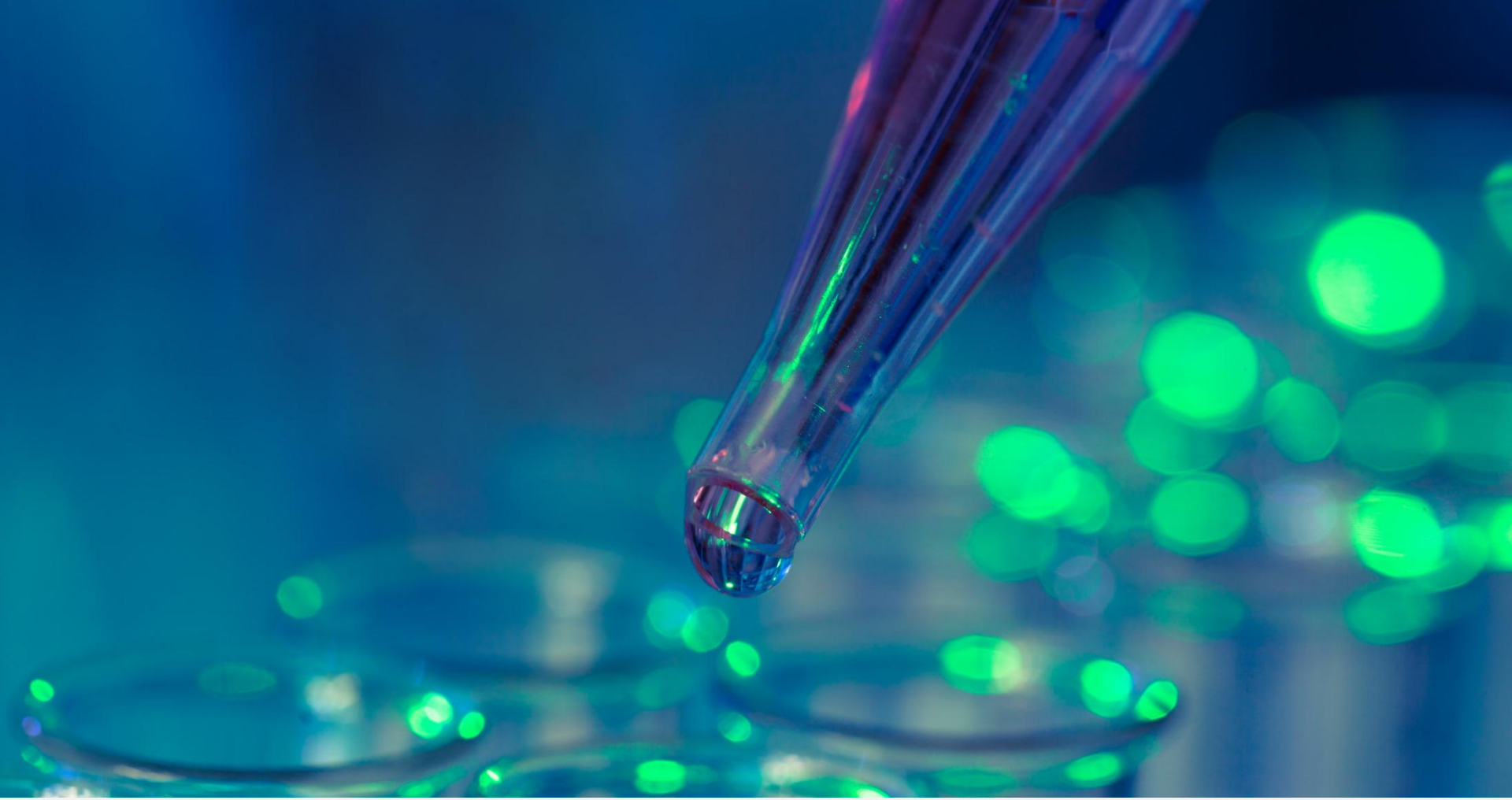


CORPORATE PRESENTATION

FORWARD-LOOKING STATEMENTS

This presentation and the accompanying oral commentary contain forward-looking statements that involve risks, uncertainties, and assumptions. If the risks or uncertainties ever materialize or the assumptions prove incorrect, our results may differ materially from those expressed or implied by such forward-looking statements. All statements other than statements of historical fact could be deemed forward-looking, including, but not limited to, any expectations regarding investment returns; any projections of financial information; any statements about historical results that may suggest trends for our business; any statements of the plans, strategies, and objectives of management for future operations, including our manufacturing and process development; any statements of expectation or belief regarding future events, potential markets or market size, technology developments, our product pipeline, clinical data, enforceability of our intellectual property rights, competitive strengths or our position within the industry; and any statements of assumptions underlying any of the items mentioned.

