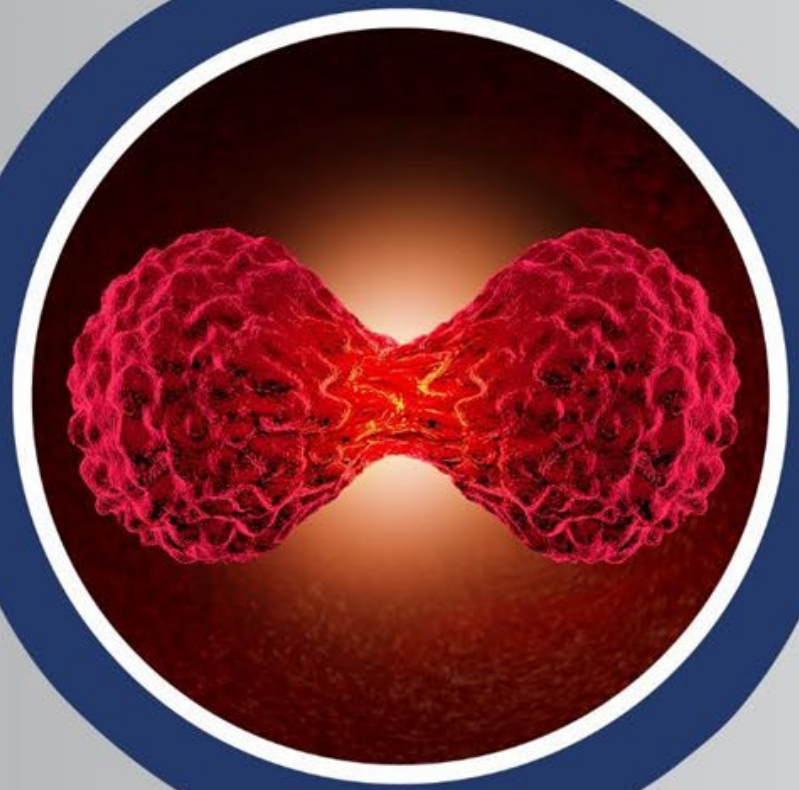

ONCTERNAL therapeutics™

TARGETING CANCER

New Science. New Cancer Therapies. New Hope.

Company Overview – April 2023

FORWARD-LOOKING STATEMENTS

This presentation contains forward-looking statements (including within the meaning of §21E of the U.S. Securities Exchange Act of 1934, as amended, and § 27A of the U.S. Securities Act of 1933, as amended). Forward-looking statements, which generally include statements regarding goals, plans, intentions and expectations, are based upon current beliefs and assumptions of Oncternal Therapeutics, Inc. ("Oncternal") and are not guarantees of future performance. Statements that are not historical facts are forward-looking statements, and include statements regarding the expected timing for achieving key milestones, the timing of regulatory communications and completing and announcing results of clinical trials of Oncternal's product candidates, the anticipated market potential, duration of patent coverage, ability to obtain and maintain favorable regulatory designations, potential accelerated approval pathways for Oncternal's product candidates and preclinical programs, and Oncternal's anticipated cash runway.

All forward-looking statements are subject to risks and uncertainties, including risks and uncertainties inherent in Oncternal's business, including risks associated with the clinical development and process for obtaining regulatory approval of Oncternal's product candidates such as potential delays in the commencement, enrollment and completion of clinical trials; the risk that results seen in a case study of one patient likely will not predict the results seen in other patients in the clinical trial; the risk that interim results of a clinical trial do not predict final results and that one or more of the clinical outcomes may materially change as patient enrollment continues, following more comprehensive reviews of the data, as follow-up on the outcome of any particular patient continues, and as more patient data become available; and other risks described in Oncternal's filings with the U.S. Securities and Exchange Commission ("SEC"). Except as required by applicable law, Oncternal undertakes no obligation to revise or update any forward-looking statement. All forward-looking statements in this presentation are current only as of the date on which the statements were made. Additional factors that could cause actual results to differ materially from those expressed in the forward-looking statements are discussed in Oncternal's filings with the SEC.

ONCT-808, ONCT-534, and zilovertamab are investigational product candidates that have not been approved by the U.S. Food and Drug Administration for any indication.

This presentation includes certain information obtained from trade and statistical services, third-party publications, and other sources. Oncternal has not independently verified such information and there can be no assurance as to its accuracy.

Corporate Highlights

ONCT-808: AUTOLOGOUS CAR T CELL THERAPY TARGETING ROR1

- Initiated Phase 1/2 clinical study in aggressive B-cell NHL, including CD19 CAR T treatment failures
- Clinical manufacturing at the Dana-Farber Cancer Institute for first-in-human studies
- Research collaborations for next-gen CAR NK cell therapies with Karolinska Institutet

ONCT-534: DUAL-ACTION ANDROGEN RECEPTOR INHIBITOR (DAARI)

- Activity in preclinical prostate cancer models of androgen receptor inhibitor resistance, including AR mutations, AR overexpression and AR splice variants, such as AR-V7
- Positive pre-IND meeting with US FDA in December 2022

ZILOVERTAMAB: POTENTIALLY FIRST-IN-CLASS MONOCLONAL ANTIBODY TARGETING ROR1

- Clinical development with ibrutinib paused due to changing therapeutic landscape
- Encouraging 100% PFS for patients with CLL and TP53 aberrations to be further investigated

MULTIPLE CATALYSTS WITHIN CASH RUNWAY PERIOD

- Cash and short-term investments of $54.3M, expected to support operations into 2025
- ONCT-808 initial clinical data update in aggressive B-cell NHL in late 2023
- ONCT-534 IND filing planned in mid-2023, initial clinical data update in 1H 2024

Experienced Team

James Breitmeyer, MD, PhD
CEO, Founder, Director

Richard Vincent
CFO

Salim Yazji, MD
CMO

Gunnar Kaufmann, PhD
CSO

Raj Krishnan, PhD
CTO

Chase Leavitt
General Counsel

Pablo Urbaneja
SVP, Corporate Development

David Hale
Co-founder
Board Chairman

Michael Carter, MB
Director

Jill DeSimone
Director

Daniel Kisner, MD
Director

Rosemary Mazanet, MD, PhD
Director

Bill LaRue
Director

Xin Nakanishi, PhD
Director

Charles Theuer, MD, PhD
Director

Robert Wills, PhD
Director

Robust Pipeline – Novel Product Candidates in Multiple Indications

Modality	Product Candidate	Indication	Preclinical	Phase 1	Phase 2	Phase 3
ROR1 Cell Therapy	**ONCT-808 (Autologous CAR T)**	Aggressive B-cell NHL				
Dual-Action AR Inhibitor	**ONCT-534**	Prostate Cancer				
ROR1 mAb	**Zilovertamab**	Hematological Malignancies and Solid Tumors (ISTs)				

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ROR1 (Receptor Tyrosine Kinase-Like Orphan Receptor 1)

Compelling Tumor-Specific Target

ONCTERNAL therapeutics™

- Expressed on **most B-cell malignancies**, including
  - diffuse large B-cell lymphoma (DLBCL), chronic lymphocytic leukemia (CLL), Mantle cell lymphoma (MCL)
- Expressed on **many solid tumors**
  - Increased ROR1 expression associated with more aggressive tumors, shorter PFS and OS
- ROR1 activity associated with **aggressive phenotype**
  - Invasion, metastasis, stem cell-like behavior, and resistance to treatment
- **Oncternal ROR1 pipeline differentiated and advancing**
  - Deep target biology expertise & immunotherapy experience

ROR1 Expressed on Multiple Solid and Liquid Tumors

CLL	95%
MCL	95%
Uterus	96%
Lymphoma	90%
Prostate	90%
Skin	89%
Pancreatic	83%
Adrenal	83%
Lung	77%
Breast	75%
Testicular	73%
Colon	57%
Ovarian	54%

