Fate THERAPEUTICS

Better Cells For Better Therapies™

Programmed Cellular Immunotherapies

Natural Killer Cell Franchise Update

November 10, 2018

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 Company's advancement of and plans related to the Company's product candidates and clinical studies, the therapeutic potential of the Company's natural killer (NK) cell cancer immunotherapies, including FATE-NK100 and FT500, the Company's regulatory strategy and advancement of its clinical studies, and the Company's plans for its intended clinical investigation of FATE-NK100 and FT500. 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 of cessation or delay of ongoing or planned development and clinical activities for a variety of reasons (including requirements that may be imposed by regulatory authorities on the initiation or conduct of clinical trials or to support regulatory approval, or on the manufacture of its product candidates, any adverse events or other results that may be observed during development, or difficulties in manufacturing or supplying the Company's product candidates for clinical trials), the risk that results observed in prior preclinical studies of FATE-NK100 or FT500 may not be replicated in subsequent studies or ongoing or future clinical trials, and the risk that FATE-NK100 or FT500 may not produce therapeutic benefits or may cause other unanticipated adverse effects. 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.

Fate THERAPEUTICS

Introduction

Scott Wolchko, President & CEO

Agenda

- Introduction – *Scott Wolchko, President & CEO*
- Adaptive Memory NK Cells – *Jeffrey S. Miller, MD*
- Translational Insights – *Dan Shoemaker, PhD, Chief Scientific Officer*
- Clinical Observations – *Sarah A. Cooley, MD*
- NK Cell Product Franchise – *Bob Valamehr, PhD, Chief Development Officer*
- Concluding Remarks – *Scott Wolchko, President & CEO*

Cell-based Cancer Immunotherapy

Therapeutic Vision for Long-Term Durable Responses

Intervention Strategy	Considerations
Early	• **Differentiated safety profile** • **Effective with well-tolerated regimens**
Often	• **Multi-dose, multi-cycle paradigm** • **Cost-effective manufacture**
Combinations	• **Augment established agents' MOA** • **Deliver multiple complementary MOAs**

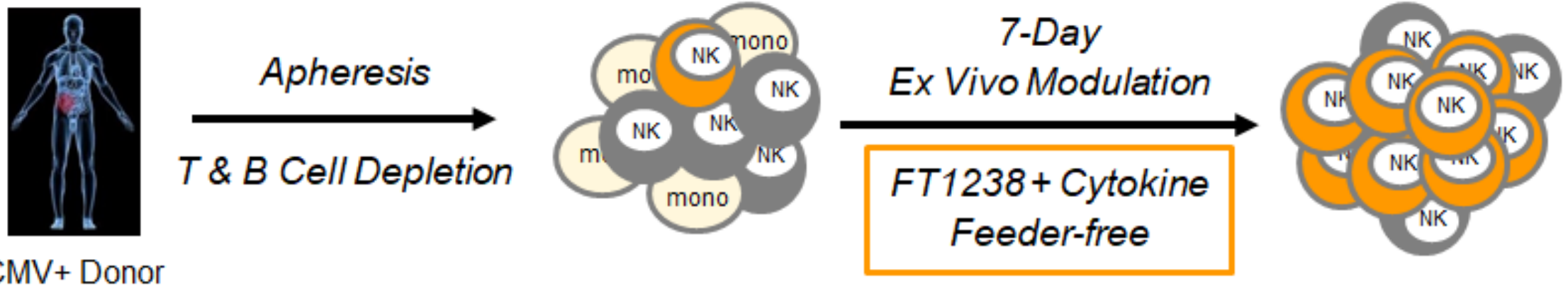
Fate THERAPEUTICS

Adaptive Memory NK Cells

A Potent Subset of Activated NK Cells with Unique Anti-Tumor Properties

Heightened Effector Function ***Enhanced Persistence***

Resistant to Immuno-regulatory Suppression



FATE-NK100

First-in-Human Phase 1 Clinical Trials

	VOYAGE	APOLLO	DIMENSION		
	R/R AML	**Recurrent Ovarian**	**Solid Tumors**	**EGFR+**	**HER2+**
NK100 Dose	Single	Single [1]	Single [1]	Single + cetuximab [1]	Single + trastuzumab [1]
Route of Admin	IV	IP	IV	IV	IV
Dose Levels	3	3	3	4	4
Range (x10^7/kg)	1, 3, 10	1, 3, 10	1, 3, 10	0.1, 1, 3, 10	0.1, 1, 3, 10
Conditioning	Lympho-D	Lympho-C2x2	Lympho-C1x2	Lympho-C1x2	Lympho-C1x2
Cy	60 mg/kg x 2d	300 mg/m2 x 2d	300 mg/m2 x 1d	300 mg/m2 x 1d	300 mg/m2 x 1d
Flu	25 mg/m2 x 5d	25 mg/m2 x 2d	25 mg/m2 x 2d	25 mg/m2 x 2d	25 mg/m2 x 2d
IL-2 Regimen	6MU sc x 3/w x 2w	6MU ip x 3/w x 2w	6MU sc x 3/w x 2w	6MU sc x 3/w x 2w	6MU sc x 3/w x 2w

[1] A second treatment cycle is optional for subjects with SD or better at Day 28 or Day 56

Fate THERAPEUTICS

FATE-NK100

Clinical Objectives & Observations in Ongoing Dose-Escalation Stages

Demonstrate Unique Properties & Functionality	**NK100 has shown augmented biological properties and enhanced activity vs. original healthy donor's and the patient's NK cells**
Establish Product Safety & Well-Tolerated Regimen	**No NK100-related DLTs, one NK100-related SAE (Grade 3) and no reports of CRS / neurotoxicity [1]**
Observe Evidence of Activity in Heavily Pre-Treated Patients	**7 of 14 subjects in ongoing dose-escalation demonstrated evidence of clinical activity [2]**
Gain First Look at Potential for Multi-Dosing Paradigm	**Delivered second treatment cycle of FATE-NK100 to 3 subjects, showing NK cell persistence and tolerance**

[1] As of October 22, 2018 data cutoff. Database is not locked and final data are subject to change.

[2] For VOYAGE, includes mLFS; for APOLLO and DIMENSION, includes best overall response of stable disease or better.

Adaptive Memory NK Cells

Jeffrey S. Miller, MD

Masonic Cancer Center
University of Minnesota

Natural Killer Cells

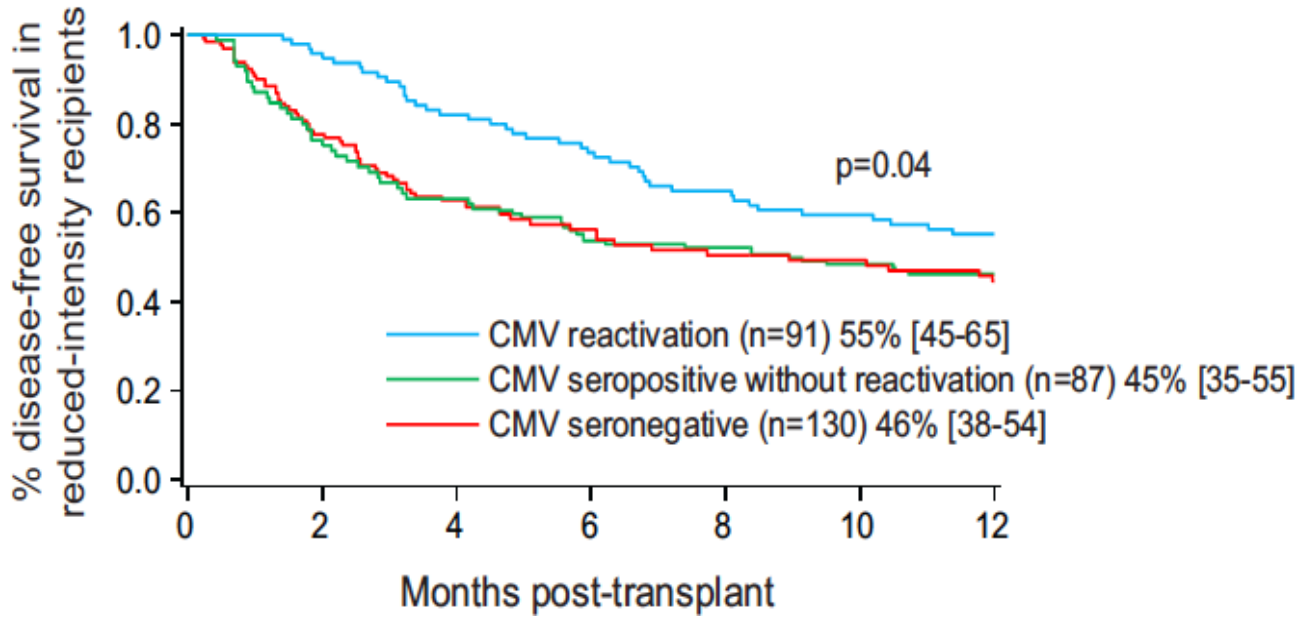
Unique Properties as compared to T Cells

Masonic Cancer Center
University of Minnesota

Advantages of NK Cells

- Proven clinical safety (no GvHD or CRS)
- Demonstrated allogeneic feasibility
- Same potent effector machinery as T cells
- Multi-faceted antigen recognition
- Chemokine / cytokine production to prime adaptive immunity
- Potential to recruit and alter homing of T cells

Adaptive NK Cells Frequency Correlates with Improved Survival



Cichocki & Miller, Leukemia 30:456, 2016

Fate THERAPEUTICS

Adaptive Memory NK Cells

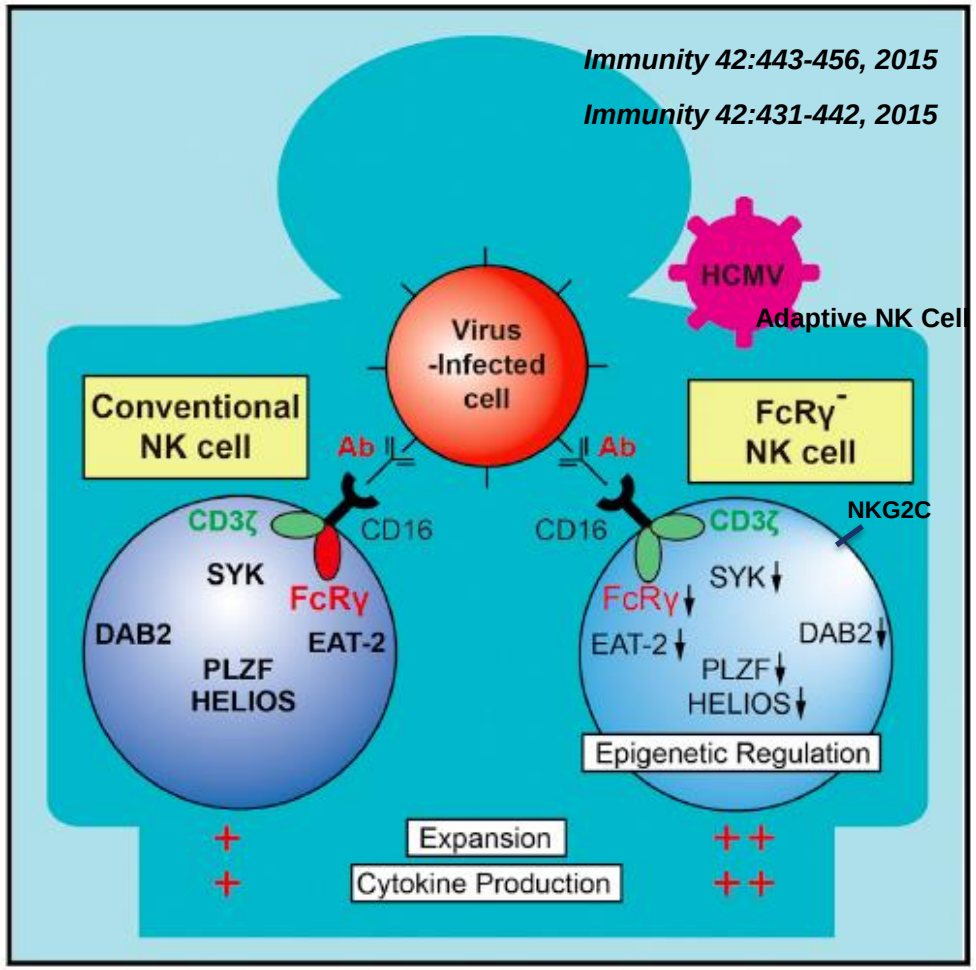
Introduction

Masonic Cancer Center
University of Minnesota

Attributes Of Adaptive NK Cells

- Protect against relapse after HCT
  Cichocki & Miller, Leukemia 30:456, 2016
- Enhanced cytokine production
- Survive longer with properties of immune memory
- Mediate enhanced ADCC
- Decreased PD-1, TIGIT and NKG2A checkpoint expression
- Inherently resistant to immuno-regulatory suppression by MDSCs and T-regs
  Sarhan and Miller, CR (2016) & CIR (2018)

CMV-Induced Adaptive NK Cells



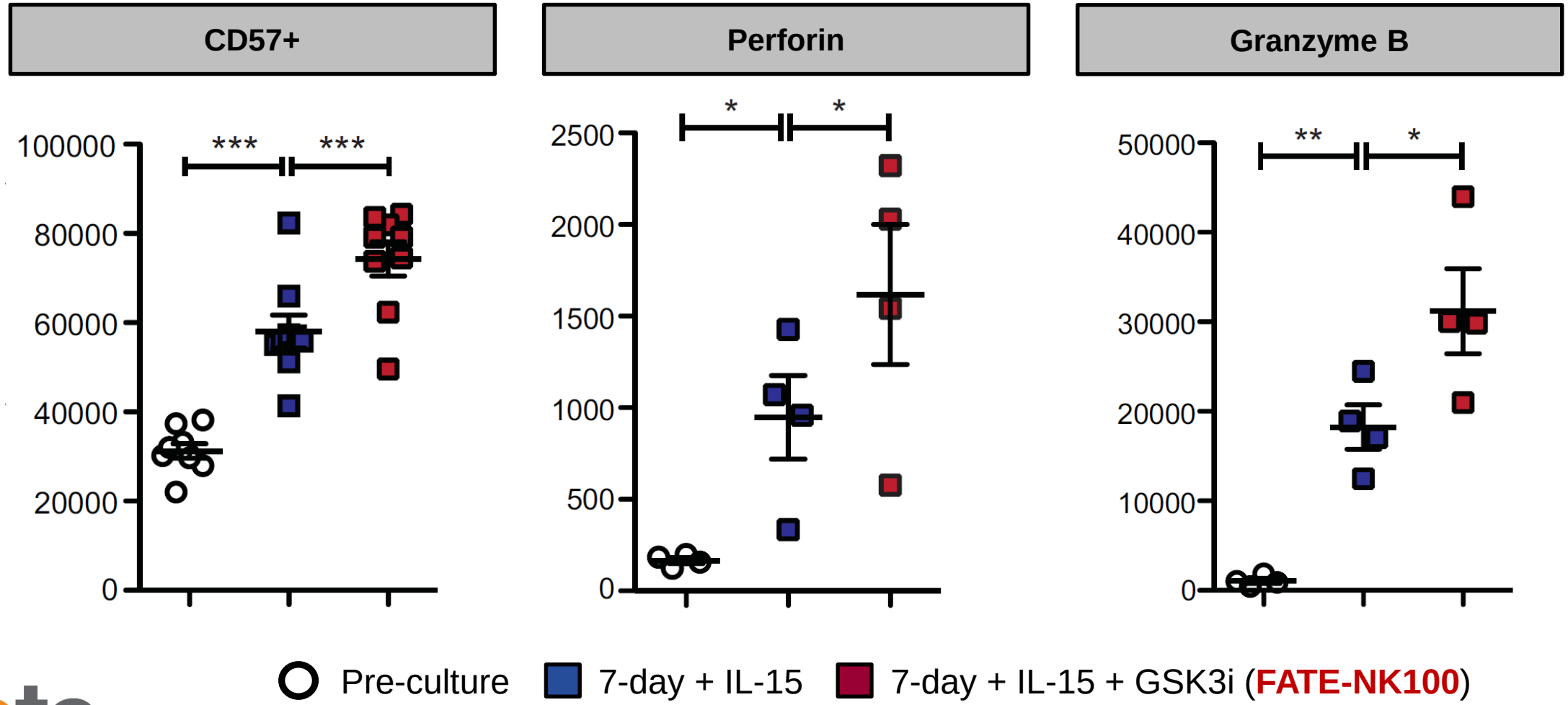
Fate THERAPEUTICS

FATE-NK100: Preclinical Data

Augmented Biological Properties

Masonic Cancer Center
University of Minnesota

Cichocki, et. al. Cancer Research, 2017 Oct 15;77(20):5664-5675



Median fluorescence intensity (MFI)