These statements are based on estimates and information available to us at the time of this presentation and are not guarantees of future performance. Actual results could differ materially from our current expectations as a result of many risks and uncertainties, including but not limited to, risks associated with: the success, cost, and timing of our product development activities and clinical trials; the approval and commercialization of our product candidates; increased regulatory requirements; the effects of competition and technological advances; adverse changes in our strategic relationships; the departure of key personnel; among others. For a further description of the risks and uncertainties that could cause actual results to differ from those expressed in these forward-looking statements, as well as risks relating to our business in general, see our Prospectus filed with the Securities and Exchange Commission on December 19, 2014 and our other public filings. Except as required by law, we assume no obligation and do not intend to update these forward-looking statements or to conform these statements to actual results or to changes in our expectations.

JUNO THERAPEUTICS

RE-ENGAGING THE IMMUNE SYSTEM TO REVOLUTIONIZE MEDICINE

- Founded on the premise that engineered T cells will revolutionize cancer treatments and medicine
- Own worldwide commercial rights to our lead CD19-directed product candidates
- Investing in a pipeline to both improve platform and extend to a broader array of cancers
- Ten therapeutic candidates against six targets in human testing by YE 2015 for both CAR and TCR technologies
- Deep experience and a significant investment in process development and manufacturing

EXPERIENCED MANAGEMENT, BOARD AND ACADEMIC COLLABORATORS

Management	
Hans Bishop	*CEO & President*
Steve Harr, M.D.	*CFO & Head of Corporate Development*
Mark Frohlich, M.D.	*EVP R&D*
Barney Cassidy	*General Counsel*
Mark Gilbert, M.D.	*Chief Medical Officer*
Ken Mohler, Ph.D.	*Chief Scientific Officer*
Liz Smith	*SVP Regulatory Strategy and Portfolio Management*
Andy Walker, Ph.D.	*SVP Manufacturing*
Jim MacDonald	*Chief IP Officer*
Robin Andrulevich	*VP Human Resources*
Chris Ramsborg, Ph.D.	*VP Process Development and Analytics*

Board of Directors
Hal Barron, M.D.
Hans Bishop
Anthony Evnin, Ph.D.
Rick Klausner, M.D.
Robert Nelsen
Howard Pien
Marc Tessier-Lavigne, Ph.D.
Maggie Wilderotter

Founding Institutions

FRED HUTCH CURES START HERE

Memorial Sloan-Kettering Cancer Center
The Best Cancer Care. Anywhere.

Seattle Children's
HOSPITAL • RESEARCH • FOUNDATION

JUNO THERAPEUTICS

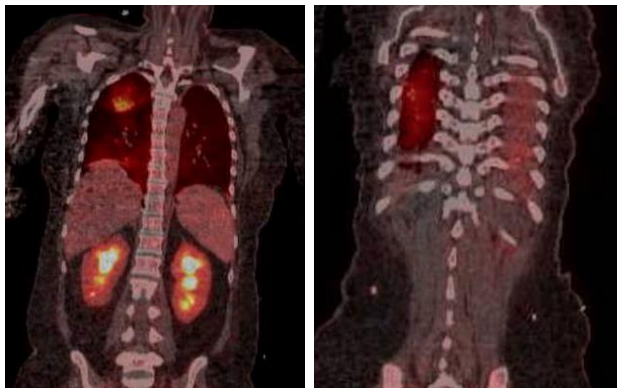
COMPELLING EVIDENCE OF RAPID TUMOR SHRINKAGE ACROSS MULTIPLE CLINICAL TRIALS

Our early experience in leukemia trials demonstrates **85%-100% complete remission rates**