Zhang 2012 AJP

Green 2008 Trends Cell Biol. 2008; Matsuda T 2001 Mech Dev.; Fukuda 2008 PNAS; Hudecek 2010 Blood; Zhang 2012 Am J Pathology; Zhang 2014 PNAS

Cell Therapy Scientific Advisory Board

Supporting ONCT-808 development and next-gen ROR1 Cell Therapies

ONCTERNAL therapeutics™

Michael Wang, MD

Endowed Professor in the Department of Lymphoma & Myeloma at MD Anderson Cancer Center

- Director of the Mantle Cell Lymphoma Program of Excellence and Co-Director of the B-Cell Lymphoma Moon Shot Program at MD Anderson Cancer Center
- Lead PI in Tecartus® registrational study
- Over 200 peer-reviewed publications

Angela Shen, MD, MBA

Clinical and Translational Market Sector Leader Mass General Brigham; CMO Walking Fish

- Deep clinical, regulatory, and strategic expertise in autologous and allogeneic cell therapies
- Experienced CMO in the cell therapy biotech space
- Led clinical team responsible for designing and launching Kymriah® registrational study

Marcela Maus, MD, PhD

Associate Professor, Medicine, Harvard Medical School Director of Cellular Immunotherapy, Cancer Center, Massachusetts General Hospital

- Translational physician-scientist in cancer immunology
- Lab focuses on the design, generation, and use of innovative forms of immune cell engineering
- Trained in the laboratories of Drs. Katherine High, Michel Sadelain, and Carl June

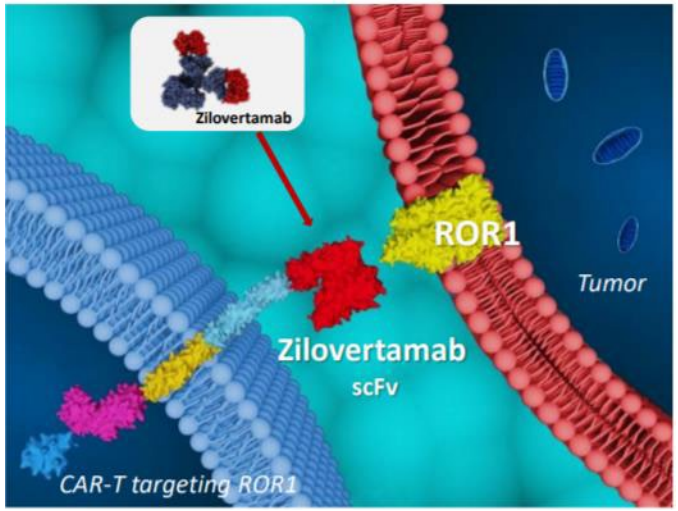
Sadik Kassim, PhD

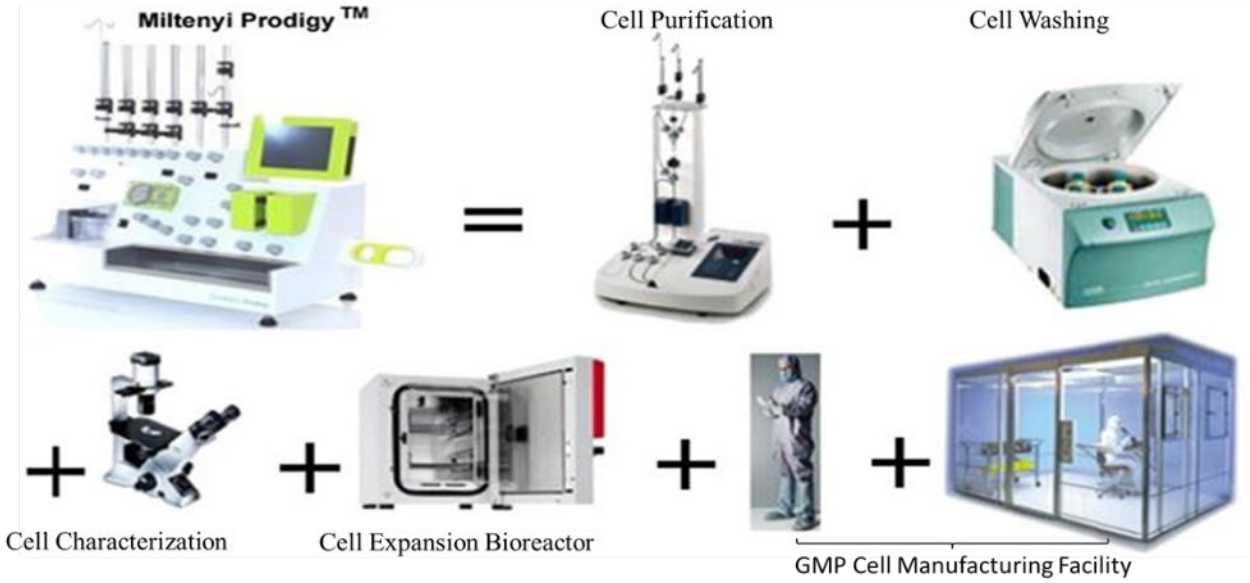
CTO (Genomic Medicines) Danaher Corporation

- Chief Technology Officer at Vor Biopharma
- Chief Scientific Officer at Mustang Bio
- Led the BLA and MAA CMC efforts for Kite's Tecartus®
- Former Head of Early Analytical Development for Novartis' Cell and Gene Therapies Unit
- Scientific news editor of Human Gene Therapy journal

ONCT-808 – CMC and Manufacturing

1. **Lead ROR1 CAR construct optimized and selected with demonstrated high potency against ROR1+ cancer cell lines**
2. **Lentivirus production process confirmed**
3. **Oncternal ROR1 CAR T cell product process optimized and confirmed**
   - Flexible, closed fully-automated platform
   - **8-day production process** post-activation
   - Greater than **2 billion CAR+ T cells produced** with over 60% CAR+ expression
   - Majority of CAR T cells with juvenile phenotypes (CD4 and CD8 stem cell memory T cells)
4. **Harvard/Dana Farber CMCF (Cell Manipulation Core Facility) for clinical manufacturing**





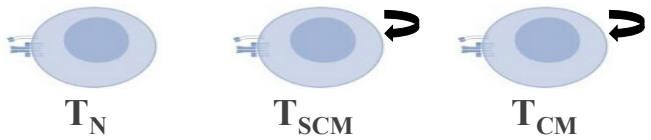
ONCT-808 Manufacturing Process Generates ROR1 CAR T Cells with High Percentage of "Juvenile Phenotype" T Cells

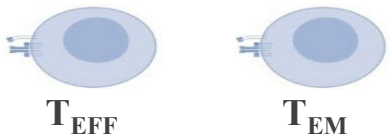
Juvenile ("less differentiated") phenotypes:

- High tissue homing capabilities
- High proliferation and killing potential upon interaction with target cells
- Reservoir of in vivo persistence
- Related to long-term remission

More differentiated phenotypes:

- Immediate and potent but brief effector function
- Limited rounds of proliferation
- Short in vivo lifespan
- High susceptibility to exhaustion