Fate THERAPEUTICS

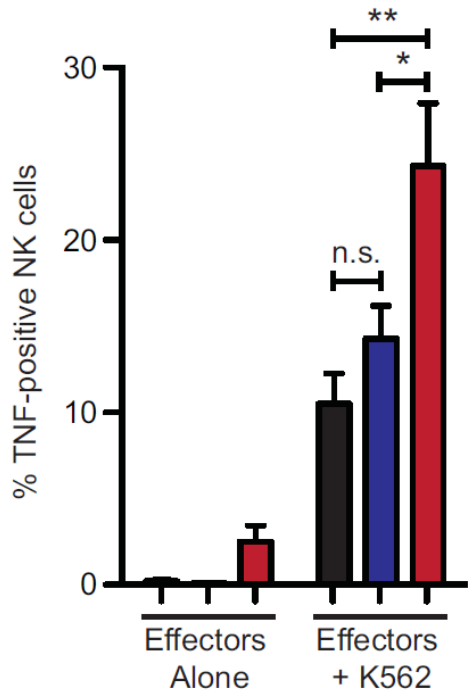
FATE-NK100: Preclinical Data

Enhanced Cytokine Production In Vitro

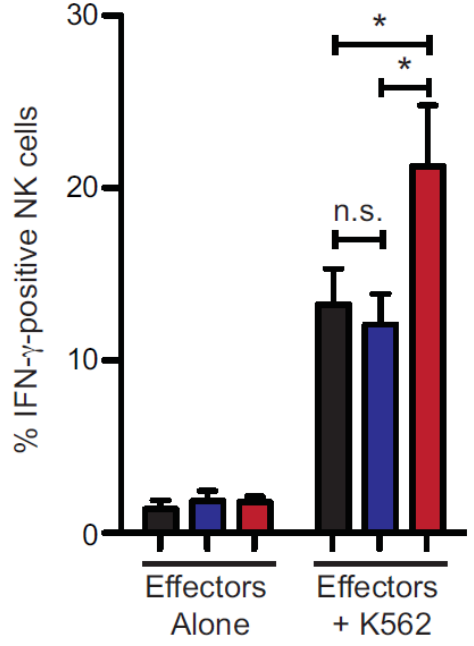
Masonic Cancer Center
University of Minnesota

Cichocki, et. al. Cancer Research, 2017 Oct 15;77(20):5664-5675

% TNF⁺ NK Cells



% IFN-γ⁺ NK Cells



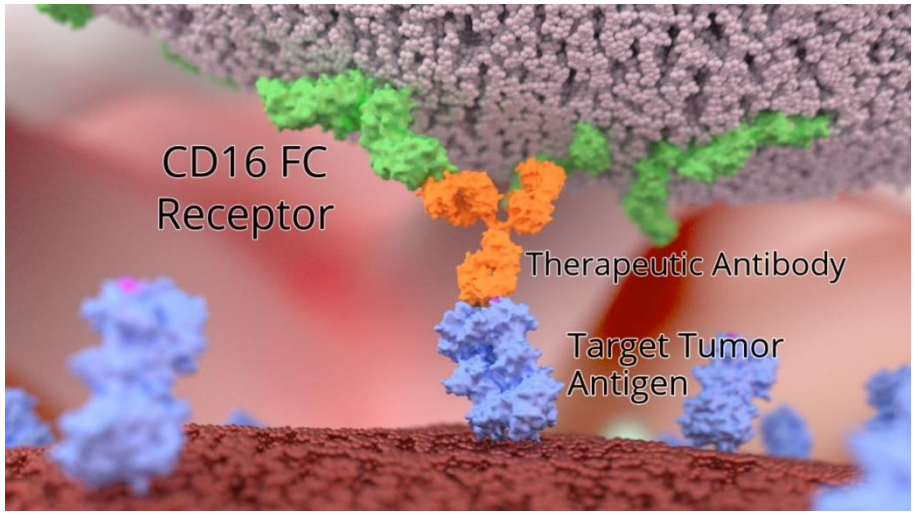
Overnight IL-15 Primed 7-day + IL-15 7-day + IL-15 + GSK3i (**FATE-NK100**)

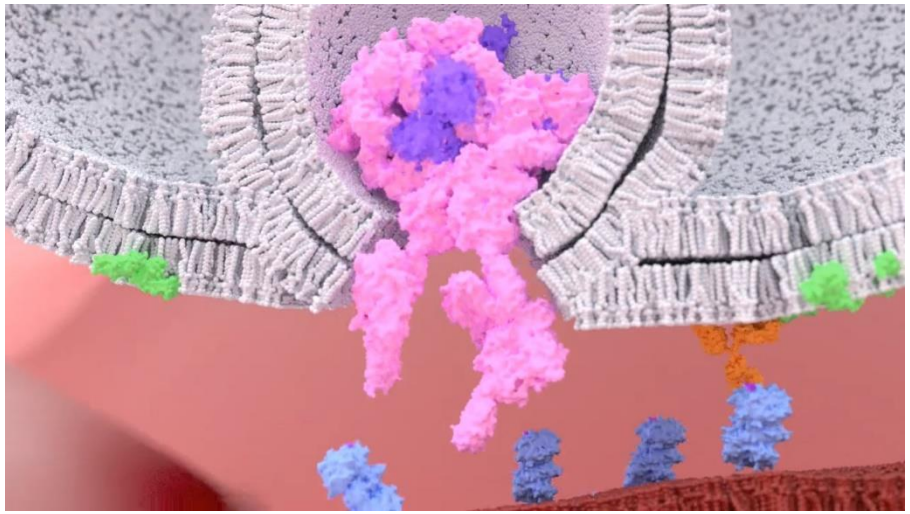
Fate THERAPEUTICS

Antibody Dependent Cellular Cytotoxicity (ADCC)

Mediated by NK Cells

- Antibody binds to tumor target via Fab and to Fc receptor on NK cells (CD16) via Fc, initiating release of perforins / granzyme resulting in tumor cell death





- ADCC contributes to anti-tumor activity of many FDA-approved antibodies
  - Herceptin, Erbitux, Rituximab, Darzalex, etc.

Fate THERAPEUTICS

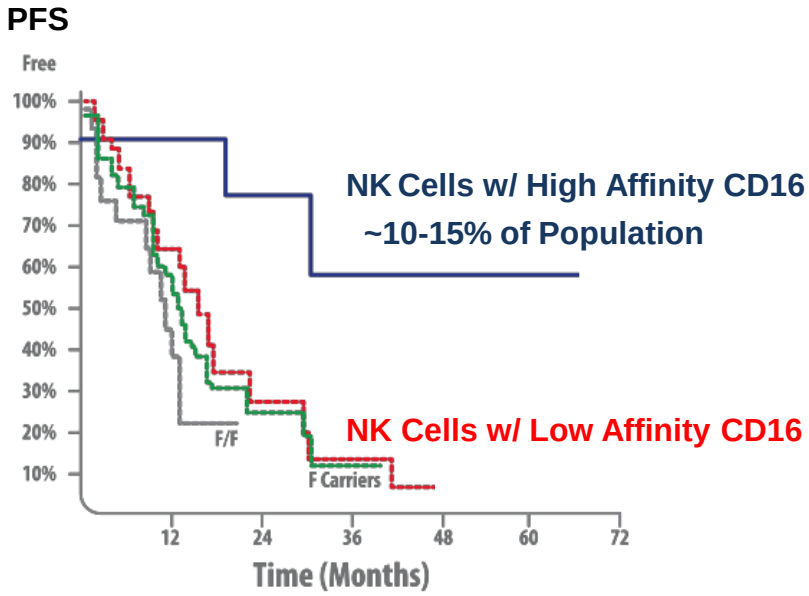
ADCC: Clinical Proof-of-Concept

Enhanced ADCC Correlates with Improved Outcomes

Improved PFS with High Affinity CD16 Polymorphism

Herceptin

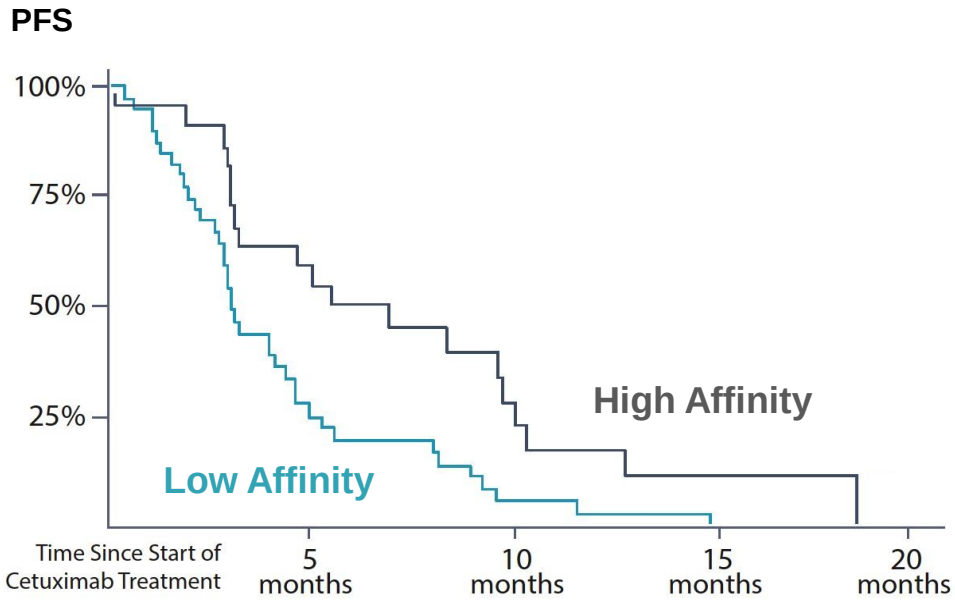
Metastatic Breast Cancer



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

Erbitux

Colorectal Cancer



Bibeau et al, J. Clin Oncol, 27, 1122, 2009

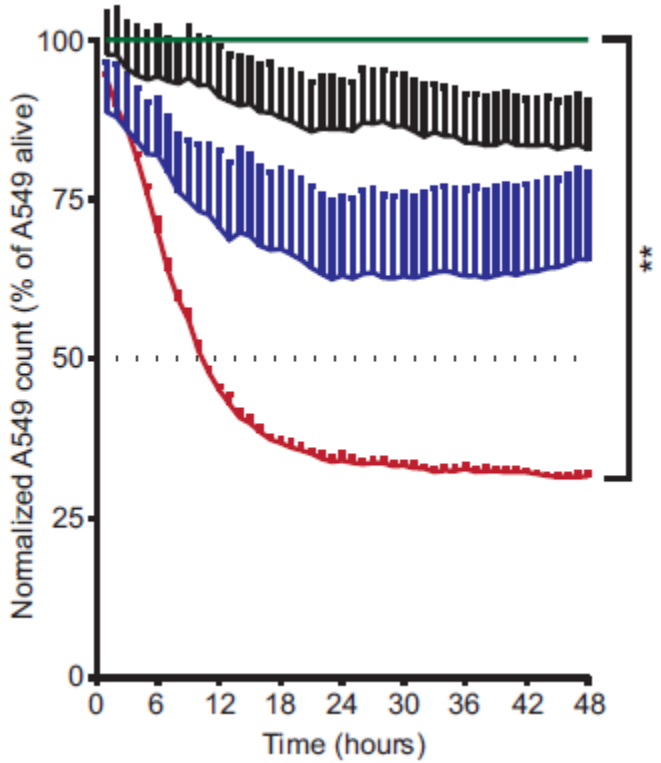
FATE-NK100: Preclinical Data

Enhanced ADCC In Vitro

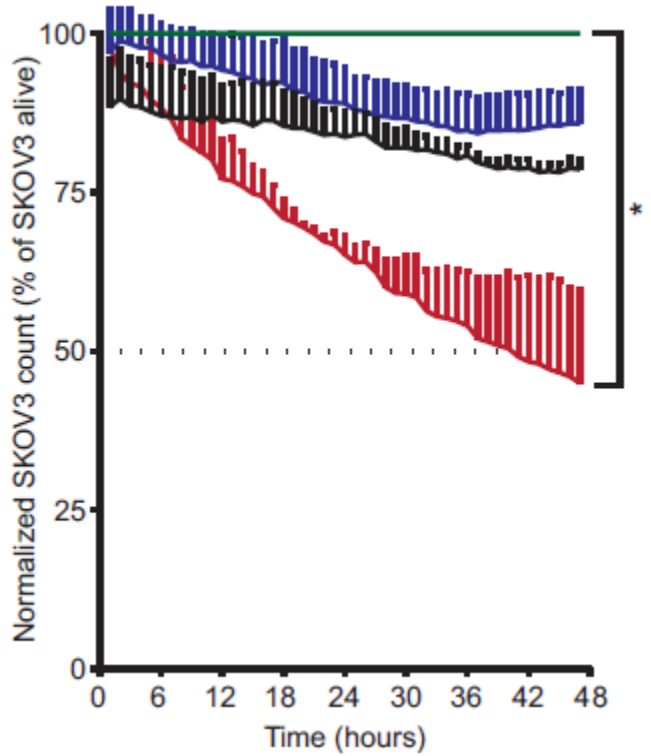
Masonic Cancer Center
University of Minnesota

Cichocki, et. al. Cancer Research, 2017 Oct 15;77(20):5664-5675

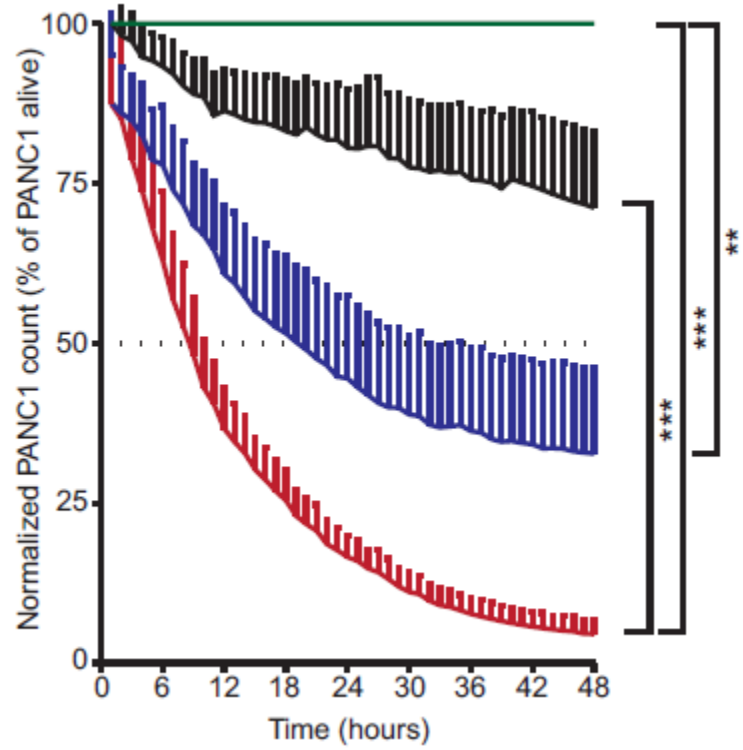
A549 Lung



SKOV-3 Ovarian



PANC-1 Epithelioid



Target Cell

Overnight IL-15 Primed + mAb

7-day + IL-15 + mAb

7-day + IL-15 + GSK3i (**FATE-NK100**) + mAb

Fate THERAPEUTICS

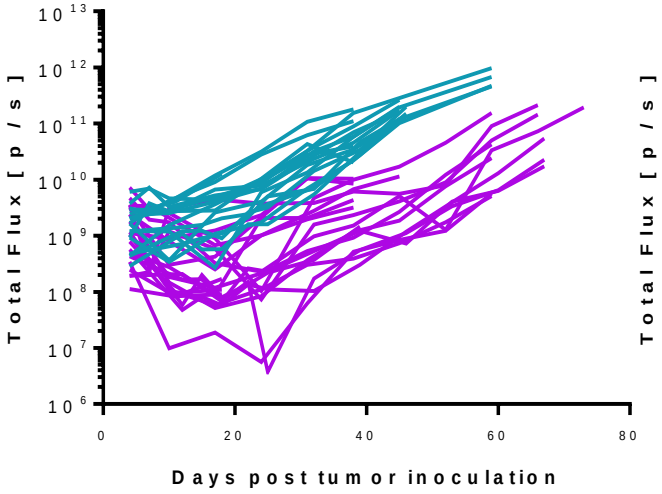
FATE-NK100: Preclinical Data

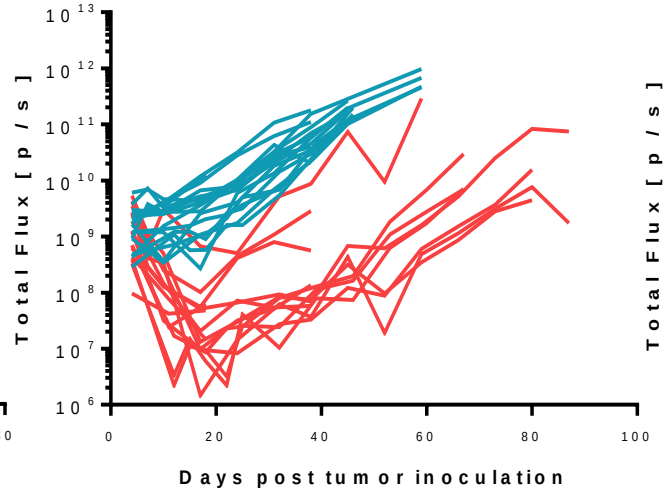
Augmented and Consistent ADCC In Vivo with Herceptin