ALL Patient Before CD19 CAR T cells



Day 37 After CD19 CAR T Cells

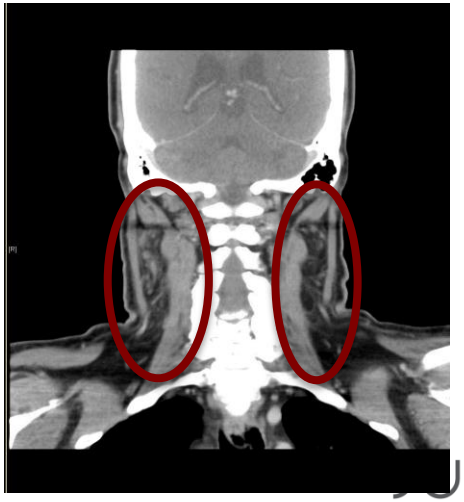


Our early experience in lymphoma demonstrates **60% overall response rate**

NHL Patient Before CD19 CAR T cells

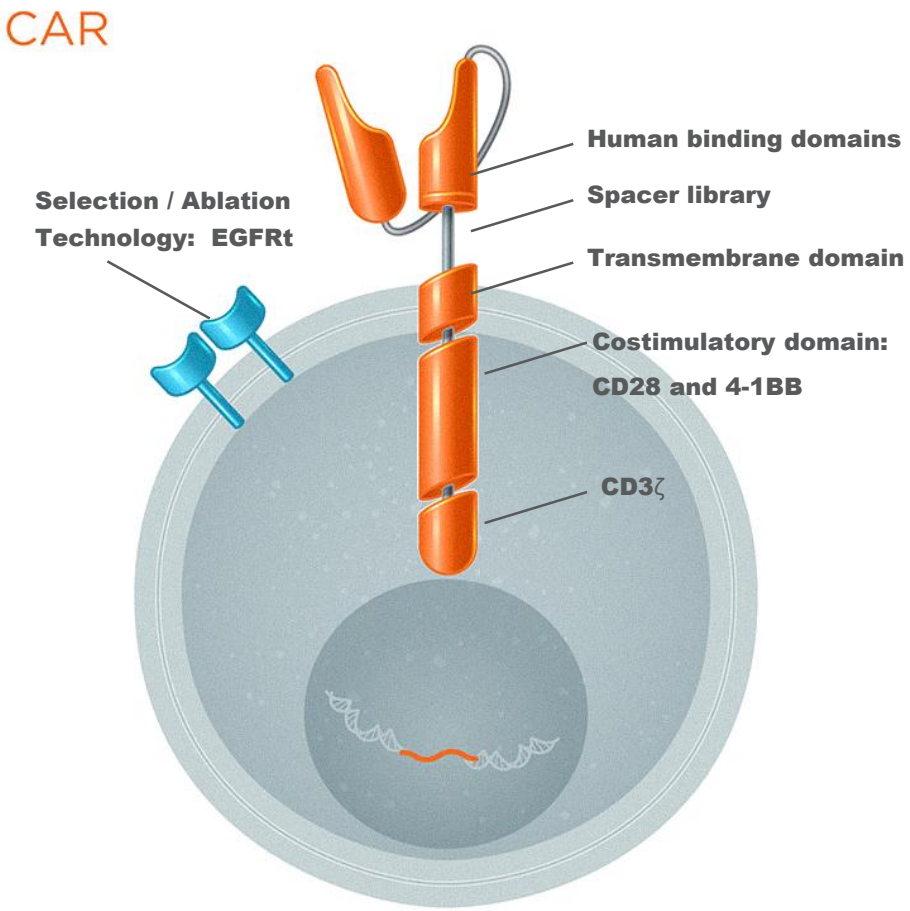


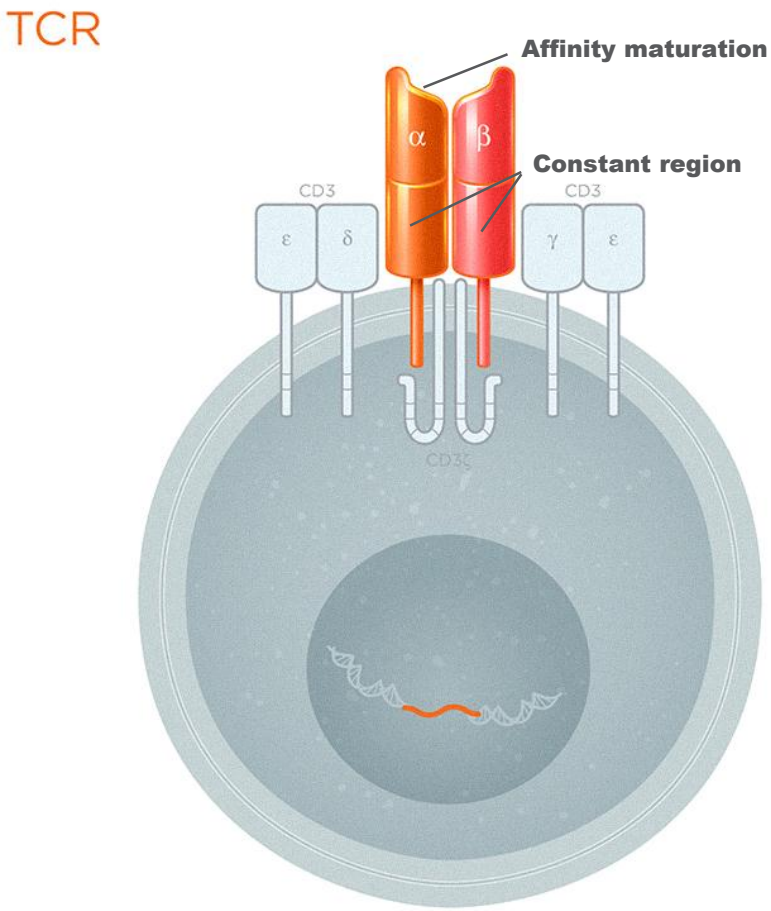
Day 28 After CD19 CAR T Cells