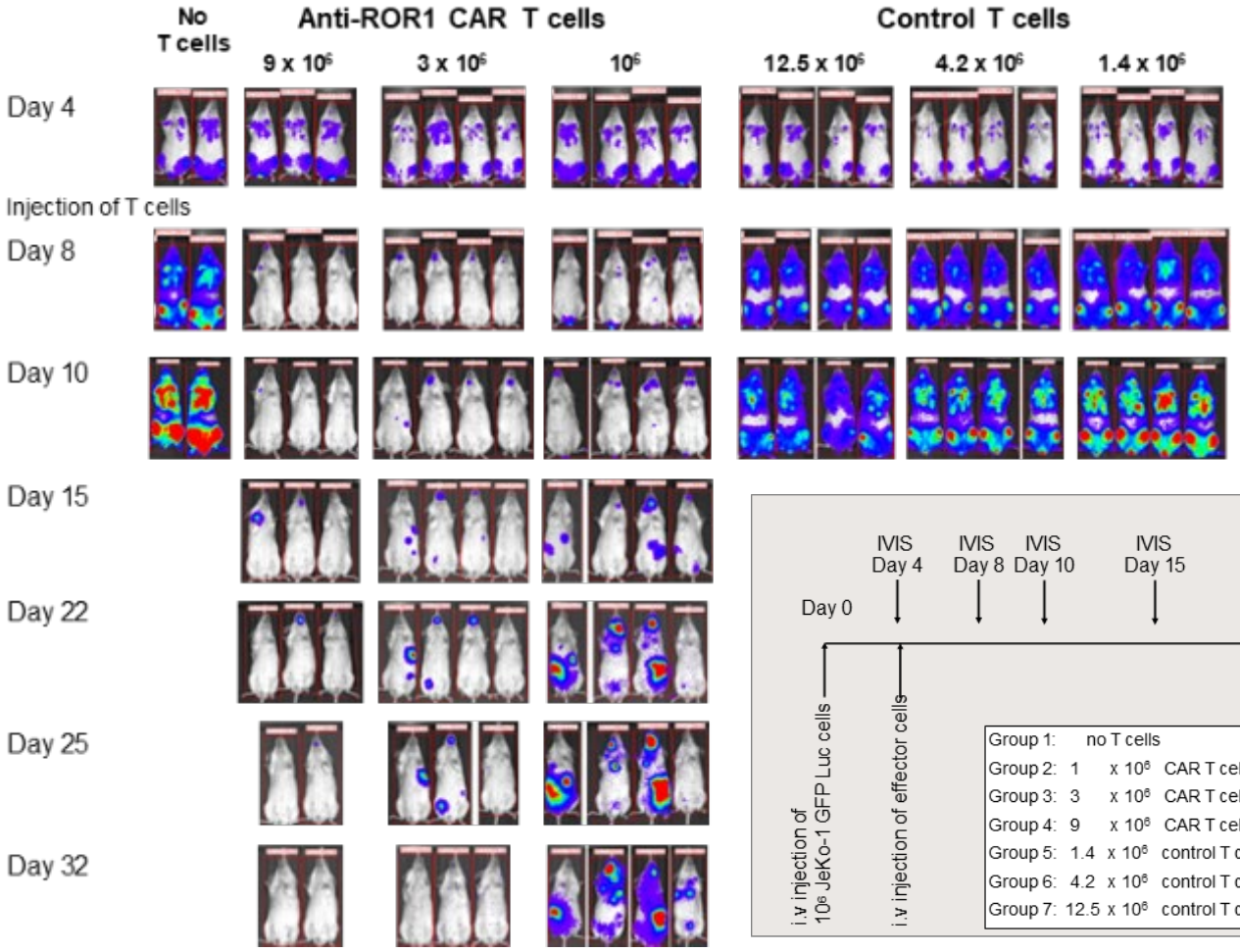
↻ = High self-renewal capacity

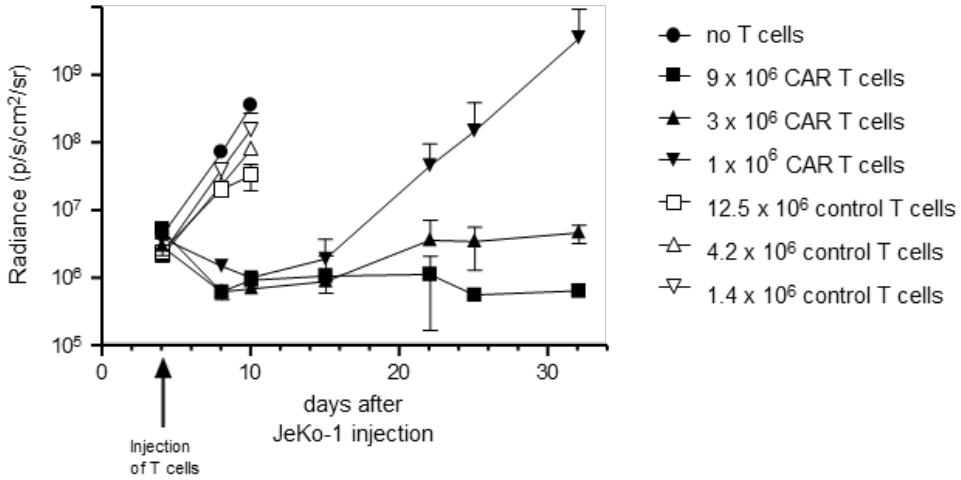
Adapted from Lopez-Cantillio, Front Immunol. 2022; 13: 878209

T_N: naïve T cells
T_{SCM}: stem cell memory T cells
T_{CM}: central memory T cells
T_{EM}: effector memory T cells
T_{EFF}: terminally differentiated effector T cells

Donor #1	CD4+ T cells		CD8+ T cells	
	$T_N + T_{SCM} + T_{CM}$	$T_{EM} + T_{EFF}$	$T_N + T_{SCM} + T_{CM}$	$T_{EM} + T_{EFF}$
ROR1 CAR T Cells	~94%	~6%	~99%	~1%
Donor #2	**CD4+ T cells**		**CD8+ T cells**	
ROR1 CAR T Cells	~72%	~28%	~99%	~1%