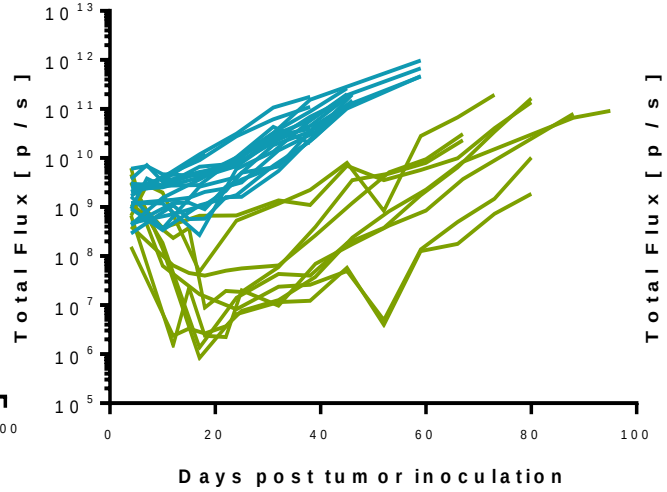
Masonic Cancer Center
University of Minnesota

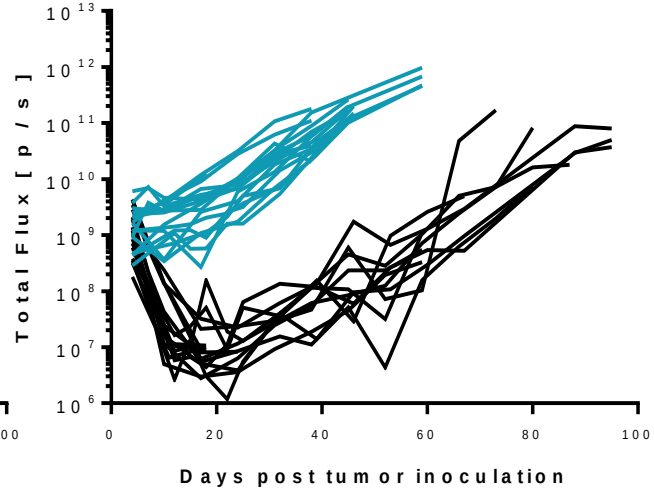
Cichocki, et. al. Cancer Research, 2017 Oct 15;77(20):5664-5675

Herceptin	O/N IL-15 NK + Herceptin	7D IL-15 NK + Herceptin	NK100 + Herceptin
Single Administration	*Single Administration*	*Single Administration*	*Single Administration*









Control = SKOV-3 Ovarian Tumor Cells

Fate THERAPEUTICS

FATE-NK100: Preclinical Data

Unique Biological Properties & Functionality

Masonic Cancer Center
University of Minnesota

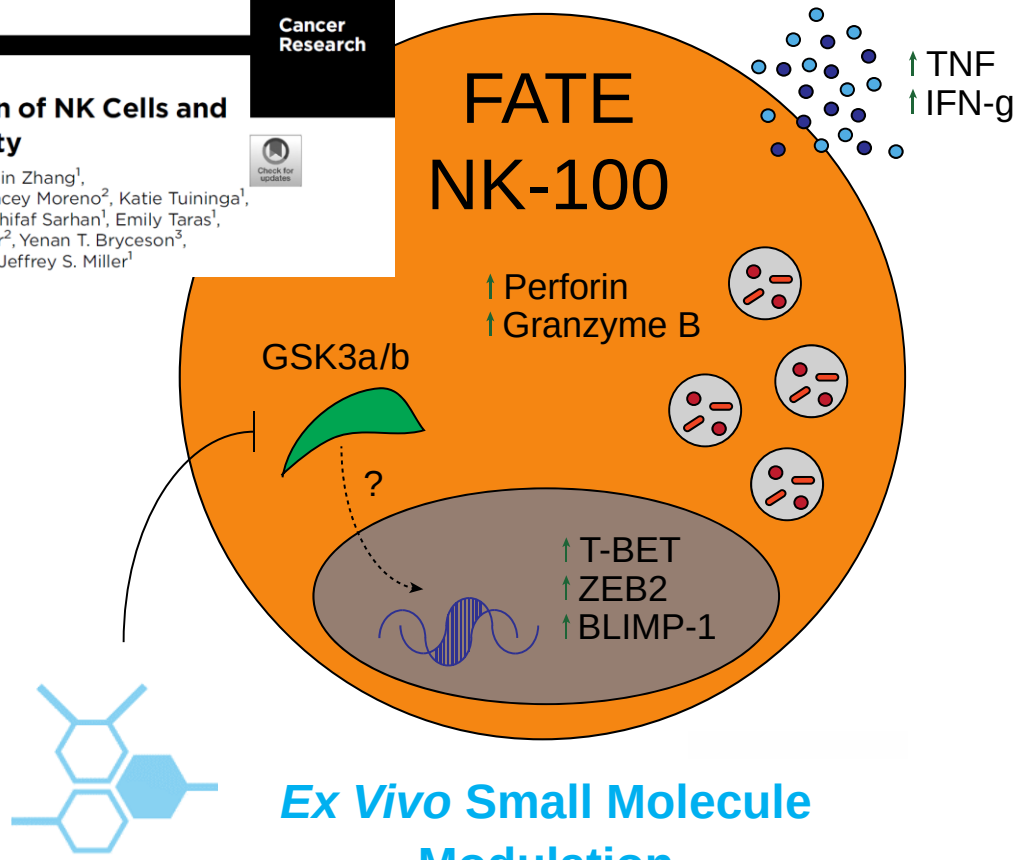
Published OnlineFirst August 8, 2017; DOI: 10.1158/0008-5472.CAN-17-0799

Microenvironment and Immunology

Cancer Research

GSK3 Inhibition Drives Maturation of NK Cells and Enhances Their Antitumor Activity

Frank Cichocki[1], Bahram Valamehr[2], Ryan Bjordahl[2], Bin Zhang[1], Betsy Rezner[2], Paul Rogers[2], Svetlana Gaidarova[2], Stacey Moreno[2], Katie Tuininga[1], Phillip Dougherty[1], Valarie McCullar[1], Peter Howard[1], Dhifaf Sarhan[1], Emily Taras[1], Heinrich Schlums[3], Stewart Abbot[2], Daniel Shoemaker[2], Yenan T. Bryceson[3], Bruce R. Blazar[4], Scott Wolchko[2], Sarah Cooley[1], and Jeffrey S. Miller[1]



***Ex Vivo* Small Molecule Modulation**

- ↑ Maturation during *ex vivo* expansion (↑ CD57, ↑ KIR, ↓ NKG2A, ↓ TIGIT)
- ↑ Enrichment of $CD57^{+}NKG2C^{+}$ adaptive NK cells from CMV^{+} donors.
- ↑ Tumor necrosis factor (TNF) and interferon (IFN)-g production.
- ↑ Natural cytotoxicity against solid tumor targets
- ↑ Antibody-dependent cellular cytotoxicity against solid tumor targets
- ↑ Tumor control in a xenogeneic model of ovarian cancer

Fate THERAPEUTICS

Translational Insights

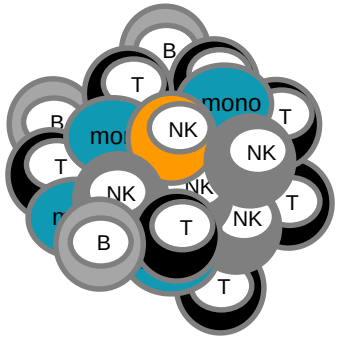
Dan Shoemaker, PhD, Chief Scientific Officer

FATE-NK100: Clinical Manufacture

Robust Expansion & Production of a Pure Population of CD56+ NK Cells

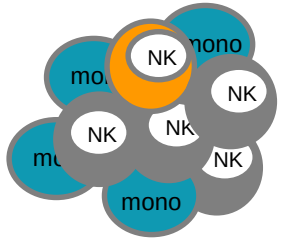
CMV+ Donor

Apheresis



Apheresis

T & B Cell Depletion

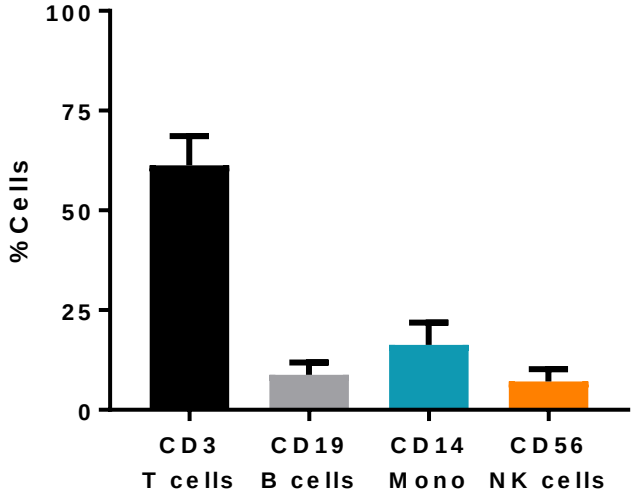


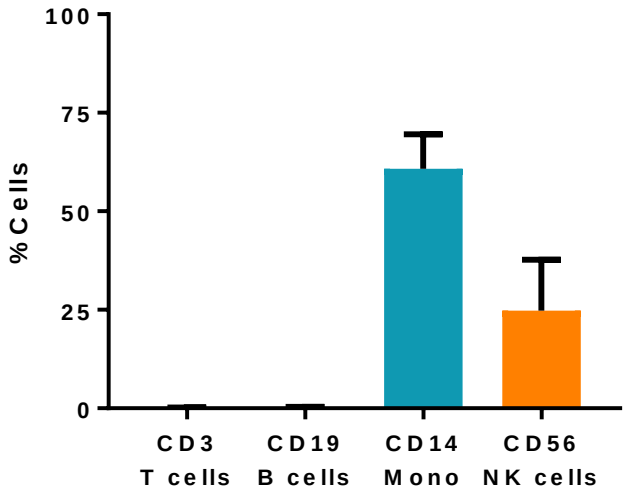
CD3/CD19 Depleted

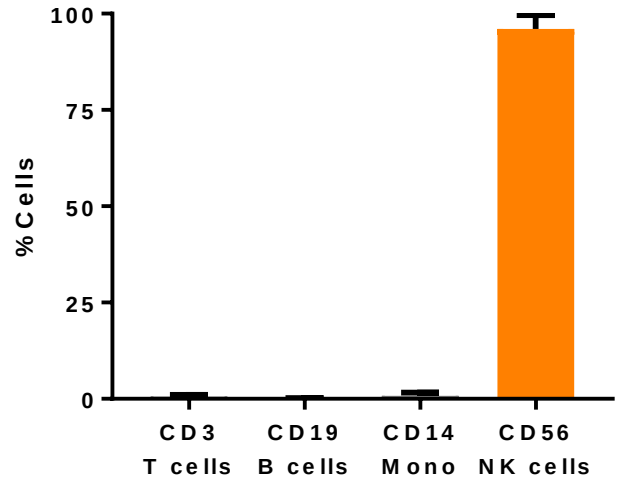
7-Day
Ex Vivo Modulation

FT1238 + Cytokine
Feeder-free

FATE-NK100







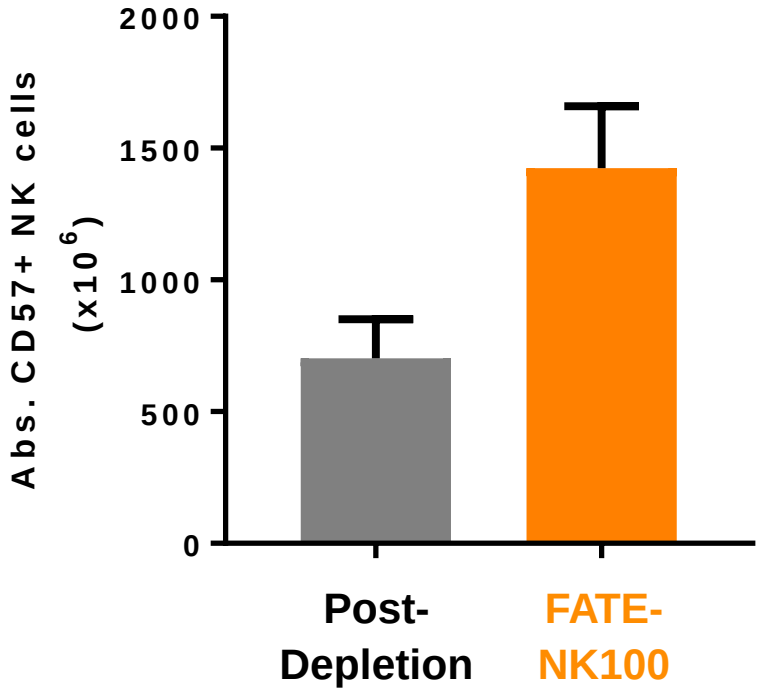
$1.1x10^9$ (Number of NK cells) → **$3.1x10^9$ (Number of NK cells)**

N = 15 (Voyage, Apollo, Dimension)

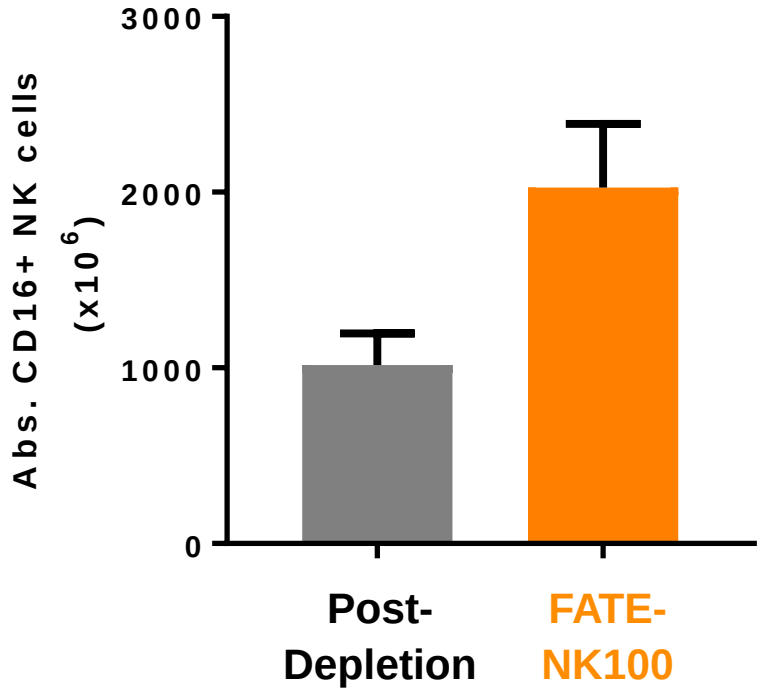
FATE-NK100: Clinical Manufacture

Comprised of Mature CD57+ NK Cells Expressing CD16 Fc Receptor

CD57+ NK Cells



CD16+ NK Cells

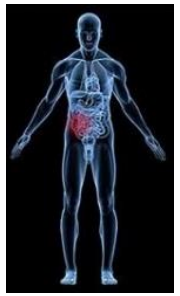


N = 15 (Voyage, Apollo, Dimension)