INVESTING TO UNDERSTAND & OPTIMIZE KEY ELEMENTS OF OUR TECHNOLOGY

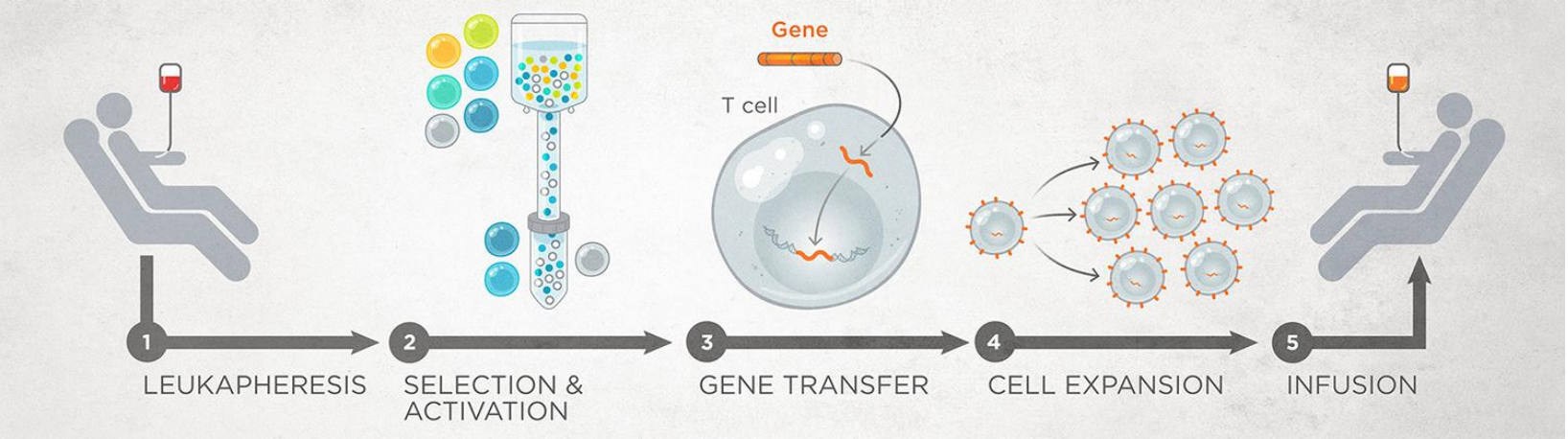
Depth and Breadth to Address Key Questions of our CAR and TCR Technologies





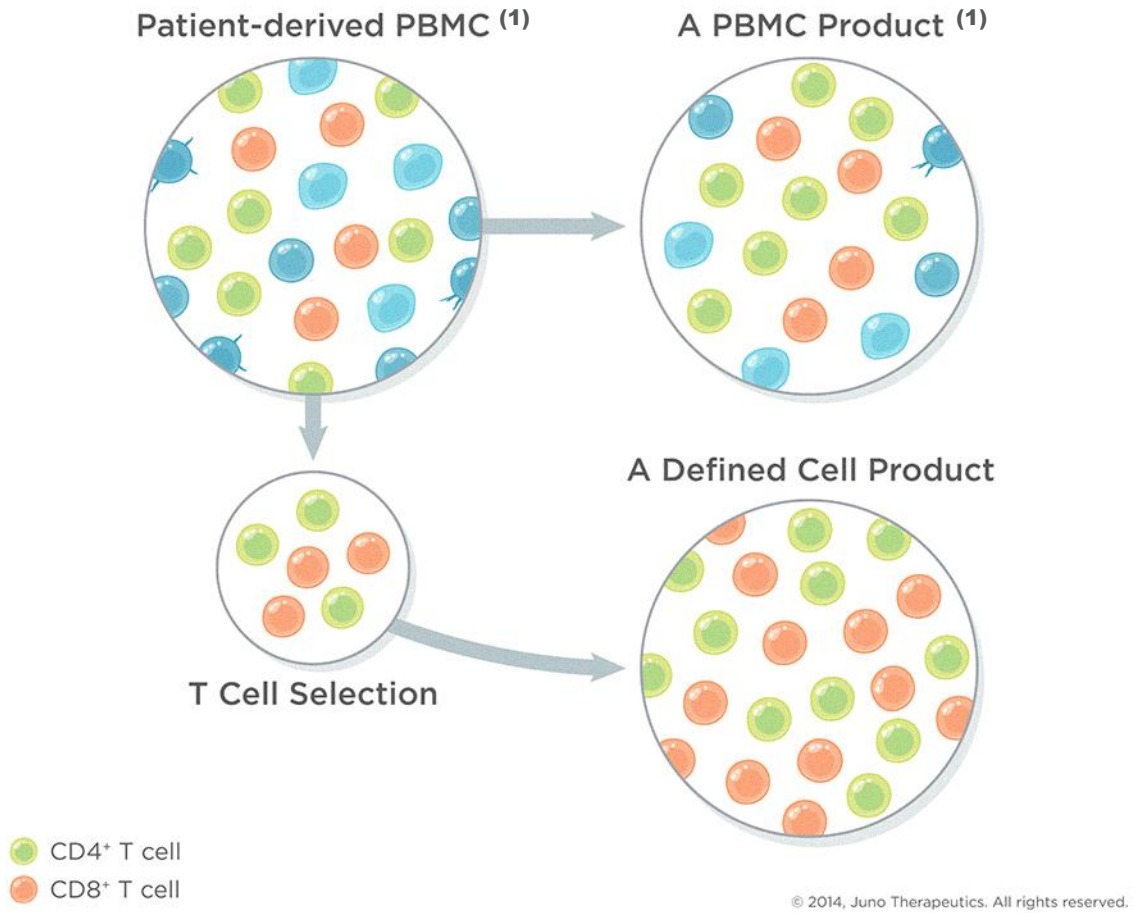
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ENGINEER T CELLS TO RECOGNIZE & KILL CANCER CELLS