ONCT-808 Exerts Strong Anti-Tumor Activity in ROR1+ Model: Jeko-1 MCL

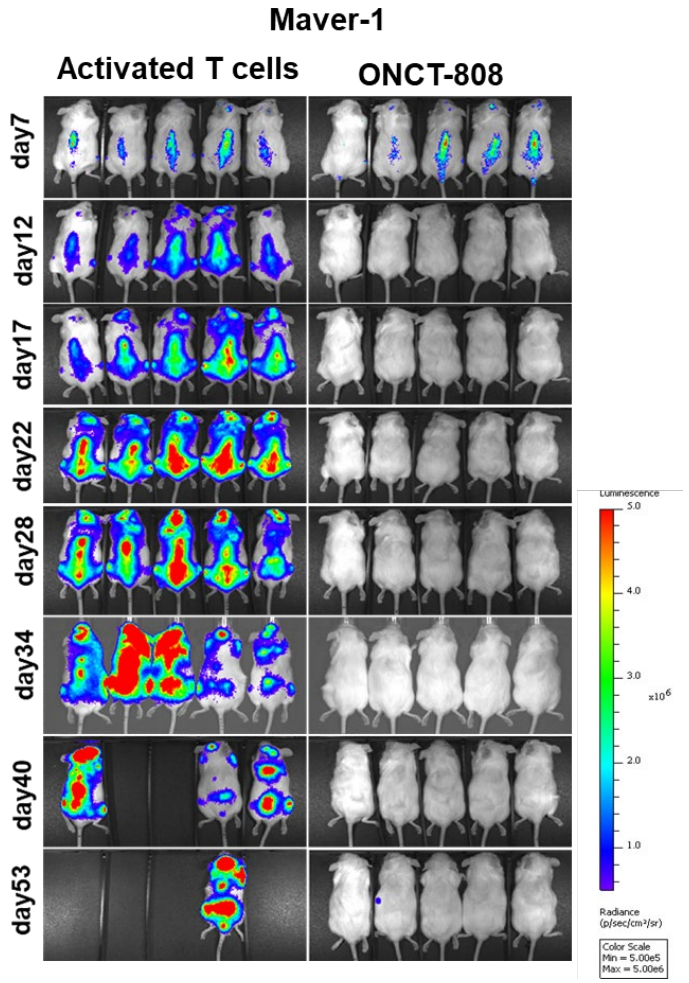


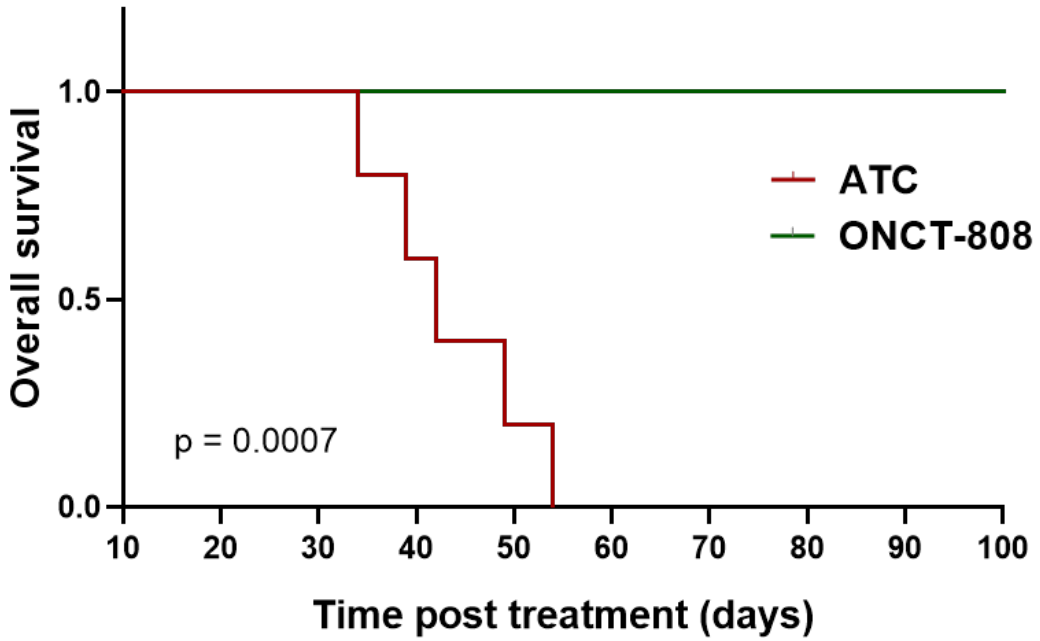


Data generated in collaboration with Dr. Evren Alici (Karolinska Institutet), presented at EHA 2022

- **Strong anti-tumor activity of ROR1 CAR T cells demonstrated in MCL xenograft mouse model**

ONCT-808 Exhibits Strong Anti-Tumor Activity in ROR1+ Model: Maver-1 MCL





Maver FF-luc ($2x10^6$ cells per mouse, 5 mice per treatment arm)

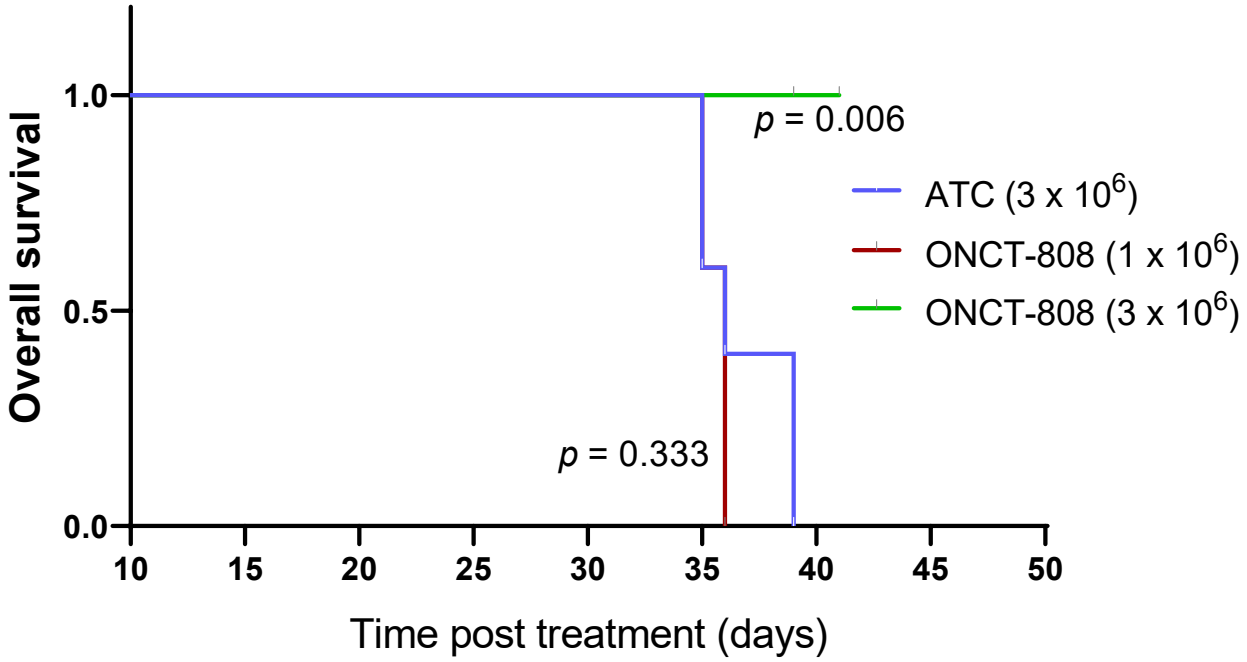
a. Activated T cells ($6x10^6$ cells per mouse)
b. ONCT-808 CAR T cells ($6x10^6$ CAR+ cells per mouse)

Collaboration with Dr. Michael Wang (MDACC)

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center
Making Cancer History®

ONCT-808 Demonstrates Anti-Tumor Activity in MCL Patient-derived Model

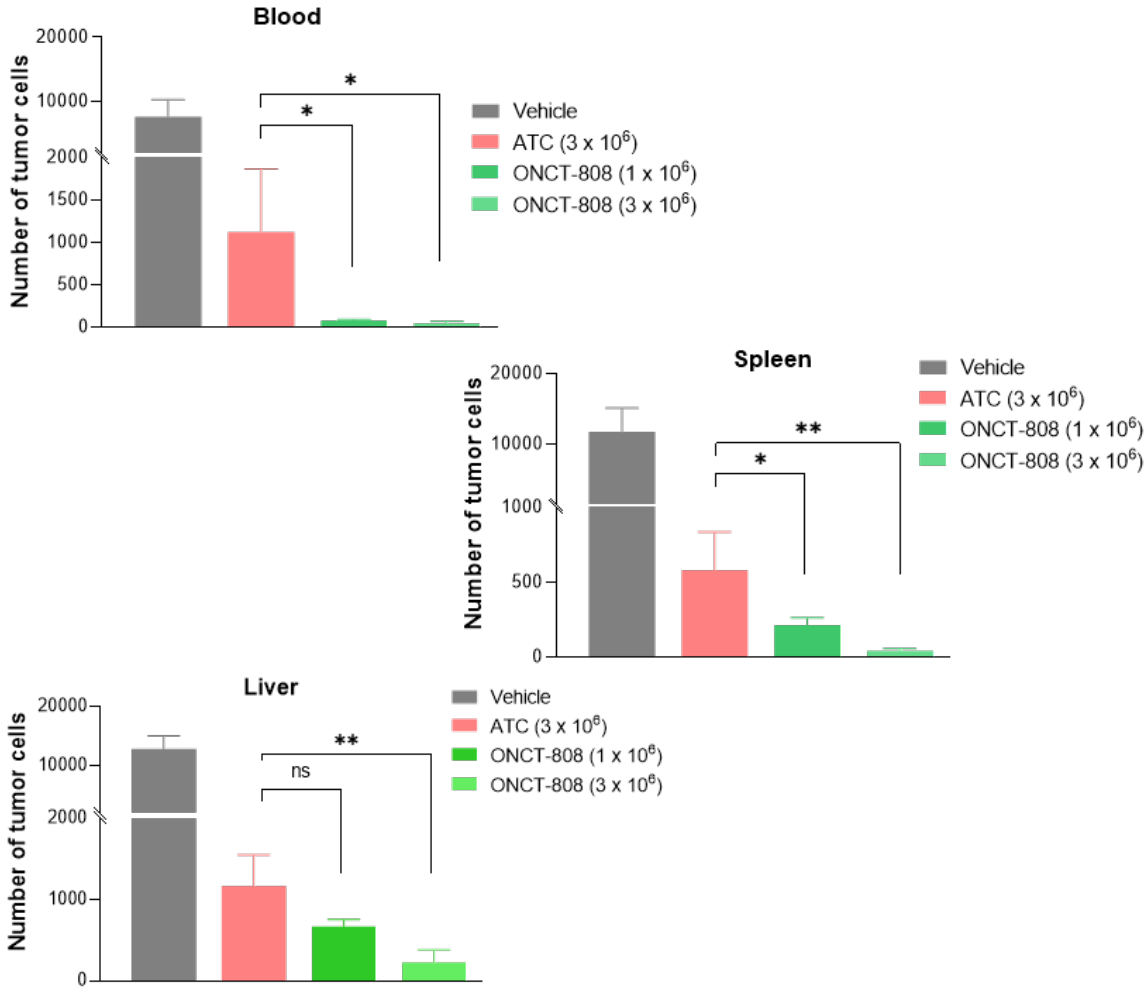
ONCT-808 exerts dose-dependent activity: high dose provides long term survival benefit



