UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): September 30, 2022

Alaunos Therapeutics, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**001-33038**	**84-1475642**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

8030 El Rio Street
Houston, TX 77054
(Address of principal executive offices, including zip code)

(346) 355-4099
(Registrant's telephone number, including area code)

Not applicable
(Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	**TCRT**	**The Nasdaq Stock Market LLC**

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 8.01 Other Events

On September 30, 2022, the previously announced proffered talk titled "Objective clinical response by KRAS mutation-specific TCR-T cell therapy in previously treated advanced Non-small cell lung cancer," was given at the CRI-ENCI-AACR Sixth International Cancer Immunotherapy Conference. A copy of the presentation is filed as Exhibit 99.1 to this Current Report on Form 8-K and is incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit No.	Description
99.1	Presentation.
104	Cover Page Interactive Data File (embedded within the Inline XBRL document).

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Alaunos Therapeutics, Inc.

Date. September 30, 2022

By: /s/ Melinda Lackey
Name: Melinda Lackey
Title: Senior Vice President, Legal

CRI-ENCI-AACR SIXTH INTERNATIONAL
CANCER IMMUNOTHERAPY CONFERENCE
TRANSLATING SCIENCE INTO SURVIVAL
September 28 - October 1, 2022 | New York Hilton Midtown | New York, NY

Exhibit 99.1

Objective clinical response by *KRAS* mutation-specific TCR-T cell therapy in previously treated advanced non-small cell lung cancer

Marcelo V. Negrao, MD
Assistant Professor
Department of Thoracic / Head and Neck Medical Oncology
University of Texas MD Anderson Cancer Center

CANCER RESEARCH INSTITUTE. ENCI AACR American Association for Cancer Research FINDING CURES TOGETHER

Forward Looking Statements Disclaimer

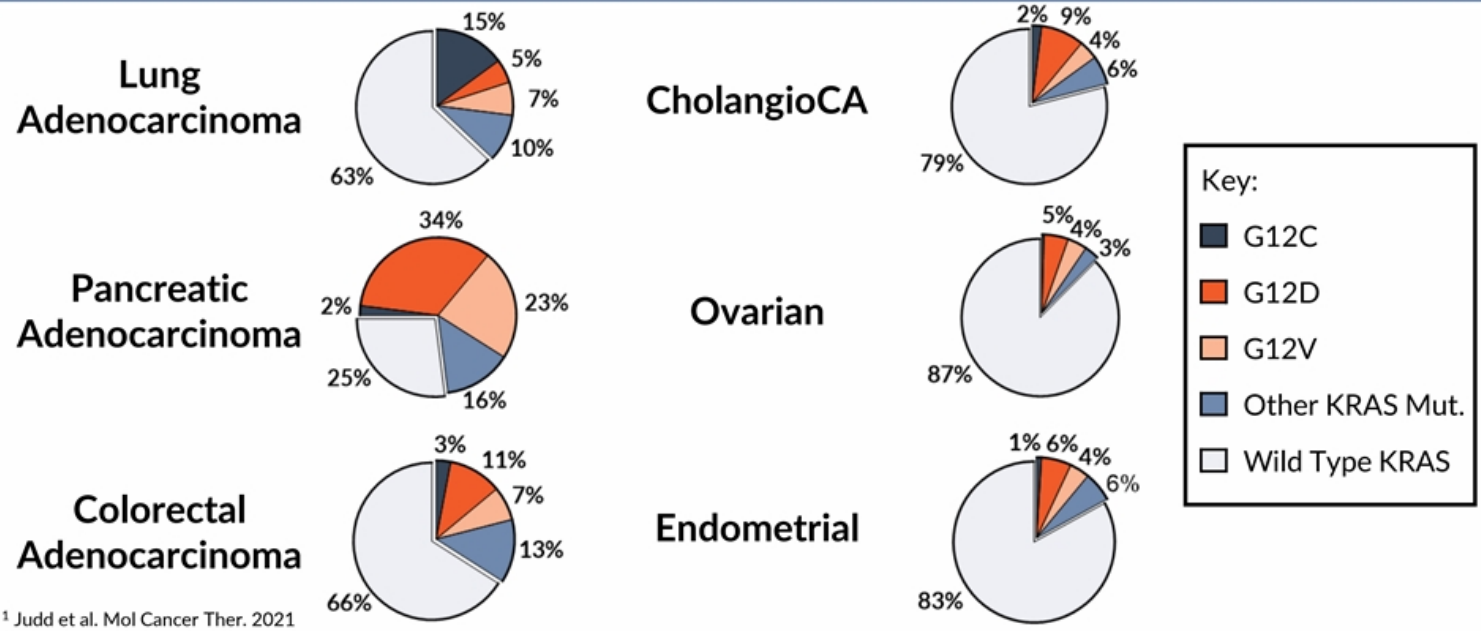
This presentation contains forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995, as amended. Forward-looking statements are statements that are not historical facts, and in some cases can be identified by terms such as “may,” “will,” “could,” “expects,” “plans,” “anticipates,” “believes” or other words or terms of similar meaning. These statements include, but are not limited to, statements regarding Alaunos Therapeutics, Inc.'s ("Alaunos" or the "Company") business and strategic plans, the anticipated outcome of preclinical and clinical studies by the Company or its third-party collaborators, the Company’s manufacturing capabilities and the timing of the Company's research and development programs. Although the management team of Alaunos believes that the expectations reflected in such forward-looking statements are reasonable, investors are cautioned that forward-looking information and statements are subject to various risks and uncertainties, many of which are difficult to predict and generally beyond the control of Alaunos, that could cause actual results and developments to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. These risks and uncertainties include, among other things, the uncertainties inherent in research and development, future clinical data and analysis, whether any of Alaunos’ product candidates will advance further in the preclinical research or clinical trial process, including receiving clearance from the U.S. Food and Drug Administration or equivalent foreign regulatory agencies to conduct clinical trials and whether and when, if at all, they will receive final approval from the U.S. Food and Drug Administration or equivalent foreign regulatory agencies and for which indication and risk factors discussed or identified in the public filings with the Securities and Exchange Commission made by Alaunos, including those risks and uncertainties listed in the most recent periodic report filed by Alaunos with the Securities and Exchange Commission. This information is being provided as of the date of this presentation, and Alaunos does not undertake any obligation to update or revise the information contained in this presentation whether as a result of new information, future events, or any other reason.