Clinical Benefit	Cost Structure	Patient Convenience
• Expansion	• Automation	• Turnaround time
• Potency	• Closed platform	• Cryopreservation
• Persistence	• Scalable process	• Industrialization

CELL COMPOSITION: THE RIGHT T CELL POPULATIONS MATTER



Example: JCAR015

Compared to defined cell products:

- Easier to manufacture
- Variable cell product
- May require higher cell doses
- May lead to variable clinical outcomes

Examples: JCAR017 and JCAR014

Expected to offer:

- Improved product characterization
- Permits lower cell doses
- May improve efficacy
- May have improved side effect profile

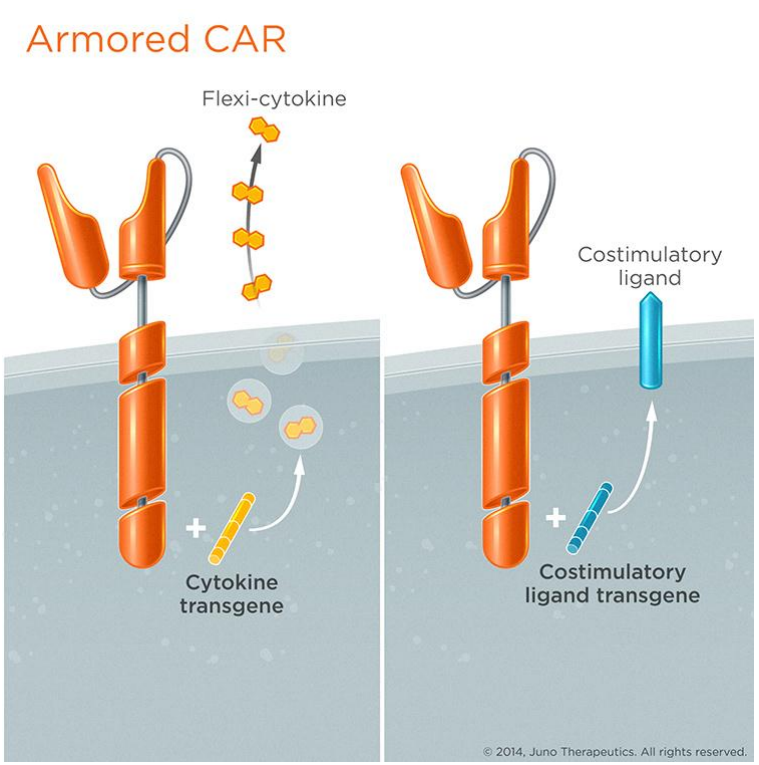
(1) PBMC = peripheral blood mononuclear cells which are white blood cell mixtures from whole blood.

Terakura S et al. Blood, 2012, Wang X et al. J Immunotherapy 2012, Stemberger C et al. PLoS One, 2012