MCL patient had received the following prior therapies:

- Chemotherapy
- BTKi
- BCL2i
- Immunotherapies

Tumor burden in blood and organs at study end point



Collaboration with Dr. Michael Wang (MDACC)

Use of Zilovertamab's anti-ROR1 scFv Could Address Common CAR T Challenges

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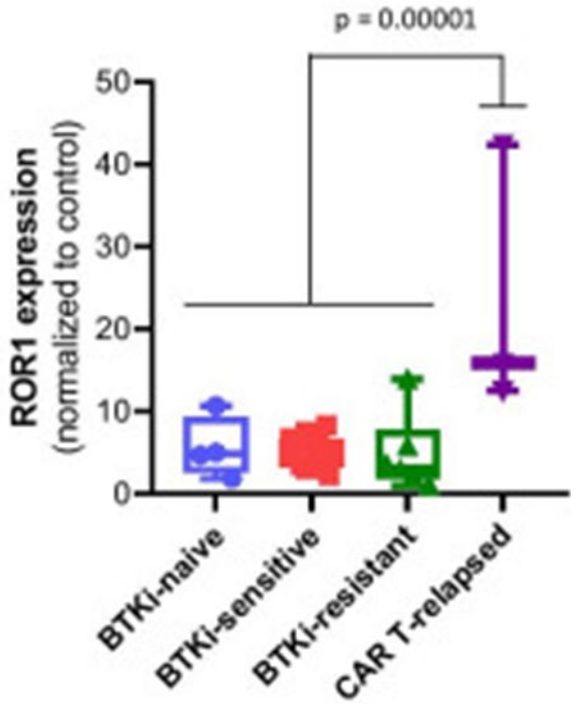
	Known CAR T Cell Therapy Challenges	Possible Advantages of Zilo-based ROR1 CAR T
Efficacy	• Increasing number of relapses following CAR T cell therapy, e.g. due to reduced expression, mutations or loss of the target antigen tumor evading CAR T cell efficacy	**Potential for fewer antigen-negative relapses** • Increased ROR1 expression associated with aggressive and/or refractory tumor phenotype[1,2] • ROR1 antigen loss might render cancer cells less aggressive and susceptible to chemo[3]
Safety	• Potential safety issues related to activation by normal cells expressing the target antigen (on-target/off-tumor activity) • Target antigens of FDA-approved CAR T cell therapies (CD19 and BCMA) are expressed on subsets of healthy B cells leading to B-cell aplasia and increased risk of infections	• The antibody-drug conjugate Zilovertamab Vedotin (MK-2140) did not lead to unexpected toxicities in clinical studies[4,5] • ROR1 is not expressed on mature B cells and thus, targeting ROR1 might not lead to B-cell aplasia

1) Kipps 2022 Blood, 2) Meck 2021 Cells, 3) Borcherding 2014 Protein Cell,
4) Wang 2022 NEJM Evid; 5) Wang 2022 Blood

Supportive Data for ROR1 Targeting in CD19 CAR T Cell Therapy-Relapsed Lymphoma Patients from ROR1 ADC MK-2140 Studies

ONCTERNAL therapeutics™

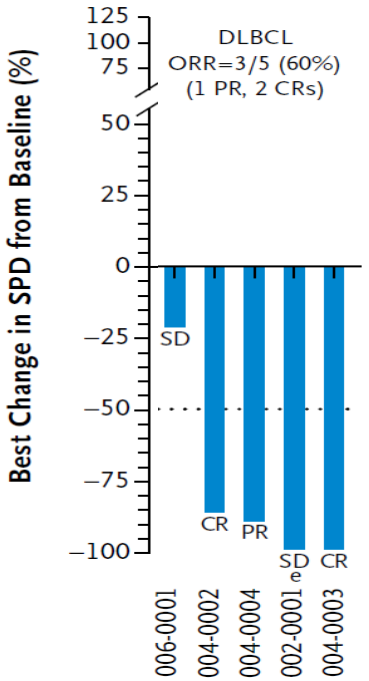
Preclinical data



ROR1 expression was highest in brexucabtagene autoleucel (Tecartus®)-relapsed samples (*n* = 3) among analyzed cell samples from MCL patients

Jiang 2021 J Hematol Oncol

Phase 1 Efficacy Data*



Patients with DLBCL responses had 3, 7, and 7 prior regimens (including HDT/HSCT in 1 patient and CAR T cells in 3 patients)

*A Study of Zilovertamab Vedotin (MK-2140) (VLS-101) in Participants With Hematologic Malignancies (MK-2140-001) [NCT03833180]

Phase 1 Safety Data*

"…as expected with a monomethyl auristatin E-containing antibody–drug conjugate, adverse events (AEs) included acute neutropenia and cumulative neuropathy…"

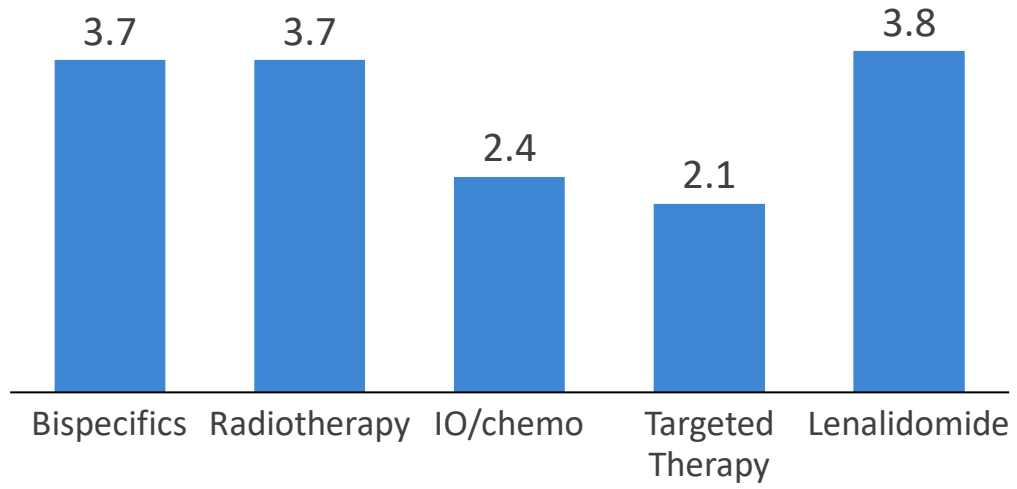
"…no clinically-concerning AEs occurred to suggest ROR1-mediated toxicities or nonspecific zilovertamab vedotin binding to normal tissues…"