Adoptive T-Cell Therapy has Activity in Solid Tumors

- Melanoma: expanded TILs ORR 34-56%[1]
- HPV+ SCC: HPV-TIL ORR 18-28%[2]
- MBC: enriched TILs ORR 67%[3]
- NSCLC: expanded TILs response rate 46%[4]
- CRC: TIL produced durable response[5]
- PDAC: durable response and persistence of TCR-T cells[6]

1. Rosenberg et al. Science 2015 / 2. Stevanonic et al. CCR 2019 / 3. Zacharakis et al. JCO 2022 / 4. Creelan et. al Nature Medicine 2021 / 5. Tran et al. NEJM 2016 / 6. Leidner et al. NEJM 2022

KRAS Mutations are Logical Targets for T-Cell Therapy due to High Prevalence in Epithelial Solid Tumors

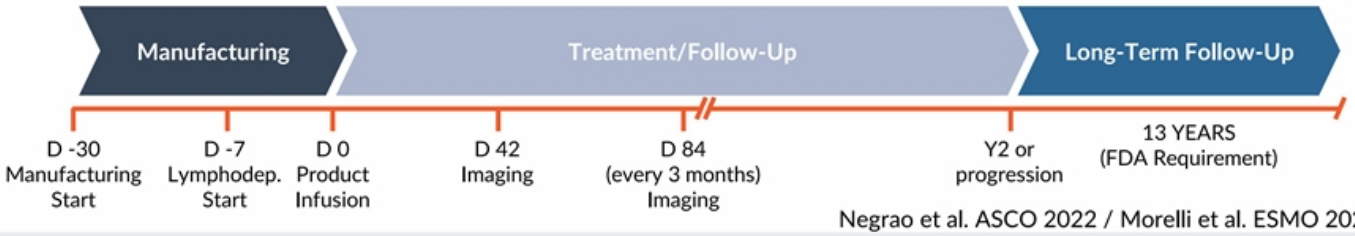


[1] Judd et al. Mol Cancer Ther. 2021

[2] Catalogue of Somatic Mutations in Cancer (COSMIC) database https://cancer.sanger.ac.uk/cosmic