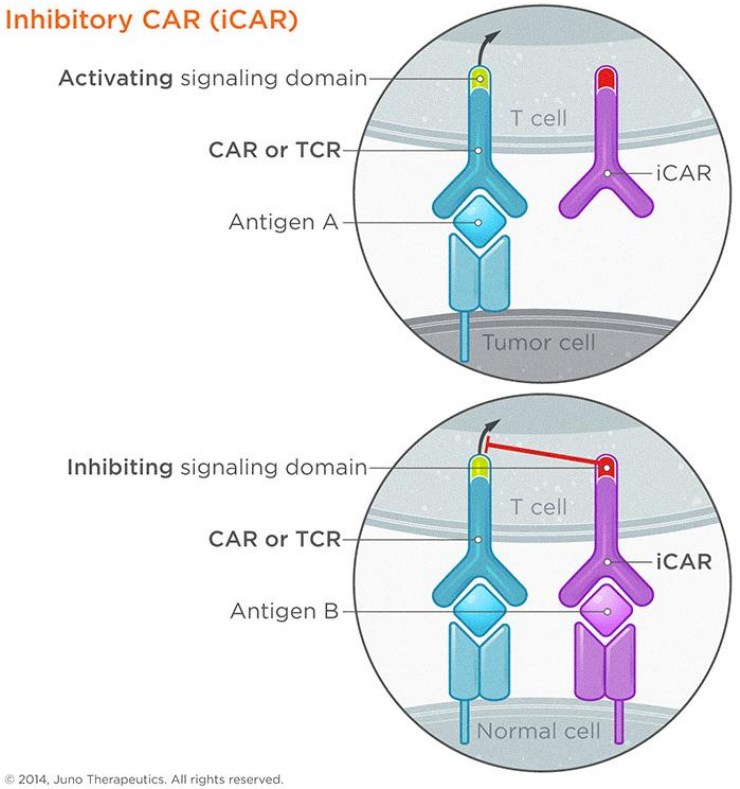
PIONEERING THE NEXT GENERATION OF CAR T IMMUNOTHERAPIES

Strategies to Improve Potency and Target Selectivity

"Armored" CARs

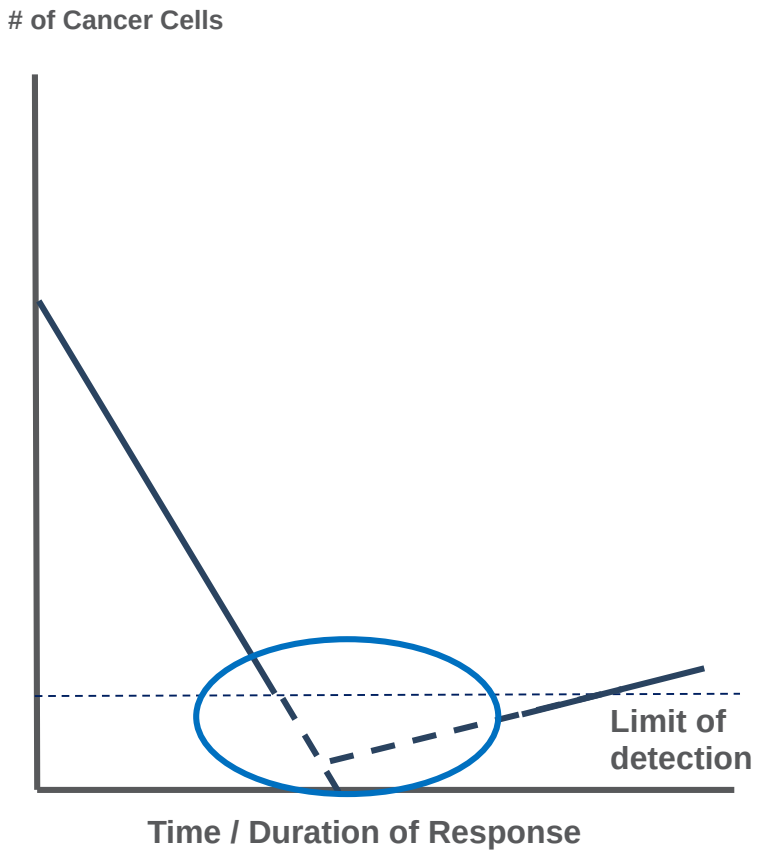


Bispecific CARs



ERADICATION OF CANCER CELLS IS LIKELY A FUNCTION OF IN VIVO CELL PERSISTENCE

Likely Mechanism of Relapse (Today)



Multiple approaches with potential to improve persistence

- Conditioning regimen
- Human binding domains
- Cell composition
- Cell signaling
- Retreatment
- Immune modulation
- Manufacturing

CLINICAL EXPERIENCE AND PIPELINE

EXPERIENCE WITH LEAD CD19-DIRECTED PRODUCT CANDIDATES OFFERS UNIQUE INSIGHTS

Select Key Elements	JCAR015 (MSK)	JCAR017 (SCRI)	JCAR014 (FHCRC)
Costimulatory domain	CD28	4-1BB	4-1BB
Cell population	CD3 enriched PBMC	CD4 + CD8	CD8 central memory + CD4
Ablation technology	None	EGFRt	EGFRt