Wang 2022 NEJM Evid

ONCT-808 can address a significant unmet need in CD19 CAR-T relapses in aggressive B-NHL

Median progression-free survival (PFS) after CAR-T relapse in DLBCL, according to treatment type[1]

MONTHS



	Bispecifics	Radiotherapy	IO/chemo	Targeted Therapy	Lenalidomide
N	7	14	25	26	45
ORR	**14.3%**	**35.7%**	**8.0%**	**11.5%**	**11.1%**

Di Blasi 2022 Blood, Post-CAR relapse in DLBCL

- The prevalence of aggressive NHL in the US is ~30,000 cases, with ~5,000 patients eligible for 3rd line or auto CAR T treatment[2]
- Response to post-CAR treatment is very low at 14%, with only 7% complete responders, and was disappointing for all systemic therapies administered
- The median progression-free survival was 3 months and median overall survival was 5 months

1 Di Blasi 2022 Blood, Post-CAR relapse in DLBCL

2 Wenzhen 2021 JNCCN, Epidemiology of Diffuse Large B Cell Lymphoma (DLBCL) and Follicular Lymphoma (FL) Patients by Line of Therapy in the United States (US) and Europe (EU)

ONCT-808-101 - ROR1 CAR T Phase 1/2 Study Design

Eligibility:
- Aggressive B-cell NHL
  - LBCL
  - MCL
- Failed chemo-immunotherapy
- Failed or ineligible for CD19 CAR T therapy
- Able to undergo CAR T cell treatment

Dose Level 1:
$1x10^6$ CAR^+ T cells/kg

Dose Level 2:
$3x10^6$ CAR^+ T cells/kg

Dose Level 3:
$10x10^6$ CAR^+ T cells/kg

Expansion Cohort 1: LBCL
N = 7-18 evaluable

Expansion Cohort 2: MCL
N = 7-18 evaluable

CAR T cell manufacturing at Dana Farber CMCF

3+3 Dose escalation

Phase 1 Objectives:
- Safety & tolerability
- Determine MTD or MAD
- Select RP2D

Simon 2-stage design

Phase 2 Objectives:
- Efficacy (ORR, CRR, DOR)
- PK of ONCT-808
- Safety & tolerability

LBCL: Large B-Cell Lymphoma (Diffuse LBCL NOS, Primary mediastinal LBCL, High-grade BCL, DLBCL arising from indolent lymphoma or CLL, Follicular lymphoma grade 3B, Richter's syndrome); MCL: Mantle Cell Lymphoma; CMCF: Cell Manipulation Core Facility; MTD: Maximum Tolerated Dose; MAD: Maximum Administered Dose; RP2D: Recommended Phase 2 Dose; ORR: Objective Response Rate; CRR: Complete Response Rate; DOR: Duration of Response

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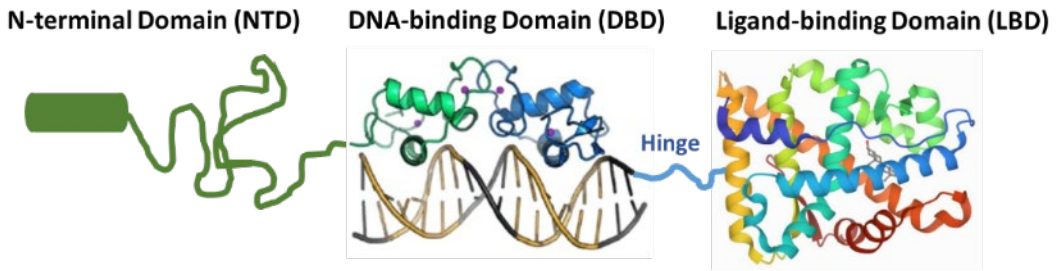
ONCT-534: Dual-Action Androgen Receptor Inhibitor (DAARI)

Differentiated Mechanism of Action

- ONCT-534 binds to N-terminal Domain (NTD) of the androgen receptor (AR) and induces AR protein loss
  - NTD binding important for activity against splice-variants
- Current standard of care treatments, such as enzalutamide or apalutamide, bind to ligand-binding domain (LBD) only



Potential to address unmet needs in prostate cancer

- Potential next-generation treatment option for patients with advanced prostate cancer
  - Focus on addressing emerging unmet medical need related to AR pathway inhibitor-resistant prostate cancer, including splice variant (AR-SV)-expressing tumors (1)
- Strong preclinical efficacy in vitro and in vivo
  - Activity in enzalutamide-resistant models, including AR-SV-expressing tumors
- Potential in other AR-driven disease, including luminal AR-triple negative breast cancer (LAR-TNBC) and non-oncology rare disease indication

(1) Antonarakis NEJM 2014

Positive pre-IND meeting in December 2022

ONCT-534 Differentiated vs other AR-targeting Therapeutic Agents

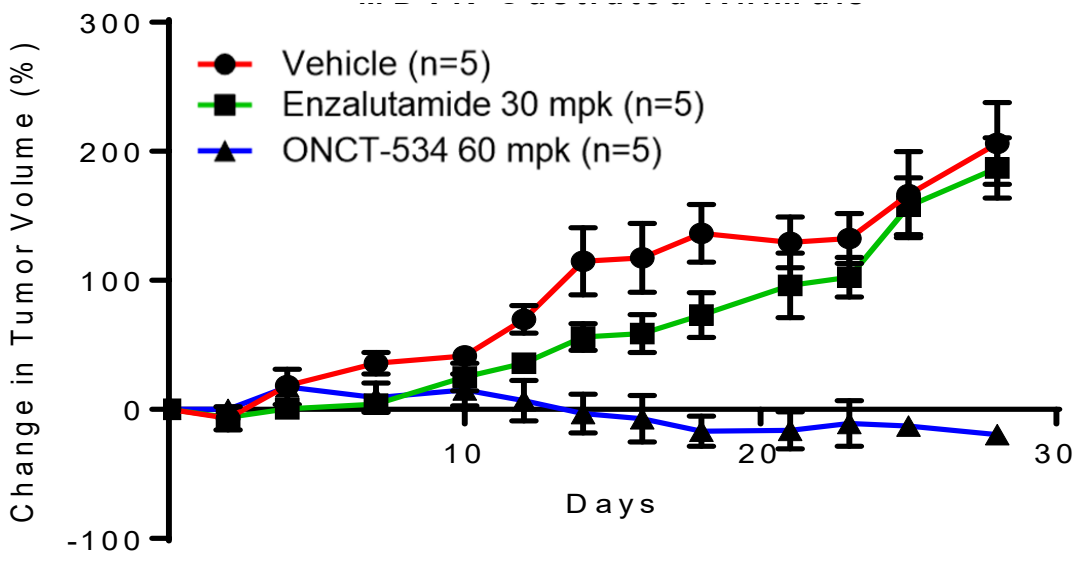
	AR antagonist	PROTAC	ANITEN	DAARI
Examples	Enzalutamide (Pfizer) Apalutamide (J&J) Darolutamide (Bayer)	ARV-110 (Arvinas)	EPI-7386 (ESSA)	ONCT-534
First-in-class Molecule	X	√	√	√
AR Degradation	X	√	X	√
N-terminal domain Binding	X	X	√	√
Active against AR LBD Mutants	certain mutants[1,2]	certain mutants[3]	?	√
Active in ENZA-resistant in vivo models	darolutamide	√	√	√
Active in AR-overexpressing in vivo models	√	√	√	√
Active in AR-SV expressing in vivo models	X	X	?	√
Active in CRCP models using intact rodents	apalutamide[4]	√	?	√

