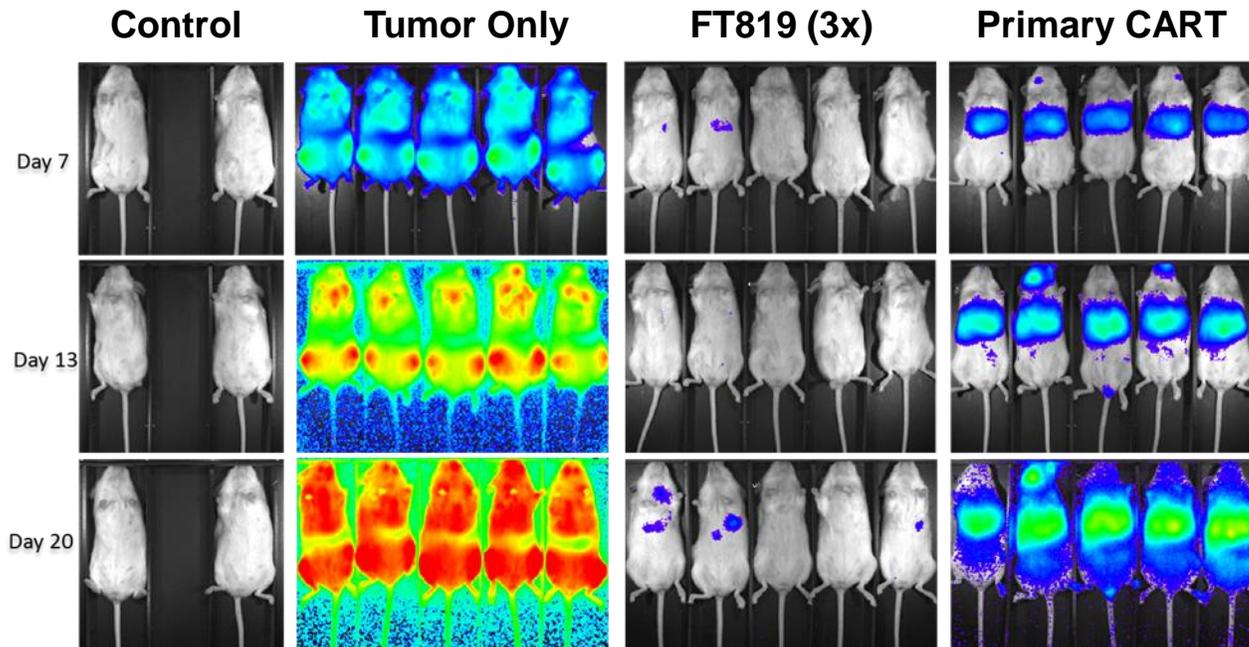
**TCR-null:** Bi-allelic disruption of TRAC at the clonal level for complete removal of TCR expression and the elimination for the possibility of GvHD in allogeneic setting