Phase I/II Trial to Determine the Safety and Efficacy of Non-viral TCR-T Cell Therapy for Treatment of Solid Tumors

- ClinicalTrials.gov: NCT05194735
- Solid tumors failed 1+ lines of therapy
- HLA + cancer gene mutation match for TCR library
- Accelerated dose escalation: BOIN design
- 3 dose levels: 1 - <$10x10^9$ / 10 - <$70x10^9$ / 70 - $150x10^9$
- Objectives: safety / RP2D / manufacturing feasibility



Negrao et al. ASCO 2022 / Morelli et al. ESMO 2022

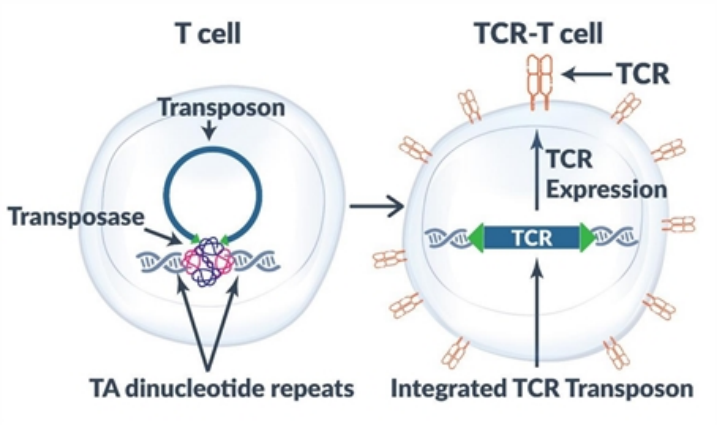
TCR Library Designed to Target Tumor Neoantigens Derived from Hotspot Mutations

- Common cancer gene mutations: *KRAS*, *TP53*, *EGFR*
- Common HLAs: A*02:01 / A*11:01
- Library expansion: identification of novel anti-tumor reactive TCRs
- More TCRs = more eligible patients

Genes	Mutations	HLA Types
KRAS	G12D	A*11:01 / C*08:02
	G12V	A*11:01 / C*01:02
TP53	R175H	A*02:01 / DRB1*13:01
	R248W	A*68:01
	Y220C	A*02:01 / DRB3*02:02
EGFR	E746-A750del	DPB1*01:01

Non-viral *Sleeping Beauty* System Designed to Enable Manufacture of TCR-T Cells without Complex Gene Editing

- Efficient integration without the complexity of gene editing or viral approaches
- Rapid, cost-effective manufacturing
- Accommodates large transgene size
- Expected to be scalable for clinical production



Patient 1: Immune Checkpoint Inhibitor and Chemotherapy Refractory KRAS G12D NSCLC