FATE-NK100: Clinical Manufacture

Enhanced Cytotoxicity as Compared to NK Cells from Original Healthy Donor

NK Cell Compartment of Original Healthy Donor



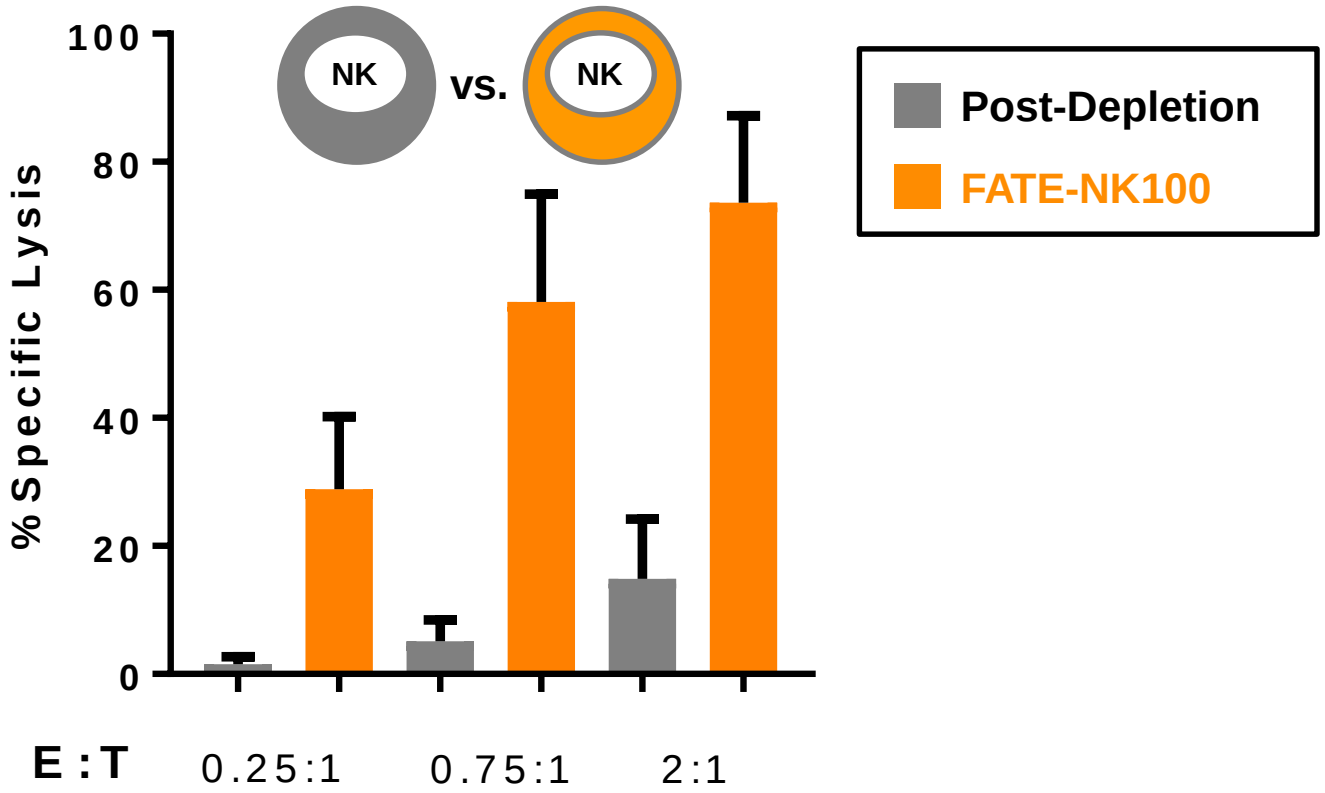
NK

CMV+ Donor

NK NK NK

FATE-NK100

K562 *In Vitro* Killing

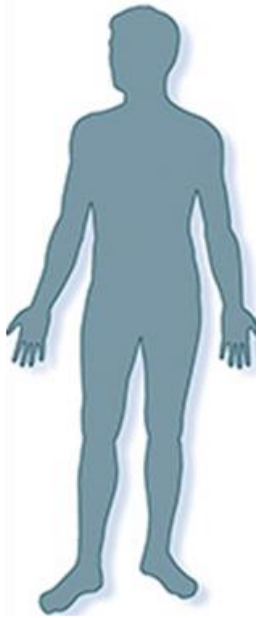


N = 10 (data not yet available for Dimension)

FATE-NK100: Clinical Research

Characterization of Patient Samples

FATE-NK100



Patient

Blood / Serum

- Chimerism
- Function
- Immunophenotyping
- Cytokine production

Biopsy

- Chimerism
- Infiltration
- Immune activity / modulation

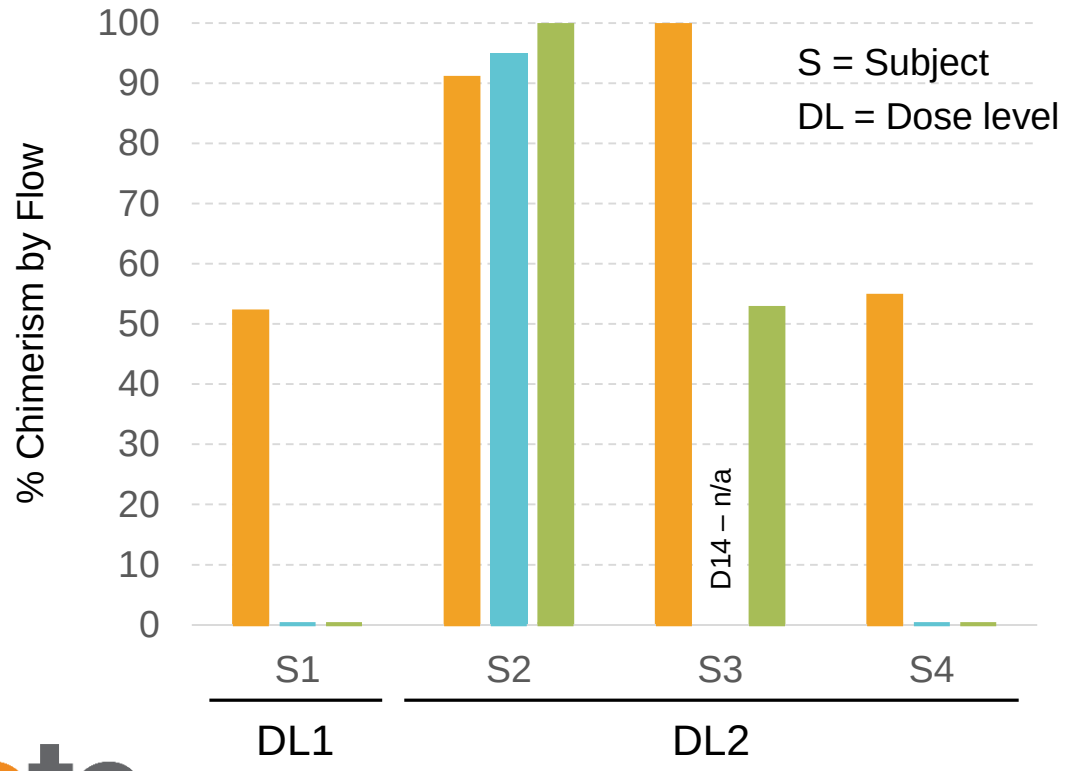
Fate THERAPEUTICS

FATE-NK100: Clinical Research

In Vivo Persistence of FATE-NK100 ■ Day 7 ■ Day 14 ■ Day 21

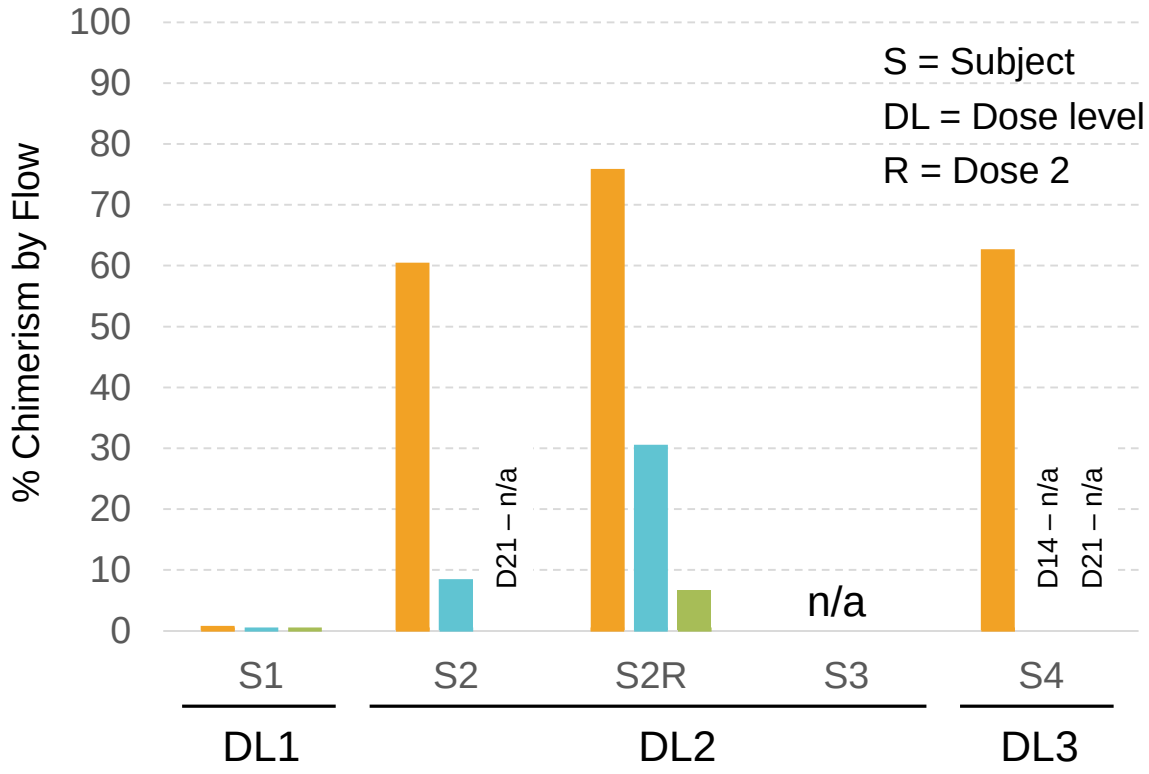
VOYAGE
Lympho-D / IV Infusion

Peripheral Blood



APOLLO
Lympho-C2x2 / IP Infusion

Ascites Fluid

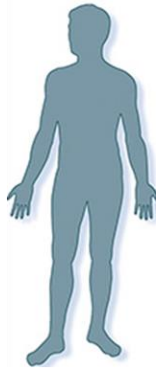


FATE-NK100: Clinical Research

Enhanced Phenotype and Function In Vivo vs. Patient NK Cells

DIMENSION
Lympho-C1x2 / IV Infusion

FATE-NK100



Patient 007
(DL3 Monotherapy)

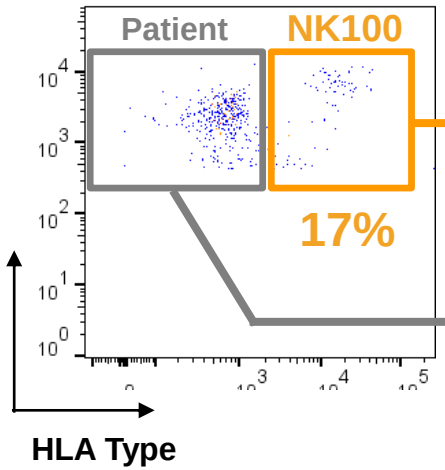
Peripheral blood sample

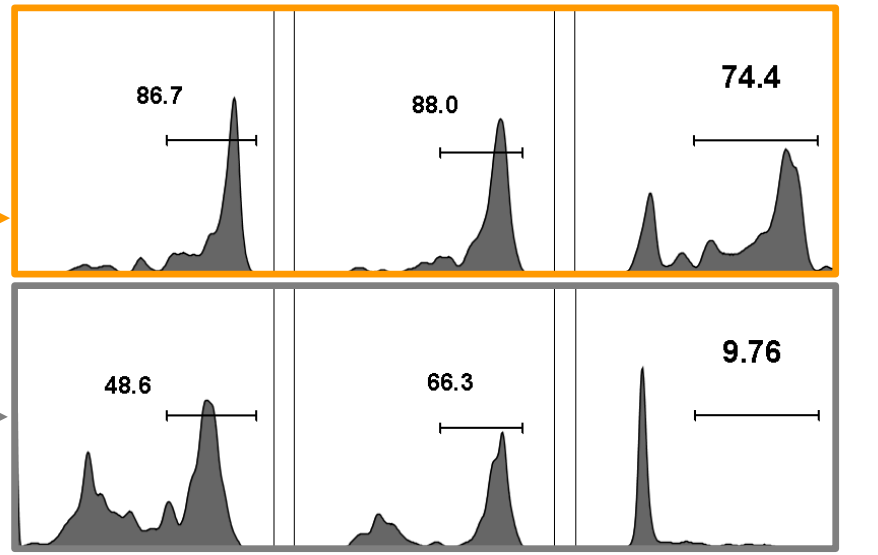
Flow Cytometry

Label cells with HLA specific antibodies

Dose 1 + 3 Days

CD56⁺ NK cells





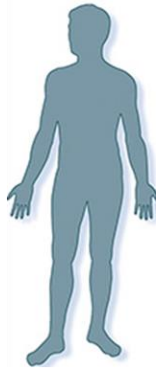
Day 7 In Vivo Persistence (Peripheral Blood) not detected in DIMENSION (N = 5)

FATE-NK100: Clinical Research

In Vivo Assessment of a Second Dose of FATE-NK100

DIMENSION
Lympho-C1x2 / IV Infusion

FATE-NK100



Patient 007
(DL3 Monotherapy)

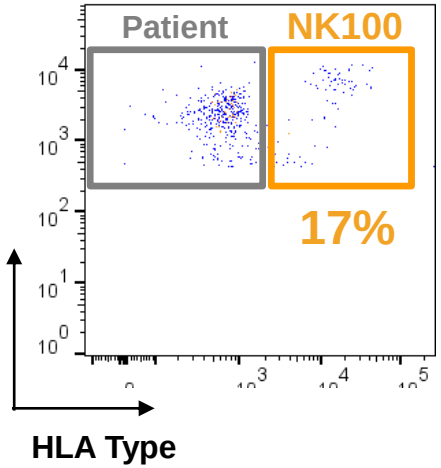
Peripheral blood sample

Flow Cytometry

Label cells with HLA specific antibodies

Dose 1 + 3 Days

CD56⁺ NK cells

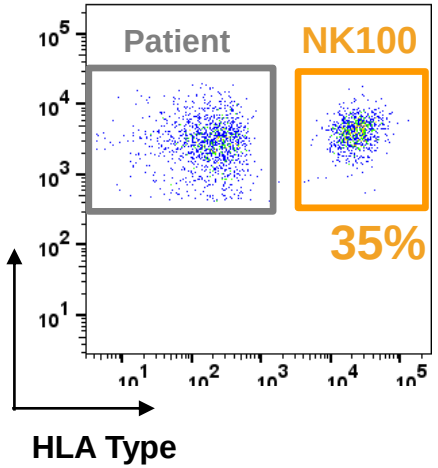


Day 63

FATE-NK100

Dose 2 + 3 Days

CD56⁺ NK cells



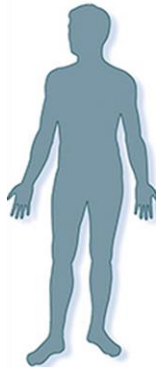
Fate THERAPEUTICS

FATE-NK100: Clinical Research

Dose 2 – Enhanced Phenotype and Function In Vivo vs. Patient NK Cells

DIMENSION
Lympho-C1x2 / IV Infusion

FATE-NK100



Patient 007
(DL3 Monotherapy)