# FT819 Off-the-Shelf CAR19 T-Cell Product

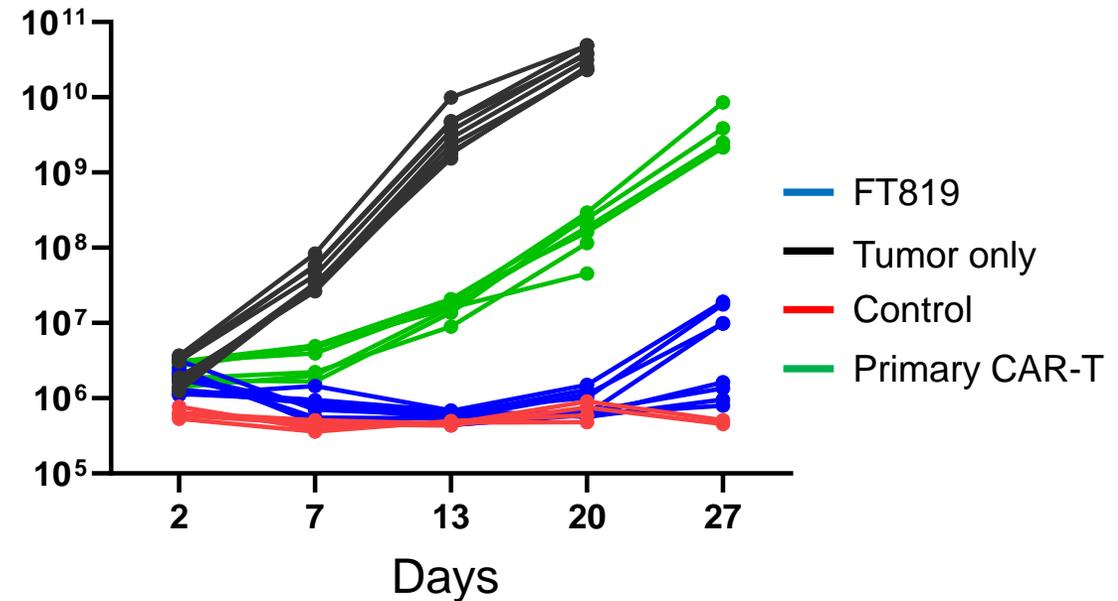
Novel CAR19 Targeted to the TRAC Locus for Improved Safety and Efficacy



## In Vivo Head-to-Head Tumor Clearance vs. Primary CAR T Cells



### Acute Lymphoblastic Leukemia



IND Submission Planned for 1H20

# Off-the-Shelf CAR T-Cell Franchise

## Foundational IP – Recently Issued Composition of Matter Patents



- **U.S. Patent Number 10,287,606 entitled “Genomic Engineering of Pluripotent Cells”**
  - Issued May 2019 (FATE owned)
  - A cell or population thereof, wherein (i) the cell is an induced pluripotent stem cell (iPSC), a clonal iPSC, or an iPSC line cell; (ii) the cell comprises a polynucleotide encoding at least one chimeric antigen receptor (CAR) introduced into a T cell receptor (TCR) alpha locus; (iii) an endogenous TCR alpha gene is knocked out; and (iv) expression of the polynucleotide encoding at least one CAR is under control of an endogenous TCR promoter of the TCR alpha locus
- **U.S. Patent Number 10,370,452 entitled “Effective Generation of Tumor-targeted T cells derived from Pluripotent Stem Cells”**
  - Issued August 2019 (MSK owned; licensed exclusively to FATE for all human therapeutic uses)
  - A population of T cells that are produced by *in vitro* differentiation of a pluripotent stem cell, wherein (i) the pluripotent stem cell expresses a chimeric antigen receptor (CAR), and (ii) the population of T cells comprises a T cell exhibiting a CD45RA+ CD27- CD28- CCR7- CD62L- phenotype