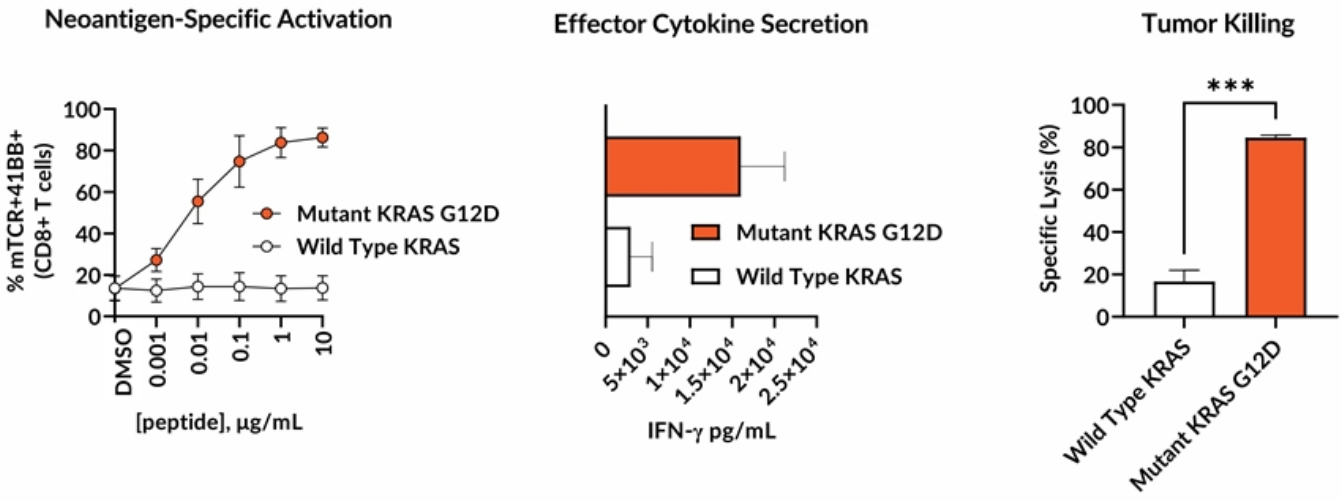
- 34yo, female, never smoker, lung adenocarcinoma
- Left lower lobectomy and adjuvant cisplatin and vinorelbine x 4 cycles
- Disease recurrence in the lungs 4 months after adjuvant treatment
- KRAS G12D mutation positive / tumor PD-L1 expression = 10%
- Carboplatin, pemetrexed, pembrolizumab x 4 cycles with response followed by pemetrexed and pembrolizumab maintenance x 22 cycles with disease progression

Patient 1: Immune Checkpoint Inhibitor and Chemotherapy Refractory KRAS G12D NSCLC

- Durvalumab + CTLA4 inhibitor + MEK inhibitor on trial – discontinued due to progression
- SHP2 inhibitor single-agent on trial – discontinued due to progression
- Library TCR match:

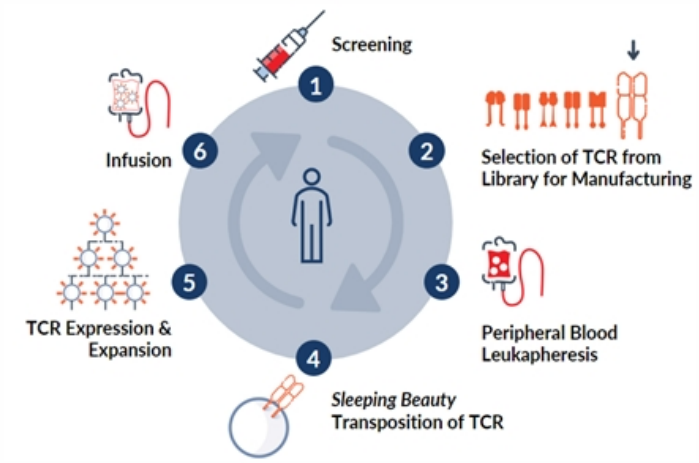
KRAS G12D	HLA-A*11:01

TCR-T Cells Observed to Specifically Recognize and Kill Targets Expressing KRAS G12D Presented by HLA-A*11:01



Preclinical Data

High TCR Expression and Purity of TCR-T Cells Manufactured with *Sleeping Beauty* Transposition



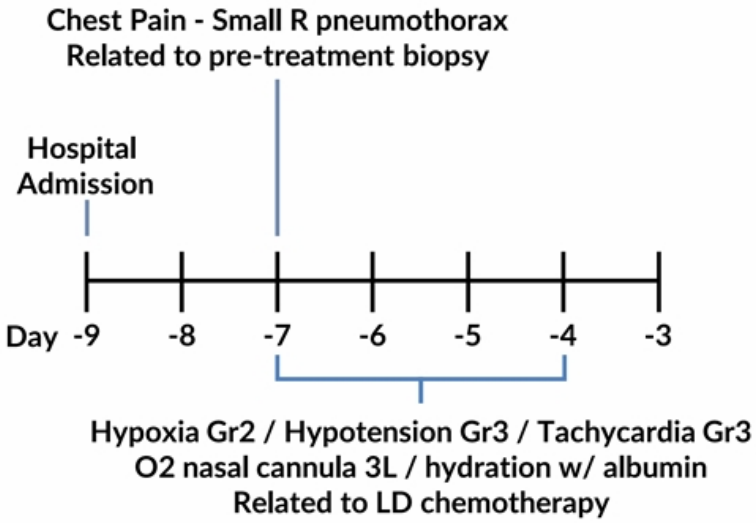
TCR-T Infusion Product
(Patient 1: KRAS G12D/HLA-A*11:01)