√ = Yes, X = No, ? = Unknown

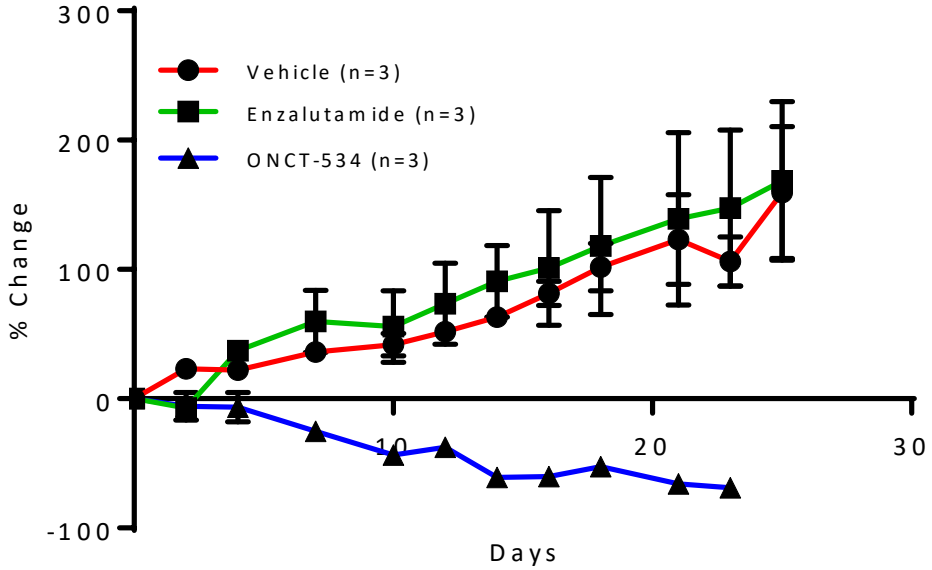
1) Joseph Cancer Discov 2013; 2) Moilanen Sci Rep 2015; 3) Cancer Discov 2022; 4) Clegg Cancer Res 2012

ONCT-534 Demonstrates Strong Anti-Tumor Activity in ENZA-resistant Model

ENZA-resistant VCaP model in castrated rodents



ENZA-resistant VCaP model in intact rodents

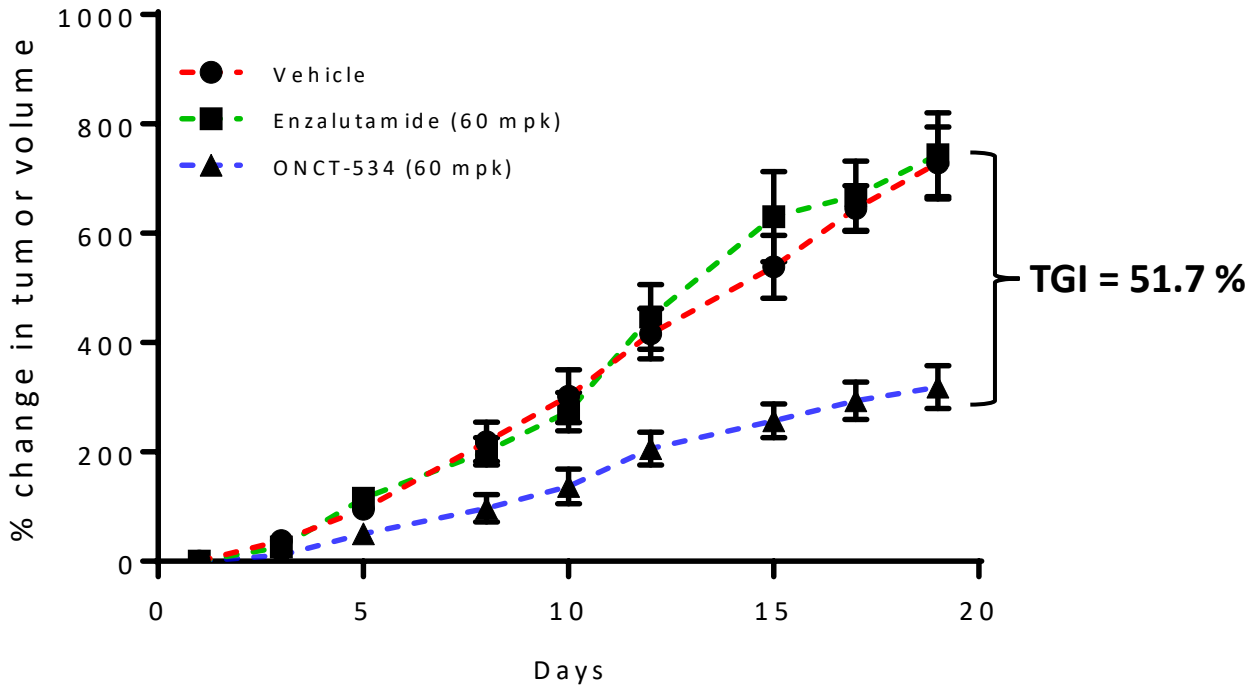


- ONCT-534 demonstrates anti-tumor activity in these models while ENZA treatment does not inhibit tumor growth
  - ONCT-534 treatment leads to regression of the tumor

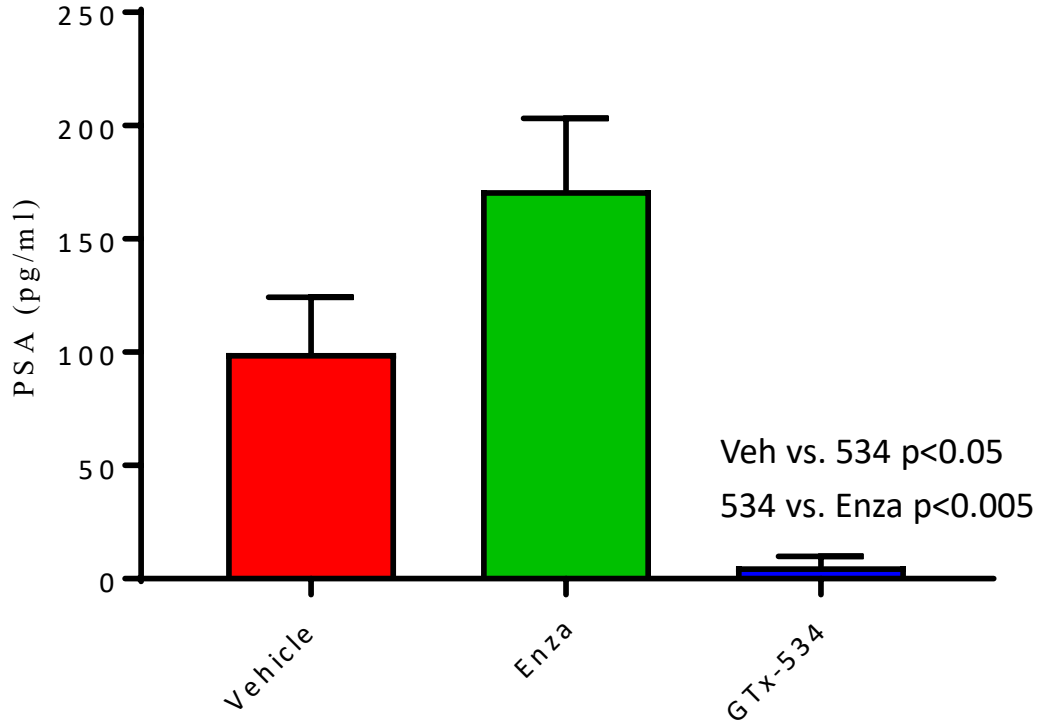
Ponnusamy, Clin Cancer Res 2019

ONCT-534 Exhibits Strong Anti-tumor Activity in AR-V7-Positive 22Rv1 CRPC Model in Castrated Animals