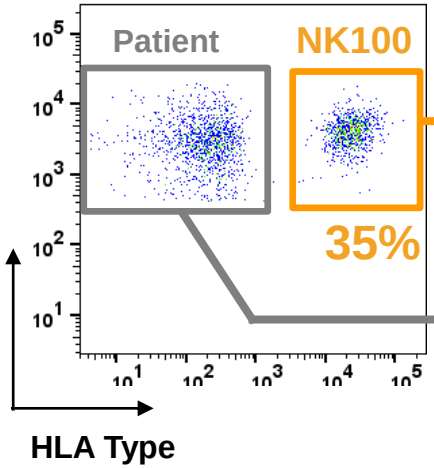
Peripheral blood sample

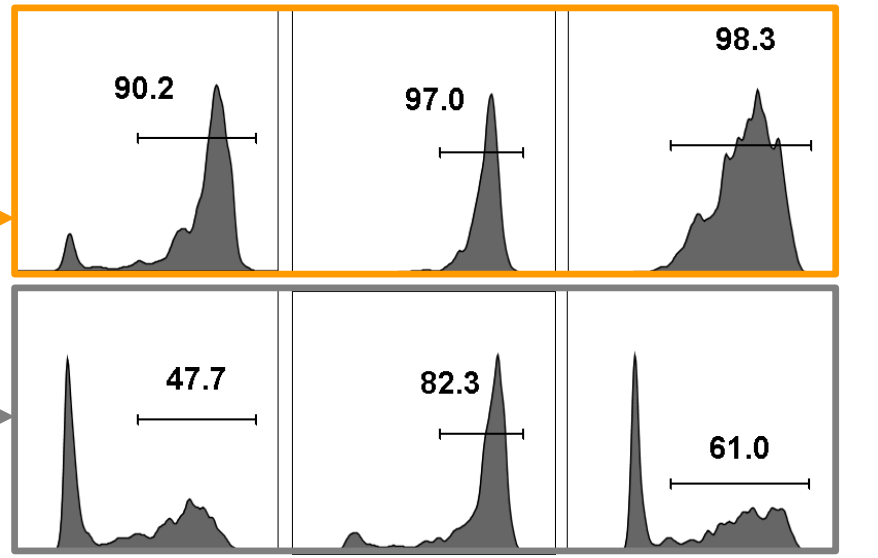
Flow Cytometry

Label cells with HLA specific antibodies

Dose 2 + 3 Days

CD56⁺ NK cells



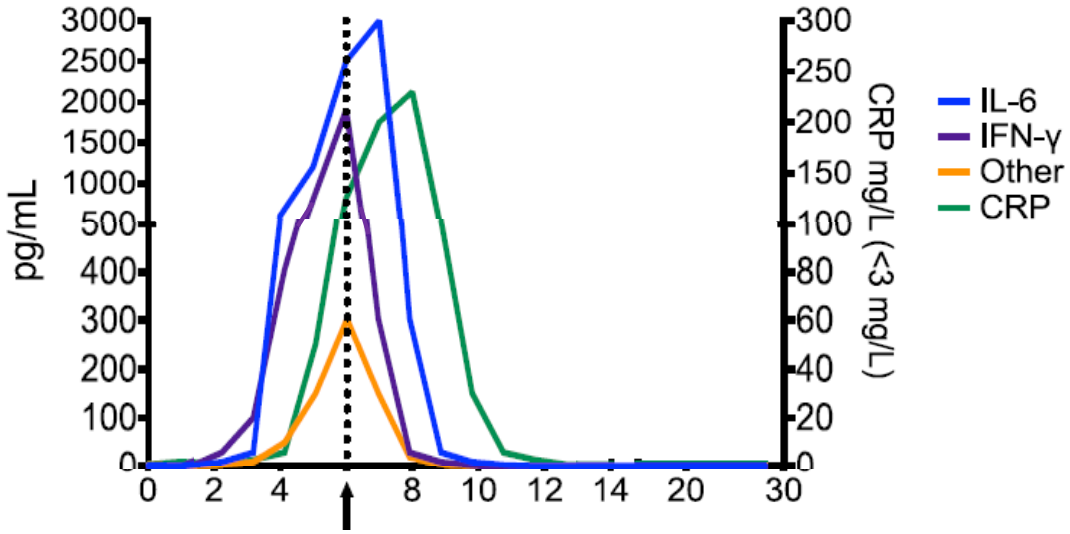


FATE-NK100: Clinical Research

Cytokine Analysis Suggests No Evidence of Cytokine Release Syndrome

DIMENSION
Lympho-C1x2 / IV Infusion

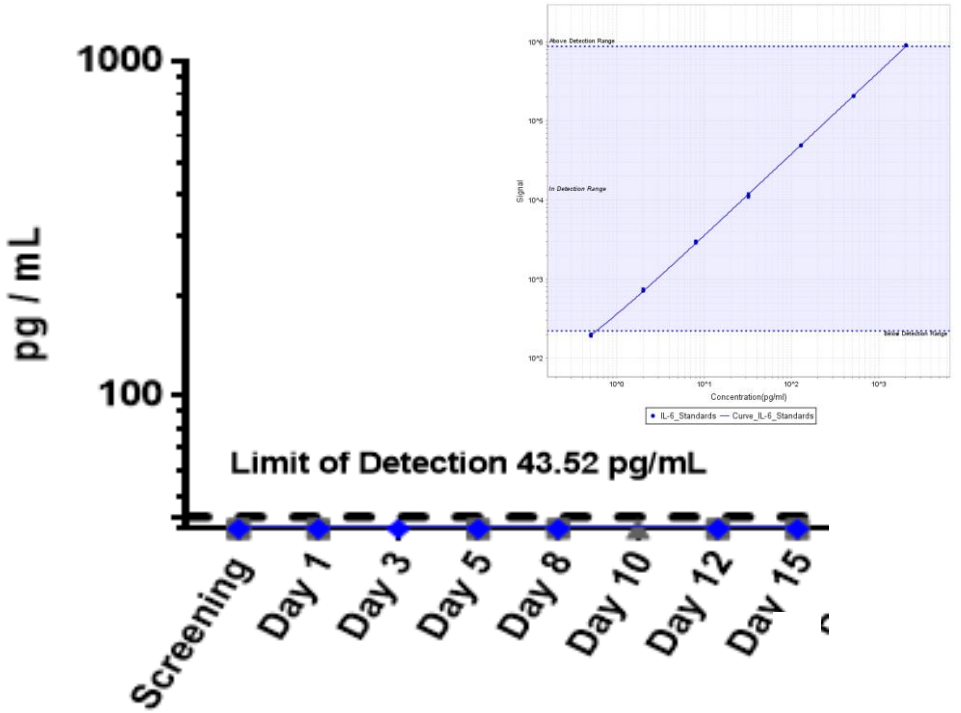
Cytokine Release Syndrome Profile



Cytokine changes associated with G3 CRS

Lee et al, BLOOD, 10 July 2014

DIMENSION IL-6



N = 4 (including 2 subjects receiving 2nd treatment cycle of FATE-NK100)

FATE-NK100: Translational Insights

Key Observations

- **FATE-NK100 is highly purified NK cell product (>98% NK cells)**
  - Has enhanced cytotoxicity *in vitro* vs. NK cell compartment of original healthy CMV^+ donor
- **Phenotype and function of FATE-NK100 is maintained *in vivo* post-infusion**
  - Exhibits differentiated phenotype and enhanced proliferation vs. NK cell compartment of patient
- ***In vivo* persistence of FATE-NK100 observed across all three studies**
  - 6 of 7 subjects assessed in VOYAGE and APOLLO demonstrated persistence ≥ 7 days
- **Second treatment cycle of FATE-NK100 demonstrated persistence with retained function**
  - Proof-of-concept for off-the-shelf, multi-dose NK cell treatment paradigm
- **Cytokine screen suggests no evidence of CRS including after second treatment cycle**

Clinical Observations

Sarah A. Cooley, MD

Masonic Cancer Center
University of Minnesota

FATE-NK100

Relapsed / Refractory AML

Masonic Cancer Center
University of Minnesota

- **20,000 new AML cases / year in U.S.**
  - Average age at diagnosis = 68
  - Overall 5-year survival = 27%
- **Refractory disease following induction chemotherapy is common**
  - CRs in 75% of patients <60 years old, but only 50% of patients >60 years old
- **Relapse rates are high (60-70%) and treated with salvage chemotherapy**
  - 10-15% achieve CR2 if early relapse (<12 months)
  - 40-60% of patients achieve CR2 if late relapse (>12 months)
  - IDH1 inhibitor ivosidenib approved with 25% CR (with DOR = 8 months), with 12% progressing to HCT
- **Expect 10-15% CRs in r/r AML in first-in-human P1 study**

Thol et al, Blood, 2015

ACS Cancer Facts and Figures 2018

Fate THERAPEUTICS

VOYAGE Phase 1 Clinical Trial

Study Design: FATE-NK100 IV Monotherapy

Masonic Cancer Center
University of Minnesota

VOYAGE: Relapsed / Refractory AML

Pre-Conditioning

CY = 60 mg/kg x 2 days

FLU = 25 mg/m2 x 5 days

Lympho-depleting

DL 3 *(n=10)*	**>3-10 x 10^7 / kg IV Monotherapy**
DL 2 *(n=1)*	**>1-3 x 10^7 / kg IV Monotherapy**
DL 1 *(n=1)*	**1 x 10^7 / kg IV Monotherapy**

Cytokine Support

IL-2 6M IU sc
x 6 doses / 2 weeks

Single treatment cycle only

Fate THERAPEUTICS

VOYAGE Phase 1 Clinical Trial

Study Design: FATE-NK100 IV Monotherapy

Masonic Cancer Center
University of Minnesota

Safety Assessment

DLT is defined as any treatment related toxicity meeting one of the following criteria within 28 days of the FATE-NK100 infusion:

- Any non-hematologic, non-infectious grade 4 or 5 events
- Grade 3 adverse event of > 48 hours duration in the following organ systems: cardiac; pulmonary; hepatic; renal; or CNS

Efficacy Assessment

- CR is defined as leukemia clearance at Day 42 (≤5% marrow blasts and no circulating peripheral blasts), recovery of neutrophils and platelets, and the absence of extramedullary disease.
- CRp is defined as leukemia clearance at Day 42 (≤5% marrow blasts and no circulating peripheral blasts), recovery of neutrophils, but with incomplete recovery of platelets.

Fate THERAPEUTICS

VOYAGE Phase 1 Clinical Trial

Dose-Escalation Clinical Data: FATE-NK100 IV Monotherapy

Masonic Cancer Center
University of Minnesota

Dose Level [a]	Age / Sex	History / Most Recent Therapy & Outcome	% Blasts in Bone Marrow (Day 14)	NK100-related SAEs	Best Overall Response	Days on Study / Day 42 CR
1	67 / M	AML complex cytogenetics PIF after 7+3, MEC, decitabine	48%	None	PD	23 / No
2	62 / F	AML relapsed post-HiDAC Refractory to Clo/Cytarabine Refractory to ALT803-NK	Not detected	None	mLFS	32 / No
2 [b c]	69 / M	AML complex cytogenetics, TP53 PIF after 7+3, ME	Not detected	None	mLFS	41 / No
2	53 / M	MDS/AML complex cytogenetics PIF after 7+3, MEC	Not detected	None	mLFS [d]	Ongoing (Day 124) / No
2	Two additional subjects to be enrolled; if no DLT, advance to DL3 (n=10)					

mLFS = morphologic leukemia-free state

[a] Excludes first subject in DL1 (not evaluable).

[b] FATE-NK100 dose failed to meet DL3, and subject was included in DL2.

[c] Subject experienced DLT of acute renal failure not related to FATE-NK100.

[d] mLFS with dysmegakaryopoiesis.

Data as reported by University of Minnesota. Final data are subject to change.

FATE-NK100

Recurrent Ovarian Cancer

Masonic Cancer Center
University of Minnesota

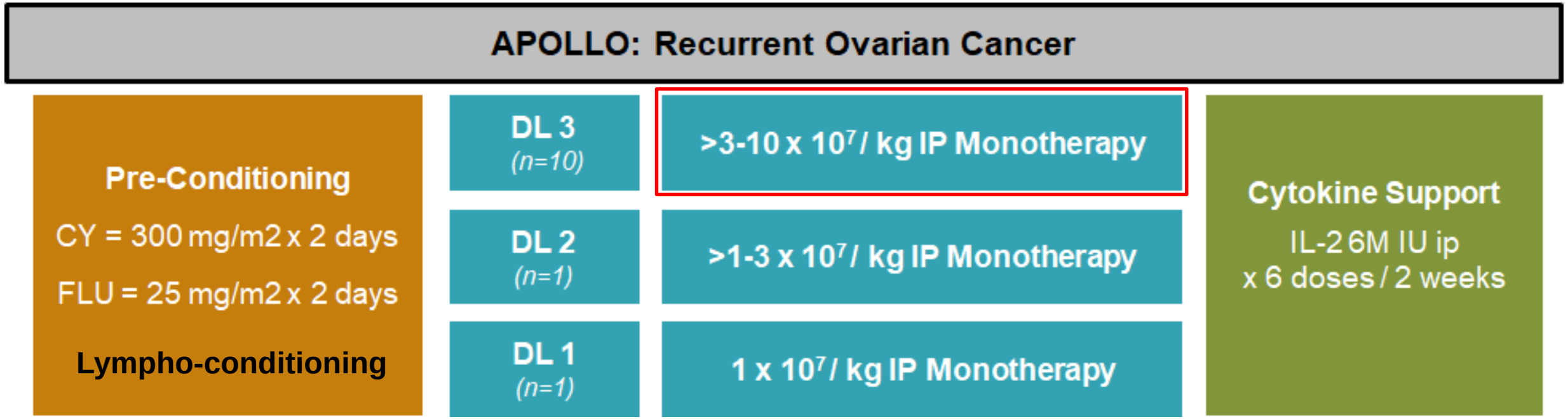
- **22,000 new cases / year and 14,270 deaths / year in the U.S.**
  - Median age at diagnosis = 63
  - 61% diagnosed with advanced disease
  - Overall 5-year survival = 44% (27% with distant spread)
- **Recurrence in most patients occurs within 12-18 months**
  - If within 6 months, life expectancy is only 3-9 months
- **Salvage therapy options have ORR 10-35% with PFS <8 months**
  - Olaparib (PARP inhibitor) for platinum-resistant disease failing 3 lines (RR = 31%, PFS = 7 months)
  - Prior NK clinical experience: 4/14 (29%) PR with Time-to-Progression = 2 months

Fate THERAPEUTICS

APOLLO Phase 1 Clinical Trial

Study Design: FATE-NK100 IP Monotherapy

Masonic Cancer Center
University of Minnesota



Patients with stable disease or better at Day 28 may be considered for second treatment cycle on an individual basis

Fate THERAPEUTICS

APOLLO Phase 1 Clinical Trial

Study Design: FATE-NK100 IP Monotherapy

Masonic Cancer Center
University of Minnesota

Safety Assessment

DLT is defined as any treatment emergent toxicity at least possibly related to FATE-NK100 or IL-2 meeting one of the following criteria within 28 days (14 days for ascites) of FATE-NK100 infusion:

- Grade 3 organ toxicity (cardiac, gastrointestinal, hepatic, pulmonary, renal/genitourinary, or neurologic) not pre-existing and lasting more than 72 hours.
- Any non-hematologic grade 4 toxicity
- Anemia or thrombocytopenia ≥ Grade 3, or neutropenia ≥ Grade 4, that persist at Day 28 despite use of growth factor support
- Any grade 3 or greater abdominal pain lasting more than three consecutive days and not controlled by standard analgesics
- Grade 3 or greater ascites within 14 days after FATE-NK100 administration in patients who had no ascites or Grade 1 ascites at enrollment and is not attributable to disease progression.

Efficacy Assessment

Assess the objective response rate (ORR) of this treatment at 28 days post-infusion.