	Result
Viability	95.1%
Total TCR-T Cells	$9x10^9$
CD3+ Purity	99.7%
TCR+	95.2%
CD4:CD8 Ratio	0.32
VCN	5

Patient 1 Had Manageable Safety Events During Lymphodepletion Chemotherapy

Lymphodepletion Drug (LD)	Dose	Days of Administration Prior to TCR-T Infusion
Cyclophosphasmide	60 mg/kg	-8, -7
Fludarabine	25 mg/m^2	-8, -7, -5, -4, -3

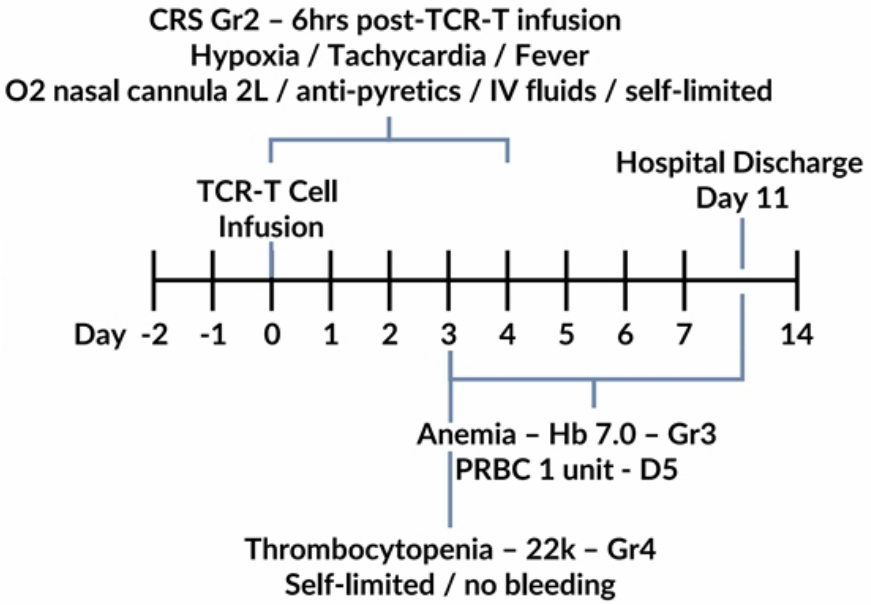
Note: Day -6 Fludarabine dose withheld