# ONO Pharmaceutical Collaboration

*Off-the-Shelf iPSC-derived CAR T-Cell Product Candidates*

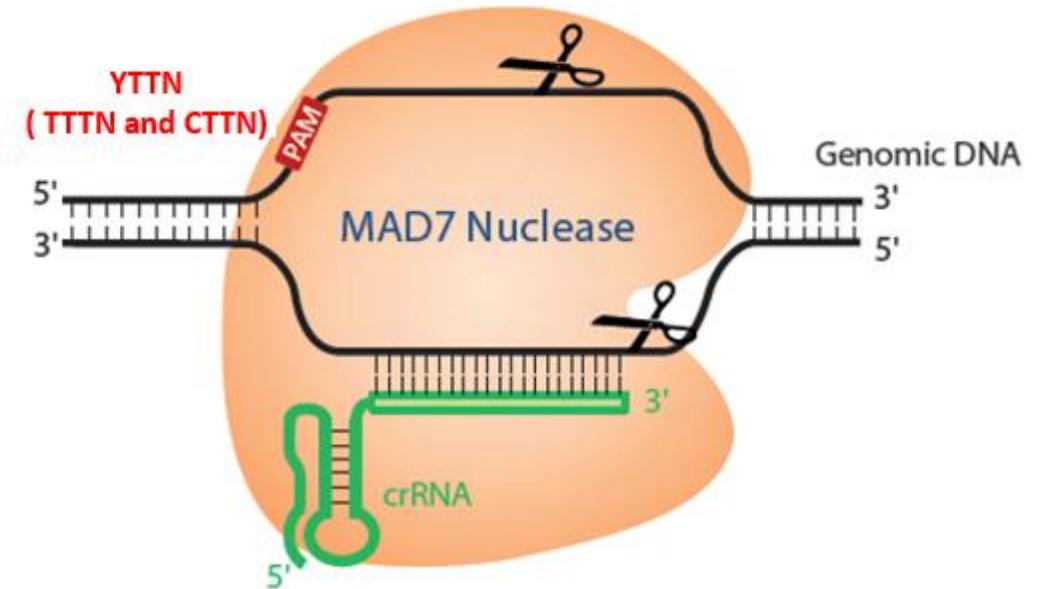


	Product 1 CAR T-cell targeting Antigen “ND”	Product 2 CAR T-cell targeting Antigen “ND”
Tumor Type	Lymphoblastic leukemia	Solid tumor
Binding Domain	FATE to contribute	ONO to contribute
Preclinical Funding	Up to \$70M, including \$10M upfront plus \$20M in committed research funding and up to an additional \$40M in contingent fees	
ONO Rights (subject to Preclinical Option Exercise)	Asia only	WW with FATE having opt-in right to develop and commercialize in the U.S. and Europe under a 50-50 profit-sharing arrangement
Post-Option Economics	Up to \$285M in clinical development, regulatory and sales milestones plus royalties	Up to \$895M in clinical development, regulatory and sales milestones plus royalties

*ND = Not publicly disclosed*



- Patent-protected, RNA-guided, Class 2 Type V CRISPR nuclease isolated from *Eubacterium rectale*
- Improved features over commonly-used CRISPR-Cas9 nucleases:
  - Different PAM recognition sequences and cut efficiencies
  - Reduced sizes and differing enzyme kinetics
- MAD7 validated in FATE iPSC Product Platform
  - ~60% cleavage efficiency against CD38KO in iPSCs



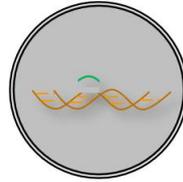
**FATE secured royalty-free license to make and use MAD7 for research, development and commercialization of iPSC-derived cell products**

# iPSC Product Platform

Clonal Master iPSC Lines for Off-the-Shelf Cell Products



Single  
iPSC Clone



**(Engineered) Single Pluripotent Stem Cell**

- Renewable
- Potential to differentiate into 200+ cell types



Unlimited Supply of  
Clonal Master iPSC  
Lines

Master Cell  
Bank



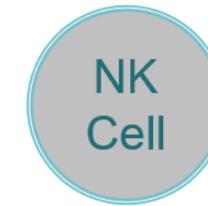
Working Cell Banks  
Working Cell Banks  
Working Cell Banks



Thousands of  
Clonally-derived Doses  
of Cell Products



**Off-the-Shelf  
Homogeneous | Multi-Dosing  
(Engineered) Cell Products**



*“to reach more patients in need”*

# Financial Summary

As of September 30, 2019



Three Months Ended September 30, 2019	
Revenue	\$2.4M
Operating Expense, Adjusted <sup>1</sup>	\$25.0M
Cash & Cash Equivalents	\$303.0M
Employees	159
Total Shares Outstanding <sup>2</sup>	89.6M

[1] Excludes non-cash stock-based compensation expense of approximately \$4.6M.

[2] Includes 14.0M shares of common stock from conversion of non-voting preferred stock.

**F**o**t**e  
THERAPEUTICS  
*Better Cells For Better Therapies™*