Fate THERAPEUTICS

APOLLO Phase 1 Clinical Trial

Dose-Escalation Clinical Data: FATE-NK100 IP Monotherapy

Masonic Cancer Center
University of Minnesota

Dose Level	Age / Sex	Prior Lines / Most Recent Therapy & Outcome	NK100-related SAEs	Best Overall Response	Days on Study
1	64 / F	Prior Lines = 4 Topotecan – PD	None	PD	35
2 *	71 / F	Prior Lines = 5 PARP inhibitor (12 cycles) – PD	Grade 3 (abdominal pain)	SD w/ decrease splenic mass	196
2 [a]	68 / F	Prior Lines = 1 Carboplatin / Taxol (7 cycles) – PD	None	PD	33
3	65 / F	Prior Lines = 6 Topotecan – PD	None	PD	35
3	Dose Escalation and Dose Expansion (n=10)				

* Subject was treated with a second dose of FATE-NK100 on Day 50. PD was reported on Day 187.

[a] FATE-NK100 dose failed to meet DL3, and subject was included in DL2.

Data as reported by University of Minnesota. Final data are subject to change.

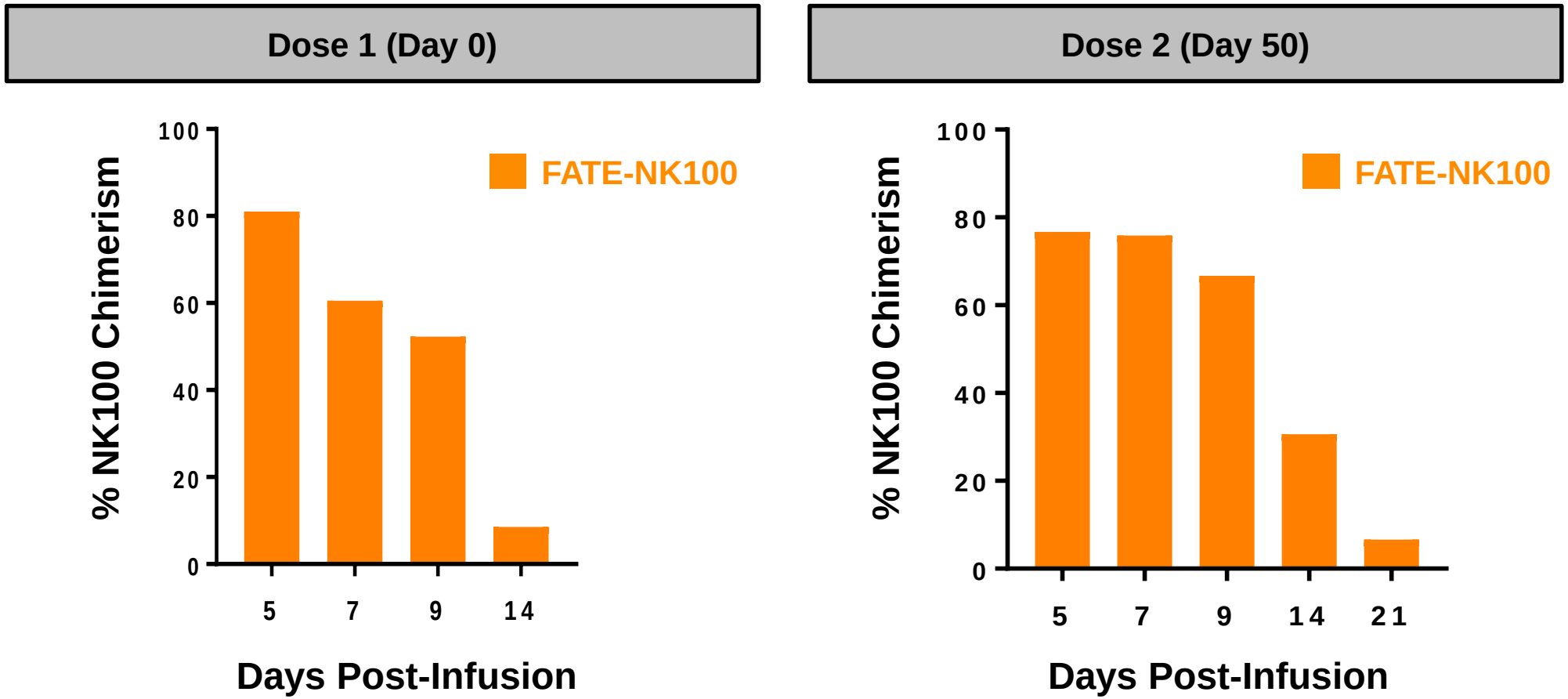
Fate THERAPEUTICS

APOLLO Phase 1 Clinical Trial

Second Treatment Cycle Demonstrates Persistence

Masonic Cancer Center
University of Minnesota

16186-UMN-002



Ascites wash

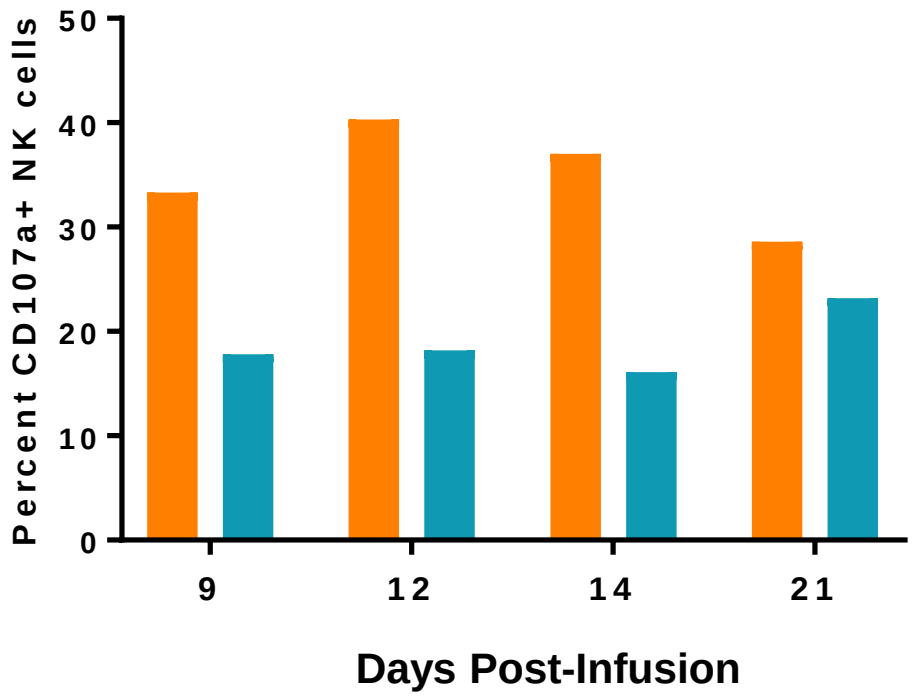
APOLLO Phase 1 Clinical Trial

Dose 2 – Enhanced Functionality vs. Patient NK Cells

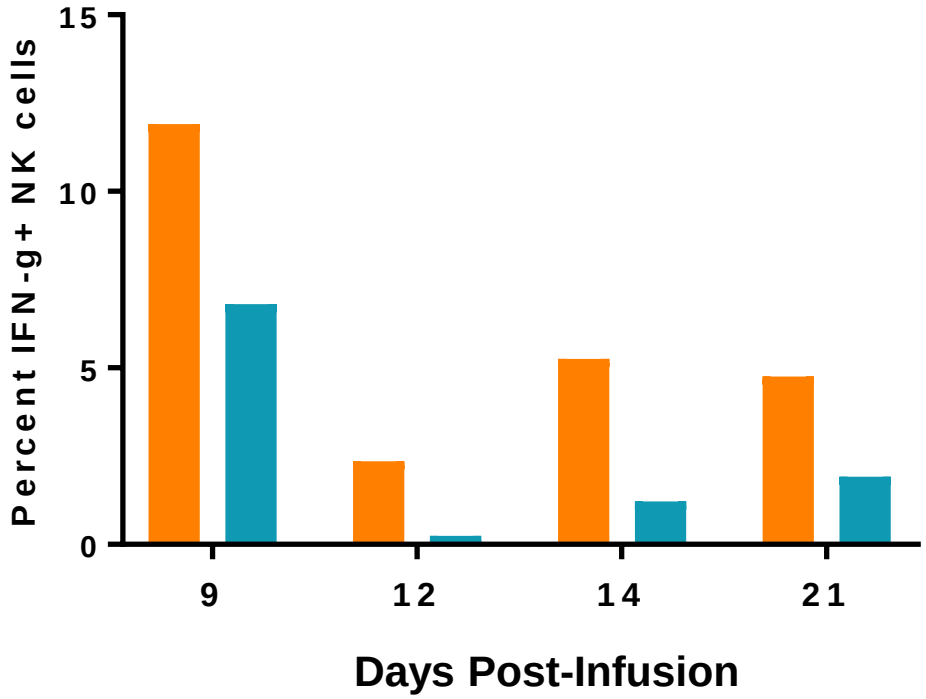
Masonic Cancer Center
University of Minnesota

16186-UMN-002 – Dose 2

Degranulation (CD107a)



Cytokine Production (IFN-γ)



FATE-NK100 Patient NK Cells

Fate THERAPEUTICS

DIMENSION Phase 1 Clinical Trial

Advanced Solid Tumors

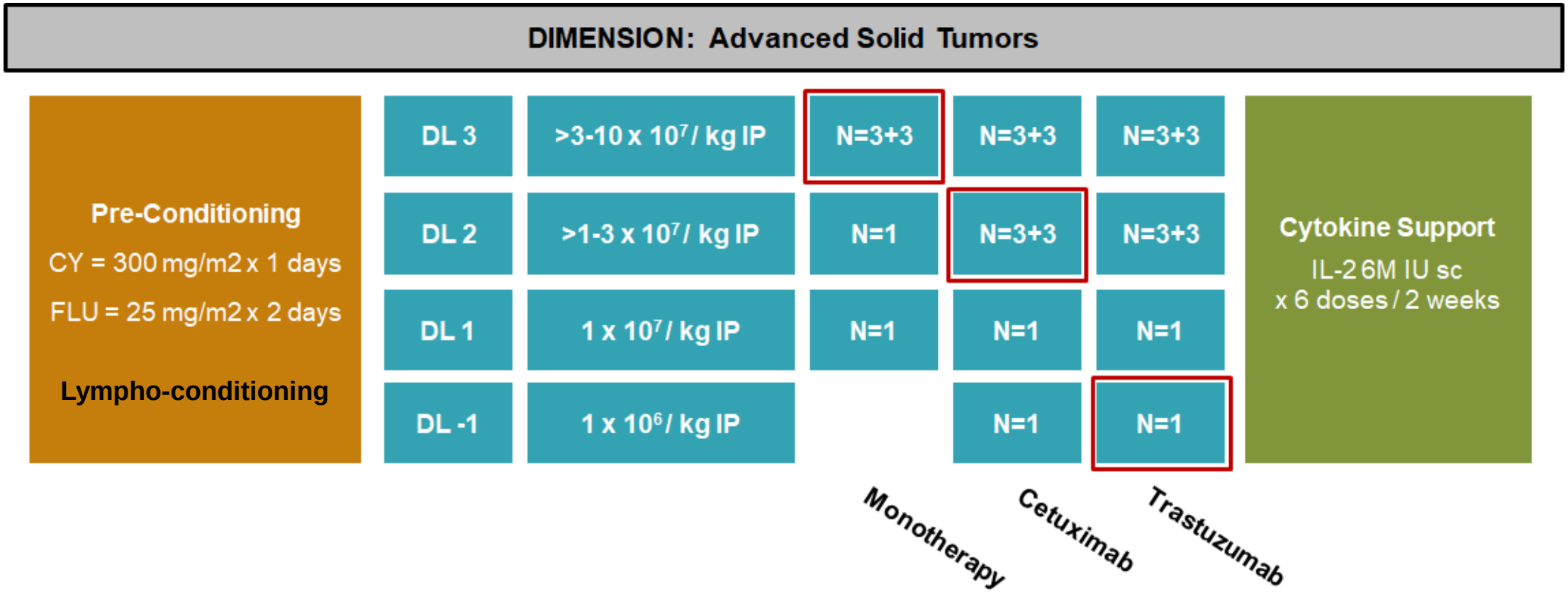
- DIMENSION is investigating FATE-NK100 as a monotherapy and in combination with trastuzumab or cetuximab in subjects with advanced solid tumors that have failed approved therapies

- Populations:
  - Monotherapy: any advanced solid tumor, “all-comer”
  - + cetuximab: any advanced EGFR1+ solid tumor
    - Colorectal cancer and head and neck squamous cell cancer must have failed cetuximab
  - + trastuzumab: any advanced HER2+ solid tumor
    - Gastric cancer must have failed trastuzumab
    - Breast cancer must have failed trastuzumab and either pertuzumab or ado-trastuzumab

First Combination of Donor-derived NK Cell Therapy with Tumor-Targeting Monoclonal Antibody Therapy for Solid Tumors

DIMENSION Phase 1 Clinical Trial

Study Design: Dose-Escalation FATE-NK100 IV Monotherapy + mAb Combination



Patients with stable disease or better at Day 28 may be considered for second treatment cycle on an individual basis

mAb administration = Day -2 and Day 8

Fate THERAPEUTICS

DIMENSION Phase 1 Clinical Trial

Study Design: Dose-Escalation FATE-NK100 IV Monotherapy + mAb Combination

Safety Assessment

DLT is defined as any treatment-related toxicity meeting one of the following criteria within 28 days of the FATE-NK100 infusion:

- Any non-hematologic AE Grade ≥ 4.
- Any non-hematologic AE Grade 3 of >48 hours duration.
- Anemia or thrombocytopenia ≥ Grade 3, or neutropenia ≥ Grade 4, that persists at Day 29 despite use of growth factor support.

Efficacy Assessment

Assess the objective-response rate (ORR) defined as the proportion of patients who achieve partial response (PR) or complete response (CR) for target lesions per RECIST 1.1 at any time on study.

DIMENSION Phase 1 Clinical Trial

Dose-Escalation Clinical Data: FATE-NK100 IV Monotherapy

Dose Level	Age / Sex	Diagnosis	Prior Lines / Most Recent Therapy & Outcome	NK100-related SAEs	Best Overall Response / % Change - Target Lesion	Days on Study
1	59 / M	Head & Neck	Prior Lines = 4 Experimental (virus) – PD	None	PD / 1% (non-target PD)	43
2	36 / F	Sinonasal	Prior Lines = 4 Tazemetostat – PD	None	SD / 0%	60
3 *	66 / F	Uterine	Prior Lines = 2 Docetaxel (Taxotere) / Carboplatin – PD	None	SD / 0%	149 #
3 *	54 / F	Colorectal	Prior Lines = 3 5-FU / Bevacizumab / Irinotecan – PD	None	SD / +18% (non-target PR)	94 #
3	30 / M	Cardio-Esophageal Junction Adenocarcinoma	Prior Lines = 3 Idasanutlin – PD	None	PD / +24%	34
3	58 / F	Renal	Prior Lines = 2 Carboplatin / Etoposide – Mixed Response		Pending	
3	52 / M	Melanoma	Prior Lines = 3 Pembrolizumab – n/a		Pending	

* Subject was treated with a second dose of FATE-NK100

Ongoing

As of October 22, 2018 data cutoff. Database is not locked and final data are subject to change.

DIMENSION Phase 1 Clinical Trial

Case Study I: Clinical Observations

- 66 y/o female with platinum-resistant uterine cancer
- Received two prior lines of therapy
  - Paclitaxel / Carboplatin – Not evaluable
  - Docetaxel (Taxotere) / Carboplatin – PD
- Treated with FATE-NK100 at DL3 (monotherapy); received a second dose on Day 63
  - No FATE-NK100 related SAEs or AEs
  - No evidence of CRS
- Best RECIST response: SD
  - Days on study = 149 (ongoing)

Fate THERAPEUTICS

DIMENSION Phase 1 Clinical Trial

Dose-Escalation Clinical Data: FATE-NK100 IV Combination with mAb

Dose Level / mAb	Age / Sex	Diagnosis	Prior Lines / Most Recent Therapy & Outcome	NK100-related SAEs	Best Overall Response / % Change – Target Lesion	Days on Study
-1 cetuximab	53 / F	Colorectal	Prior Lines = 4 Trifluridine / Tipiracil – PD	None	PD / 38%	34
1 cetuximab	72 / M	Urothelial	Prior Lines = 5 Carboplatin / Gemcitabine – PD	None	PD / 82%	38
2 cetuximab	72 / F	Endometrial	Prior Lines = 2 Carboplatin / Paclitaxel – PD	Pending		
2 cetuximab	61 / M	NSCLC	Prior Lines = 6 Docetaxel / Ramucircumab – PD	Pending		
-1 trastuzumab	75 / F	Recurrent Gastric	Prior Lines = 5 Trastuzumab Emtansine – PD	Pending		

As of October 22, 2018 data cutoff. Database is not locked and final data are subject to change.