JUNO CD19 EXPERIENCE – PRODUCT CANDIDATES LEAD TO RAPID & SIGNIFICANT CLINICAL RESPONSES

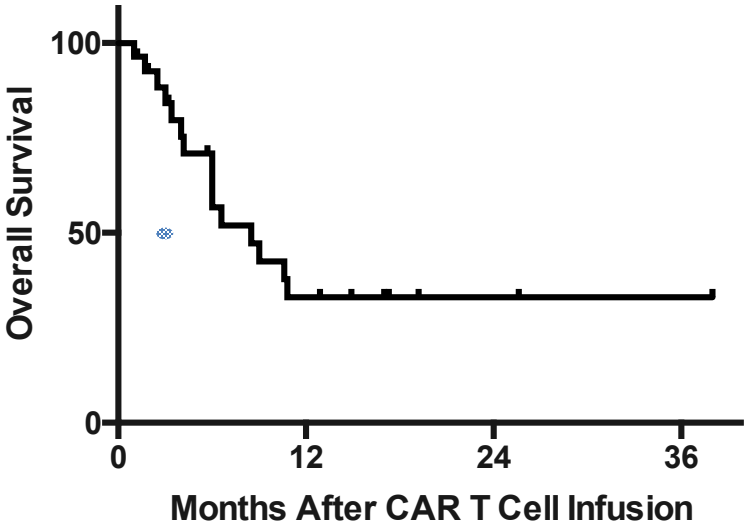
	JCAR015	JCAR017	JCAR014	
	r/r Adult ALL N = 28 Evaluable = 27	r/r Pediatric ALL N = 14 Evaluable = 13	r/r Adult ALL N = 13 Evaluable = 11	r/r Adult NHL[6] N = 12 Evaluable = 10
Complete Response / Remission	89%	85% [1]	100% [4]	10% [4]
Complete Molecular Remission	78%	85% [1]	82% [4]	NA
Overall Response	NA	NA	NA	60% [4]
Severe Cytokine Release Syndrome [2]	18%	23% [3]	23% [5]	None [5,6]
Severe Neurotoxicity	25%	15%	23% [5]	None [5,6]

(1) One patient received steroids at line placement for apheresis.
(2) With respect to JCAR015 and JCAR017, sCRS is a condition defined clinically by certain side effects, which can include hypotension, or low blood pressure, and confusion or other central nervous system side effects when such side effects are serious enough to lead to intensive care unit care with mechanical ventilation or significant vasopressor support. With respect to JCAR014, sCRS is defined as the occurrence of certain side effects, which can include hypotension, confusion, or other central nervous system side effects when such side effects are CTCAE grade 3 or higher.
(3) One patient received steroids for treatment of severe CRS following CAR T cell infusion.
(4) Analysis based on patients who received conforming products per protocol.
(5) Includes patients who received non-conforming products per protocol. Data based on investigator-observed responses.
(6) 2 CLL patients are excluded from analysis. One CLL patient experienced Grade 3 delirium.

JCAR015 ADULT ALL TRIAL SURVIVAL ESTIMATE

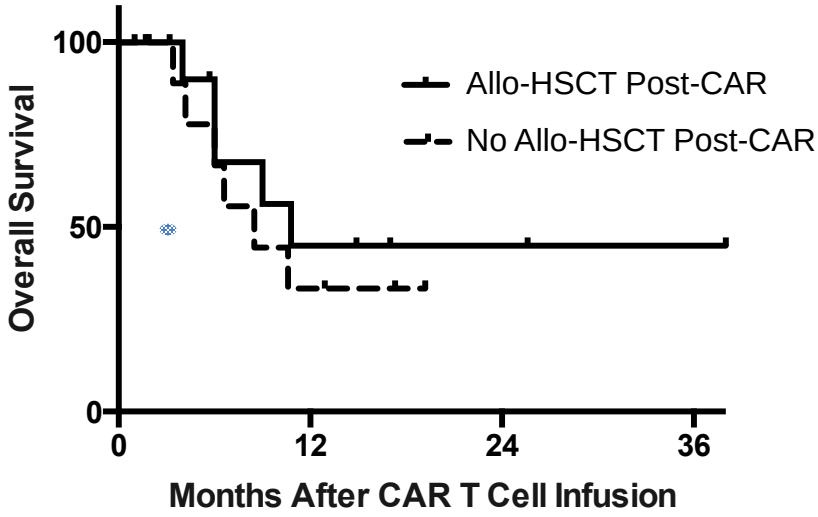
Survival Compares Favorably to Current Standard of Care

Overall Survival: All Patients



Post CAR Median Survival: 8.5 months

Post-CAR Responding Patients: Allo-HSCT vs. No HSCT



Allo-HSCT Post CAR Median Survival: 10.8 months

No HSCT Post CAR Median Survival: 8.5 months

❄ **Historical SOC median survival ~3 months (O'Brien, et al, 2008)**

Source: MSK ASH Presentation.