Change in Tumor Volume



Reduction in Serum PSA levels



- ONCT-534 demonstrates anti-tumor activity corresponding to inhibition of AR-dependent tumor growth while ENZA treatment does not inhibit tumor growth
  - Maximum growth inhibition for the 22Rv1 model via AR and AR-V7 is about 50% [1,2]
- ONCT-534 significantly reduces the serum PSA levels in treated animals

1) Compagno 2007 PLoS One; 2) Li 2012 Cancer Res

Narayanan, SUO, 2022

ONCT-534-101 Phase 1/2 Study Design

Eligibility:
- mCRPC with progressive disease
- R/R to ARi or Abi
- Prior chemo or radio nuclide allowed
- Evidence of AR dependence
- Any AR phenotype: native, amplified, LBD mutant, splice variant
- ECOG 0-2
- No CNS mets or seizure history

Dose Level 1

Dose Level 2

Dose Level 3

Dose Level 4

Phase 1 Adaptive BOIN design
- Safety & tolerability
- Efficacy (PSA), correlate with AR phenotype
- Select 2 doses for Phase 2
- N = 12-18

Dose Level A
N = 7-14 evaluable

Dose Level B
N = 7-14 evaluable

Phase 2 Simon 2-stage design
- Compare Safety & efficacy (PSA)
- Estimate ORR, CRR, DOR, PFS
- Correlate efficacy with AR phenotype
- PK/PD and AR levels
- Select RP2D and patient target

mCRPC: metastatic castrate resistant prostate cancer; ARi: Androgen Receptor inhibitor (enzalutamide, darolutamide, apalutamide); Abi: abiraterone; LBD: AR ligand binding domain; BOIN: Bayesian Optimal Interval; OBD: optimal biologic dose; RP2D: Recommended Phase 2 Dose;

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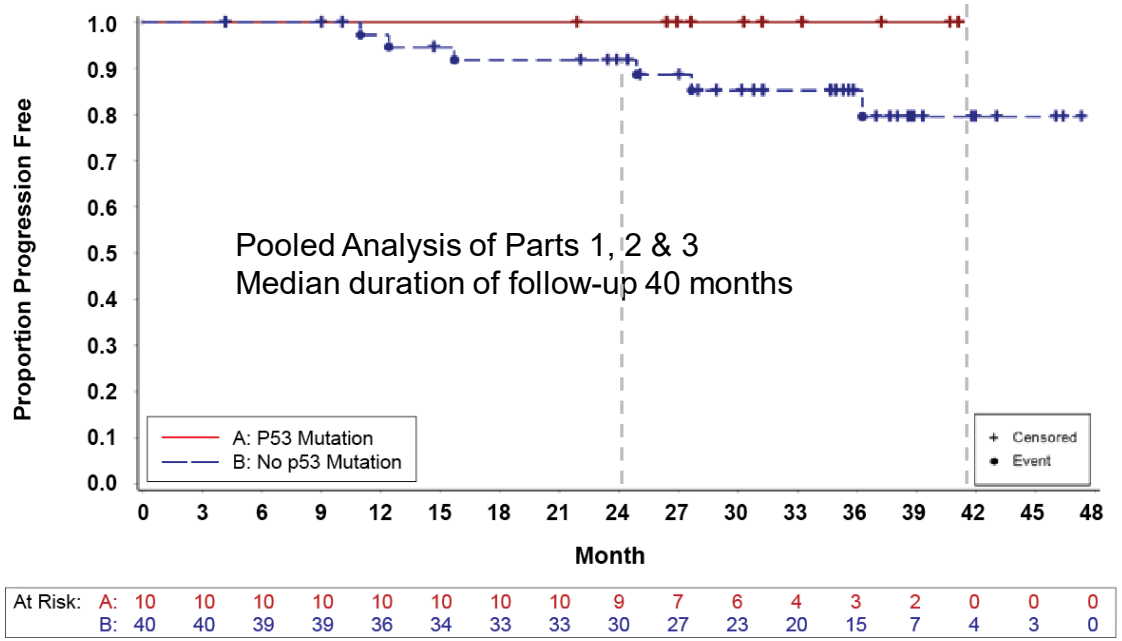
Zilovertamab: Potential in TP53 aberrant cancers including CLL

CIRM-0001 Phase 1/2 Study of Zilovertamab + ibrutinib in patients with CLL and aberrant TP53 (ASH 2022 Oral Presentation*)



PFS for p53 mut/del(17p) at **~42 months was 100%** for zilovertamab + ibrutinib (N=5 R/R, N=5 TN)

- Robust response rates and prolonged PFS in TP53-altered CLL to be further investigated preclinically, and extended into other tumor types
- Investigator-sponsored study of zilovertamab in combination with docetaxel in patients with metastatic CRPC to continue
- Partnerships and collaborations required to support future clinical trials
- AbbVie is voluntarily withdrawing accelerated FDA approval for ibrutinib in MCL and MZL
- Studies of zilovertamab combined with ibrutinib (CIRM-0001 and ZILO-301) closed due to changed BTKi commercial landscape

*Lee 2022, Blood

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Financial Information: ONCT (Nasdaq)

Cash & Cash Investments @ March 31, 2023 Cash Runway into 2025	$54.3M
Debt	$0M
Capitalization:	
Common Shares Outstanding	58.7M
Awards / Warrants in the Money @ March 31, 2023 (1)	0.9M
Fully Diluted in the Money	59.6M
Non-Dilutive Support • NIH Grants MOA, indication expansion	$3.7M

(1) Excludes out-of-the-money stock options, RSUs and warrants totaling ~14.3M

Anticipated Pipeline Milestones

ONCT-808 ROR1 CAR T cell therapy

- Aggressive B-cell NHL Phase 1/2 study initiation **1Q 2023**
  - Initial clinical data **2H 2023**
  - Additional clinical data readouts **2024**

ONCT-534 DAARI

- Prostate cancer IND submission **mid 2023**
  - Initiate Phase 1/2 study **2H 2023**
  - Initial clinical data **1H 2024**

Corporate Highlights

ONCT-808: AUTOLOGOUS CAR T CELL THERAPY TARGETING ROR1

- Initiated Phase 1/2 clinical study in aggressive B-cell NHL, including CD19 CAR T treatment failures
- Clinical manufacturing at the Dana-Farber Cancer Institute for first-in-human studies
- Research collaborations for next-gen CAR NK cell therapies with Karolinska Institutet

ONCT-534: DUAL-ACTION ANDROGEN RECEPTOR INHIBITOR (DAARI)

- Activity in preclinical prostate cancer models of androgen receptor inhibitor resistance, including AR mutations, AR overexpression and AR splice variants, such as AR-V7
- Positive pre-IND meeting with US FDA in December 2022

ZILOVERTAMAB: POTENTIALLY FIRST-IN-CLASS MONOCLONAL ANTIBODY TARGETING ROR1

- Clinical development with ibrutinib paused due to changing therapeutic landscape
- Encouraging 100% PFS for patients with CLL and TP53 aberrations to be further investigated

MULTIPLE CATALYSTS WITHIN CASH RUNWAY PERIOD

- Cash and short-term investments of $54.3M, expected to support operations into 2025
- ONCT-808 initial clinical data update in aggressive B-cell NHL in late 2023
- ONCT-534 IND filing planned in mid-2023, initial clinical data update in 1H 2024