FATE-NK100

Summary of Key Safety & Clinical Data Across Dose-Escalation

	FATE-NK100 Related		Symptoms of CRS / Neurotoxicity	Clinical Activity [1 2]
	DLTs	SAEs		
VOYAGE	None	None	None	3 of 4
APOLLO	None	Grade 3 (1)	None	1 of 4
DIMENSION				
Monotherapy	None	None	None	3 of 5
Cetuximab	None	None	None	0 of 1
Trastuzumab	Pending			

[1] For VOYAGE, includes mLFS; for APOLLO and DIMENSION, includes best overall response of stable disease or better.

[2] Excludes DL-1 for DIMENSION combination with mAb.

As of October 22, 2018 data cutoff. Database is not locked and final data are subject to change.

Fate THERAPEUTICS

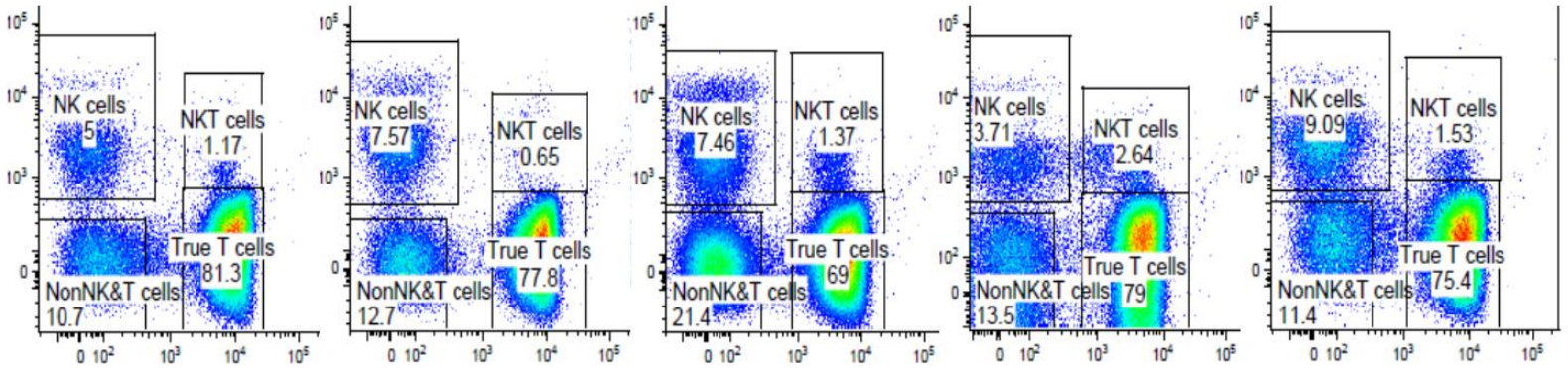
NK Cell Product Franchise

Bob Valamehr, PhD, Chief Development Officer

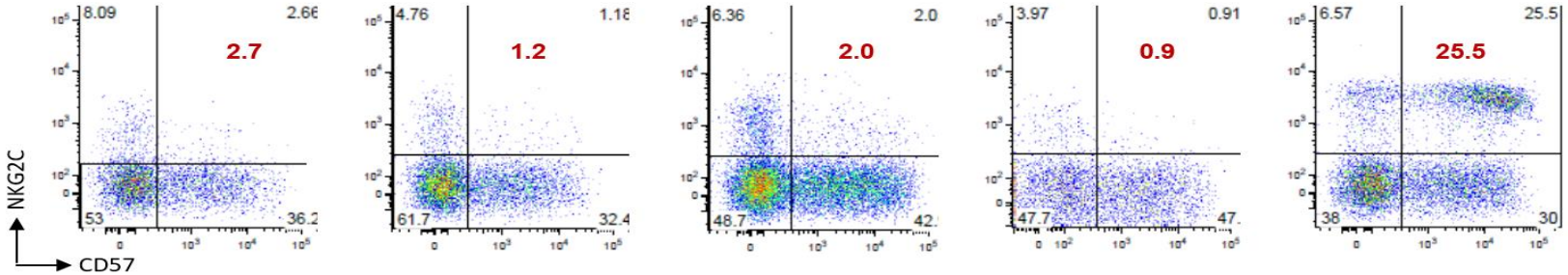
Limitations of Patient- and Donor-derived Adoptive Cell Therapy

Heterogeneity of Healthy Related Donor Cells

Blood Composition

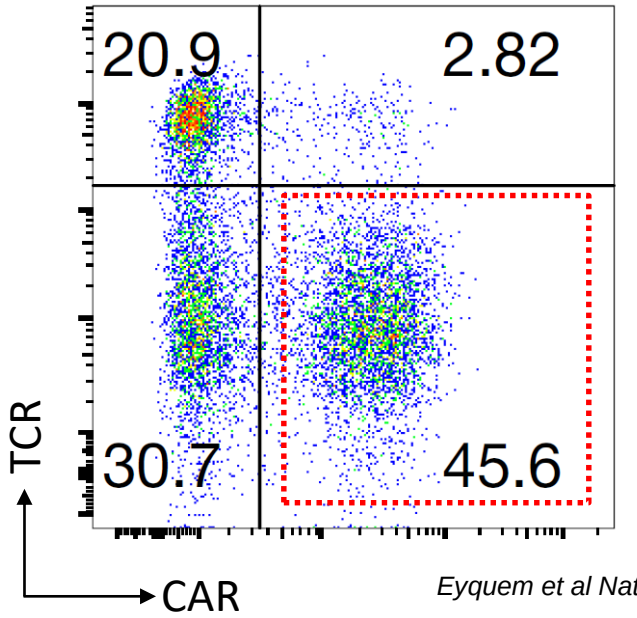


CD57 / NKG2C NK Cell Compartment



Heterogeneity of Engineering

CAR Targeted into TRAC Locus using CRISPR

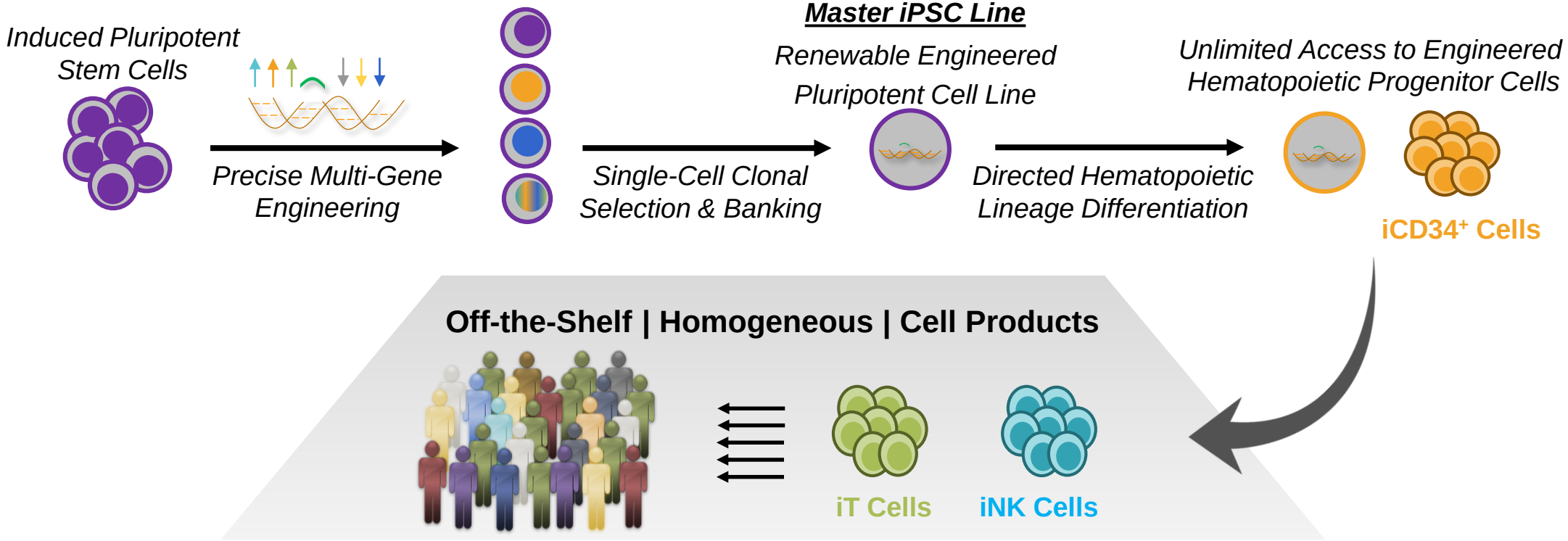


Eyquem et al Nature 2017

Fate THERAPEUTICS

Our iPSC Product Platform

Off-the-Shelf Cell Products Derived From Clonal Master iPSC Lines



Does not require patient-sourced cells *Off-the-shelf production of cells* *Multi-dosed enabling*

Consistent, homogeneous and reliable product forms *Unprecedented scalability* *Cost-effective*

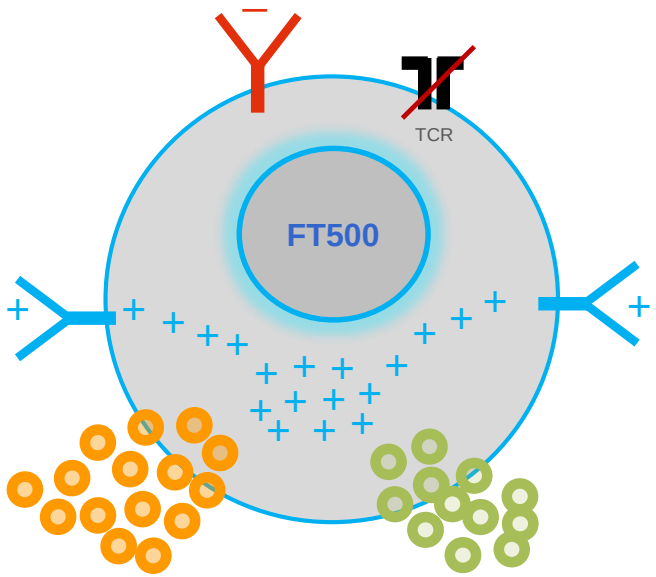
Addresses Critical Limitations of Patient-Sourced Cellular Therapies

Fate THERAPEUTICS

FT500 Universal, Off-the-Shelf NK Cell Product

Combination with Checkpoint Blockade Therapy

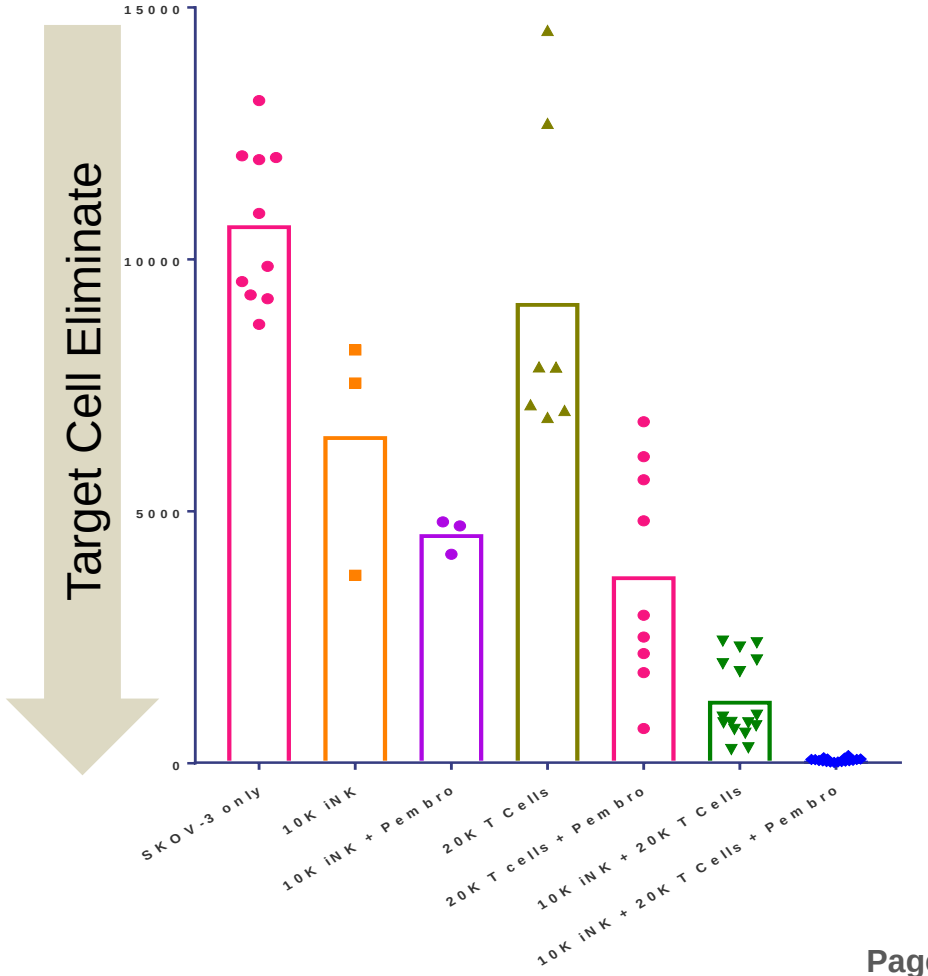
Multi-faceted Functionality to Augment CPB Therapy



IND Submitted

- ✓ Activating Receptors to Seek and Eliminate Stressed Cells Independent of a Single Unique Antigen
- ✓ Inhibitory Receptors "Check" NK Cell Activation, Prevent Cytotoxicity Towards Healthy Cells
- ✓ Unlike T cells, NK cells do not elicit GvHD
- ✓ Secretion of proinflammatory cytokines and chemokines to recruit and activate the adaptive immune system