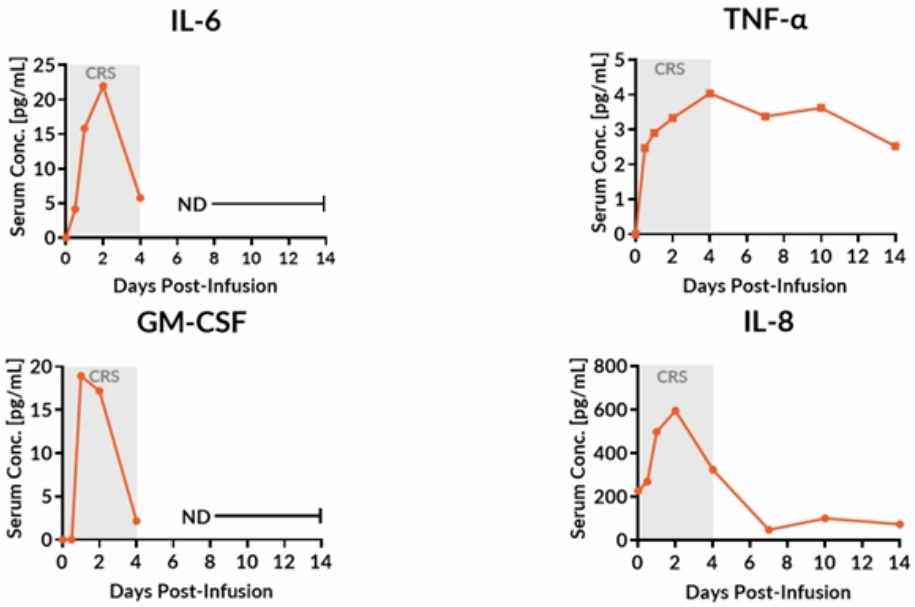
LD = Lymphodepletion

Patient 1 Had Manageable Safety Events After Lymphodepletion Chemotherapy and TCR-T cell infusion

TCR-T Cell Target	Dose
KRAS G12D/HLA-A*11:01	$9x10^9$ TCR+ T Cells (Dose Level 1)

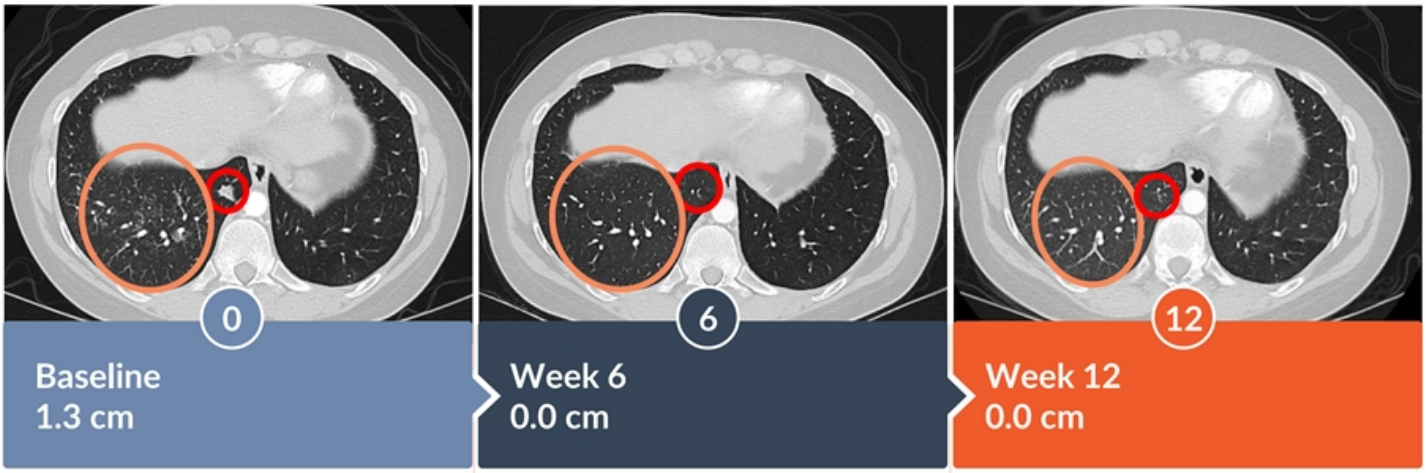


Patient 1 Had Transient Elevation in Inflammatory Cytokines Associated with Onset and Resolution of CRS