EXPANSION & PERSISTENCE IMPACT CLINICAL OUTCOMES

Trial	Median C_{max} (1)	# Subjects with Persistence > 40 days
JCAR014 10 Subjects [NHL] (2)	1 cells/uL [<1 – 482]	20% (2/10)
JCAR014 11 Subjects [ALL] (2)	46 cells/uL [1 – 412]	18% (2/11)
JCAR017 13 Subjects [Ped ALL] (3)	478 cells/uL (4) [63 – 1288]	75% (6/8) (5,6,7)

(1) Cmax = peak concentration.
(2) Data reflects patients which received conforming products per protocol.
(3) Values calculated based on data from SCRI 2014 ASH presentation.
(4) Cmax data available for only the 11 patients who achieved a complete remission.
(5) One patient received steroids at line placement for apheresis.
(6) One patient received steroids for treatment of severe CRS following CAR T cell infusion.
(7) 3 subjects of 11 had not reached the 40-day milestone as of the data cutoff date.

ROBUST AND DIVERSE CAR & TCR PIPELINE

Active and Planned Programs for 2015 in addition to CD19 Programs

WT-1 (TCR) *AML*	▪ 15 patients with relapsed / high-risk AML treated with TCR product candidate after HSCT ▪ Generally well tolerated; demonstrated safety, persistence and encouraging clinical activity
CD22 (CAR) *B Cell Malignancies*	▪ CD22 is a cell surface protein widely expressed on B lymphocytes ▪ Phase I trial will enroll r/r ALL or r/r NHL patients, including $CD19^-$ or $CD19^+$ positive disease
L1CAM (CAR) *Neuroblastoma*	▪ Overexpressed in neuroblastoma and a variety of solid tumors ▪ Preliminary data from non-human primates show encouraging safety profile
ROR-1 (CAR) *ROR-1 Expressed Tumors*	▪ Overexpressed on a wide variety of cancers including NSCLC and B cell CLL ▪ Preliminary data from non-human primates show encouraging safety profile
MUC-16 / IL-12 "Armored CAR" *Ovarian*	▪ First "Armored" CAR we plan to advance in clinical testing ▪ MUC-16 is a protein cleaved to make CA125; overexpressed in the majority of ovarian cancers

JUNO'S IP PORTFOLIO

124 Patent Assets Worldwide (Including In-Licensed Assets) (1)

FRED HUTCH CURES START HERE

Memorial Sloan-Kettering Cancer Center
The Best Cancer Care. Anywhere.

Seattle Children's
HOSPITAL • RESEARCH • FOUNDATION

St. Jude Children's Research Hospital
ALSAC • Danny Thomas, Founder

NATIONAL CANCER INSTITUTE

City of Hope

- Selective enrichment of defined T cell subsets
- Adoptive immunotherapy using defined T cell compositions
- Proprietary CAR constructs
- Customized spacer domains for improved tumor recognition
- Bispecific chimeric antigen receptors
- Enhanced affinity T cell receptors
- Engineered transgene for T cell selection and in vivo ablation

JUNO THERAPEUTICS

(1) Includes U.S. and ex-U.S. patents and pending applications.

ROBUST AND DIVERSE CAR & TCR PIPELINE

Active and Planned Programs for 2015 in addition to CD19 Programs

Program	Description	2015 Key Milestone	
		Planned Trial Start	Expected Data Readout
CD19: JCAR015 (Adult ALL and Adult NHL)	▪ Adult ALL Phase I		●
	▪ Adult NHL (Post Autologous Tx) Phase I	●	
	▪ Adult ALL Phase II Pivotal Study	●	
CD19: JCAR017 (Pediatric ALL and Adult NHL)	▪ Pediatric ALL Phase I / II: Data Readout		●
	▪ Adult NHL Phase I / II	●	
CD19: JCAR014 (Adult B Cell Malignancies)	▪ Adult B Cell Malignancies Phase I / II		●
	▪ Exploratory Pathway (Cell Population, Immune Modulation, Others) Phase I	●	
CD22: Fully Human scFv CAR (B Cell Malignancies)	▪ Pediatric ALL / NHL Phase I	●	●
WT-1: JTCR016 (AML, NSCLC)	▪ Adult AML Phase I / II	●	●
	▪ Adult NSCLC Phase I	●	
L1CAM: CAR (Neuroblastoma)	▪ Pediatric Phase I	●	
CD19: "Armored" CARs (B Cell Malignancies)	▪ CD19 & 4-1BBL Phase I	●	
MUC16 & IL-12: "Armored" CAR (Ovarian)	▪ Ovarian Phase I	●	
ROR-1: CAR (CLL, Solid Organ Tumors)	▪ ROR-1 Expressing Tumors Phase I	●	

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