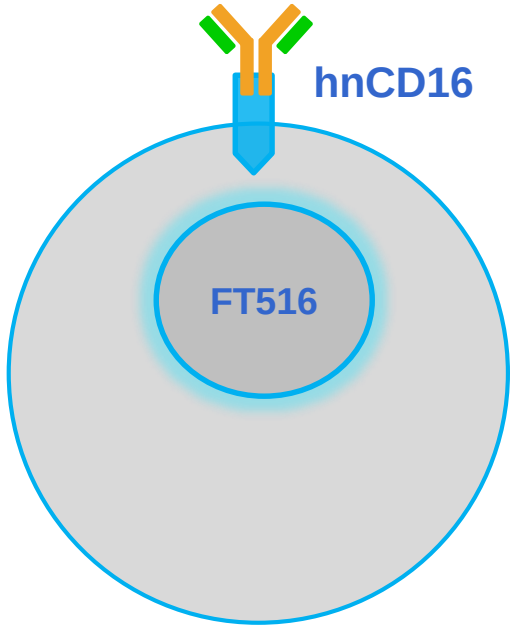
3-D Ovarian Cancer Tumor Model

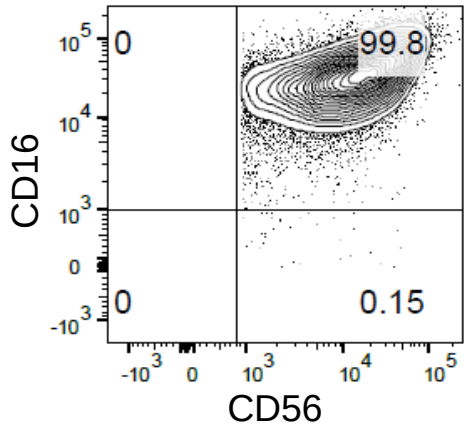


FT516 Universal, Off-the-Shelf hnCD16 NK Cell Product

Enhanced ADCC for Combination with Monoclonal Antibody Therapy

Engineered High-affinity, Non-cleavable CD16 Fc Receptor



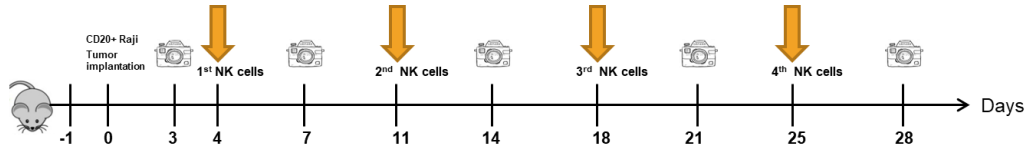


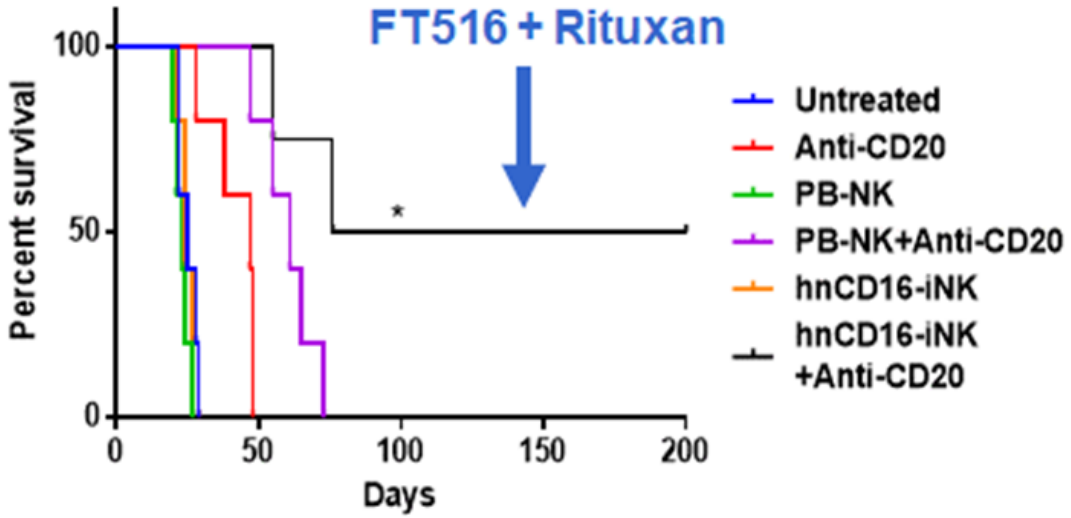
FDA-approved Monoclonal Antibodies

Bi- / Tri- Specific Engagers

Planned IND Submission for YE18

Enhanced *In Vivo* Survival

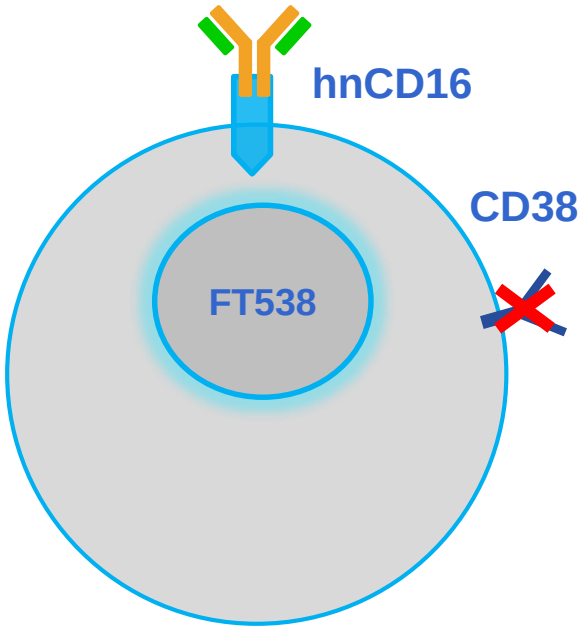


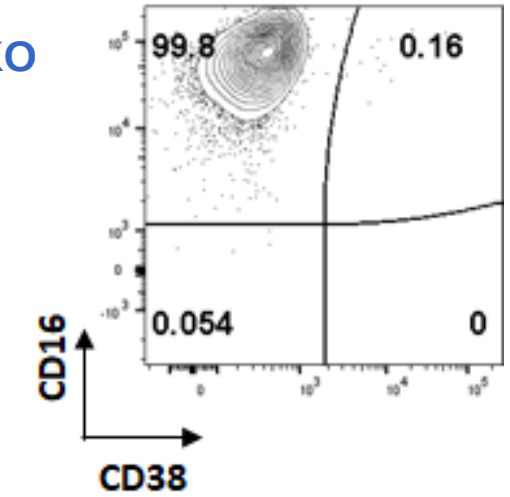


FT538 Universal, Off-the-Shelf hnCD16 / CD38- NK Cell Product

Enhanced ADCC with Elimination of Fratricide for Daratumumab Combo

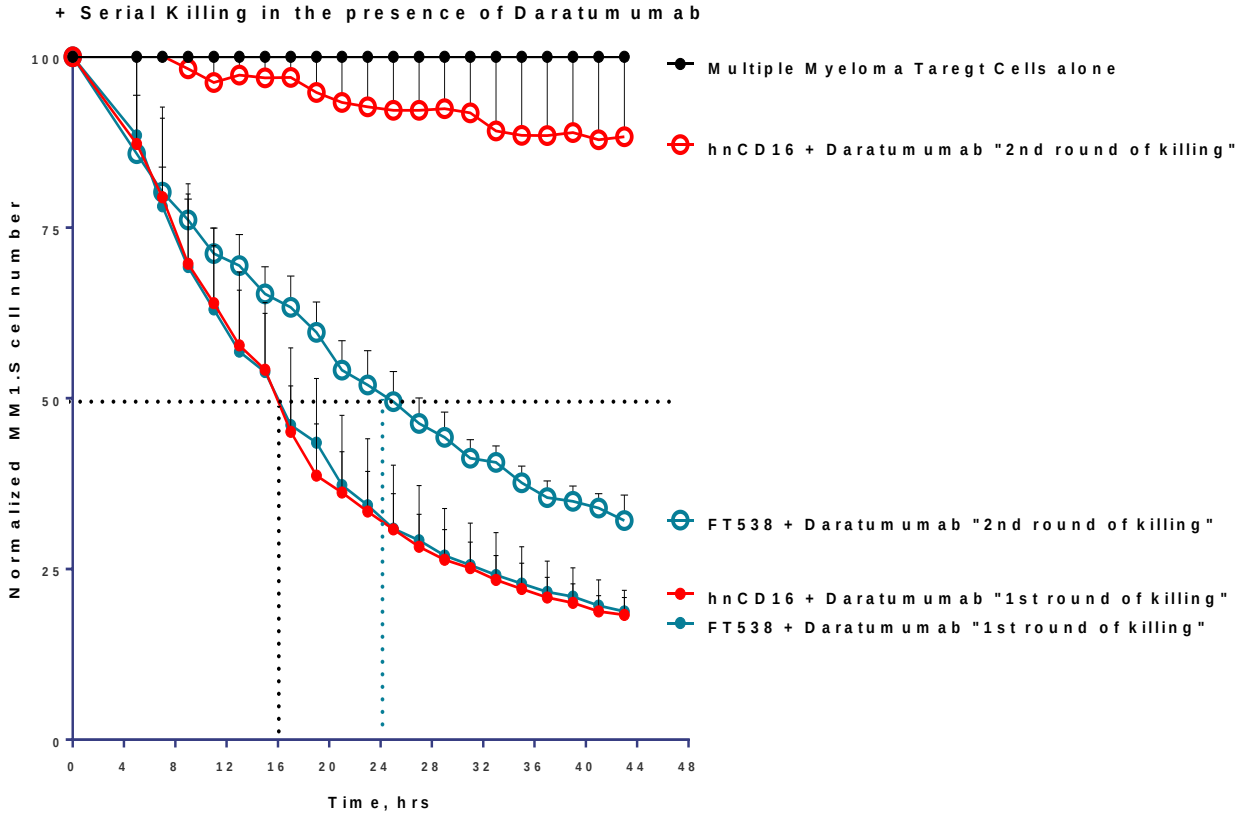
Engineered hnCD16 Fc Receptor + CD38 Knock-Out





Combination with Daratumumab for Myeloma

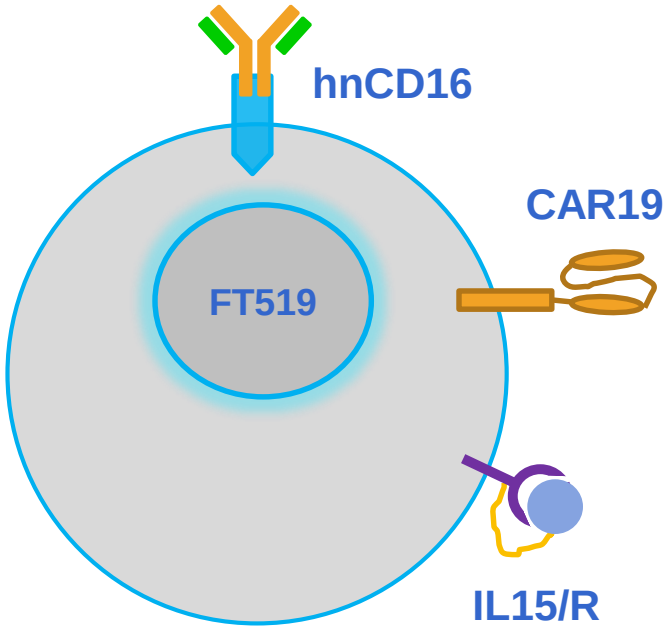
Augmented *In Vitro* Serial Killing



FT519 Universal, Off-the-Shelf hnCD16 / CAR19 NK Cell Product

Dual-Targeting for Antigen Escape

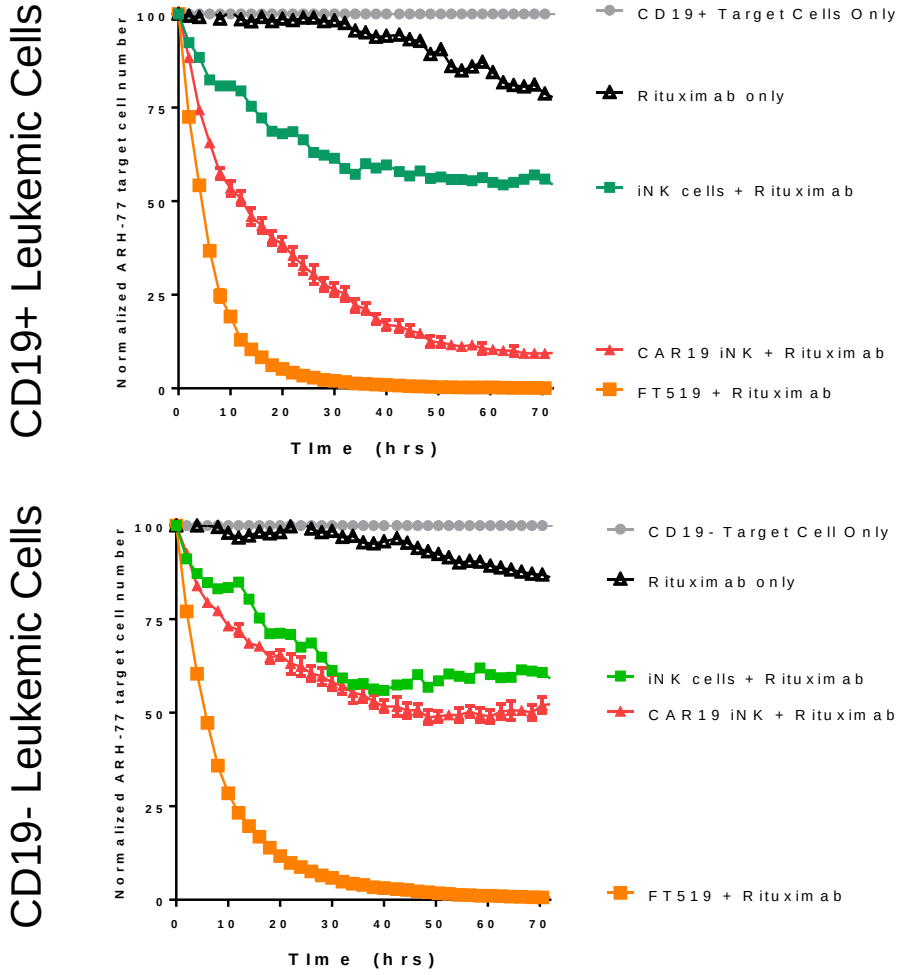
Engineered hnCD16 Fc Receptor + CAR19



- ✓ Potent CAR tailor made for NK cell anti-tumor efficacy
- ✓ hnCD16 to multi-node targeting and to mitigate antigen escape
- ✓ IL15/R to enable NK cell persistence without the need for cytokine support

Planned IND Submission for Mid-2019

Complementary Mechanisms for Antigen Escape



Fate THERAPEUTICS

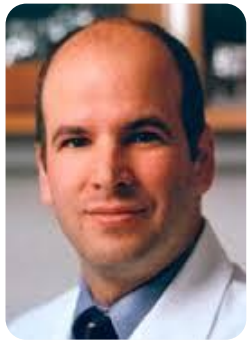
Coming Soon…ASH Annual Meeting

FATE Investor Event: Friday, November 30

American Society of Hematology
Helping hematologists conquer blood diseases worldwide

University of Minnesota
Driven to Discover℠

Jeffrey S. Miller, MD

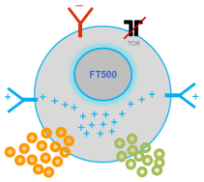


UC San Diego

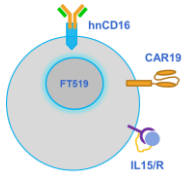
Dan Kaufman, MD PhD

Memorial Sloan Kettering Cancer Center

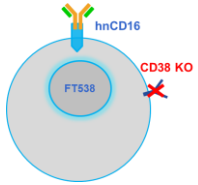
Michel Sadelain, MD PhD



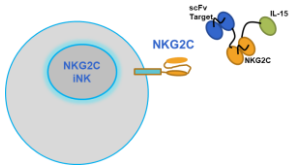
FT500 iPSC-Derived NK Cells and **Anti-PD1 Antibody Synergize** to Enhance T-Cell Cytokine and Cytolytic Responses Against Multiple Tumors



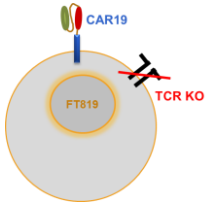
FT519 Off-the-Shelf Natural Killer Cells with Multi-Functional Engineering Using a Novel **Anti-CD19 Chimeric Antigen Receptor** Combined with Stabilized CD16 and IL15 Expression to Enhance Directed Anti-Tumor Activity



FT538 CD38 Deficient, CD16 Engineered NK Cells Exhibit Enhanced Antibody Dependent Cellular Cytotoxicity without NK Cell Fratricide to Augment Anti-Myeloma Immunity in Combination with Daratumumab



iPSC-Derived NK Cells **Genetically Modified to Express NKG2C/DAP12** Mediate Potent Function When Targeted through an NKG2C/IL15/CD33 **Tri-Specific Killer Engager**



FT819 Pluripotent Cell-Derived Off-the-Shelf TCR-Less **CAR-Targeted Cytotoxic T Cell** Therapeutic for the Allogeneic Treatment of B Cell Malignancies

Fate THERAPEUTICS

Concluding Remarks

Scott Wolchko, President & CEO

NK Cell Franchise

FATE-NK100 to FT500 Series

- **Therapeutic strategy: early, often, combinations**
  - Supported by current safety and clinical activity observations with FATE-NK100
- **Significant learnings from FATE-NK100 clinical trials are accruing to franchise**
  - Gaining valuable insights: conditioning, immune response, multi-dosing, tumor types
  - Developing key relationships with top medical investigators and clinical sites
- **Off-the-shelf, iPSC-derived NK cell paradigm is disruptive**
  - Plan to advance FATE-NK100 based on compelling clinical responses observed in dose-expansion
  - FT500 and FT516 have the potential to step into the FATE-NK100 clinical footprint
- **Completed adventitious agents testing of iPSC Master Cell Bank for FT500 as requested by FDA**
  - **No** adventitious agents were detected in *in vivo* and *in vitro* testing
  - Response to FDA has been submitted

Fate THERAPEUTICS

Better Cells For Better Therapies™