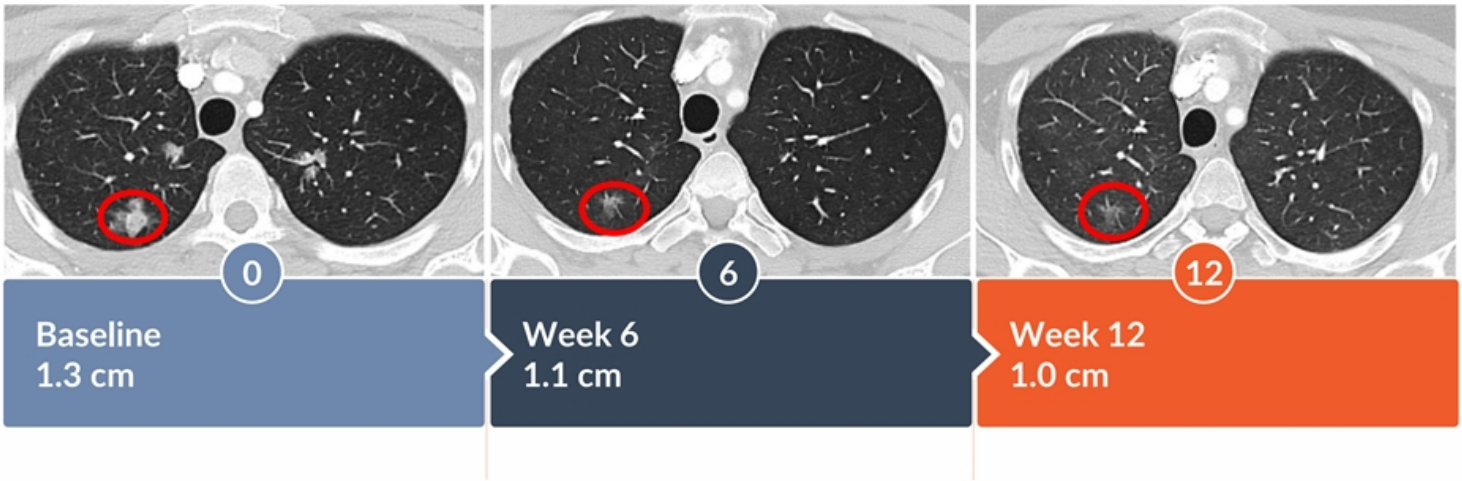


CRS = Cytokine Release Syndrome

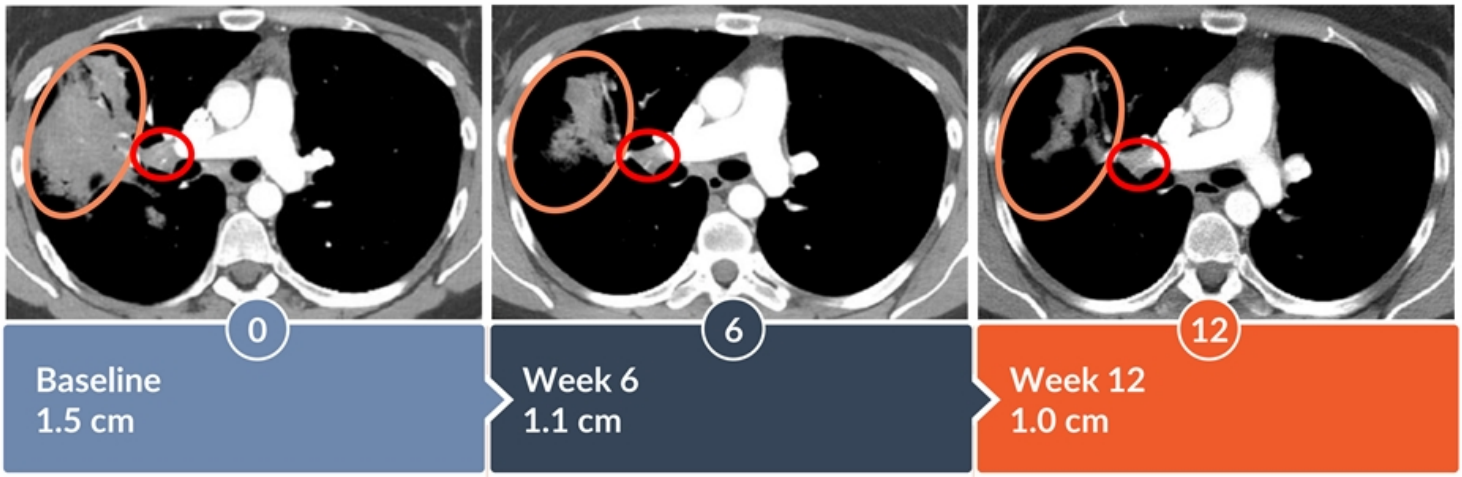
Patient 1: Complete Resolution of Right Lower Lobe Lesion



Patient 1: Reduction of Right Upper Lobe Lesion



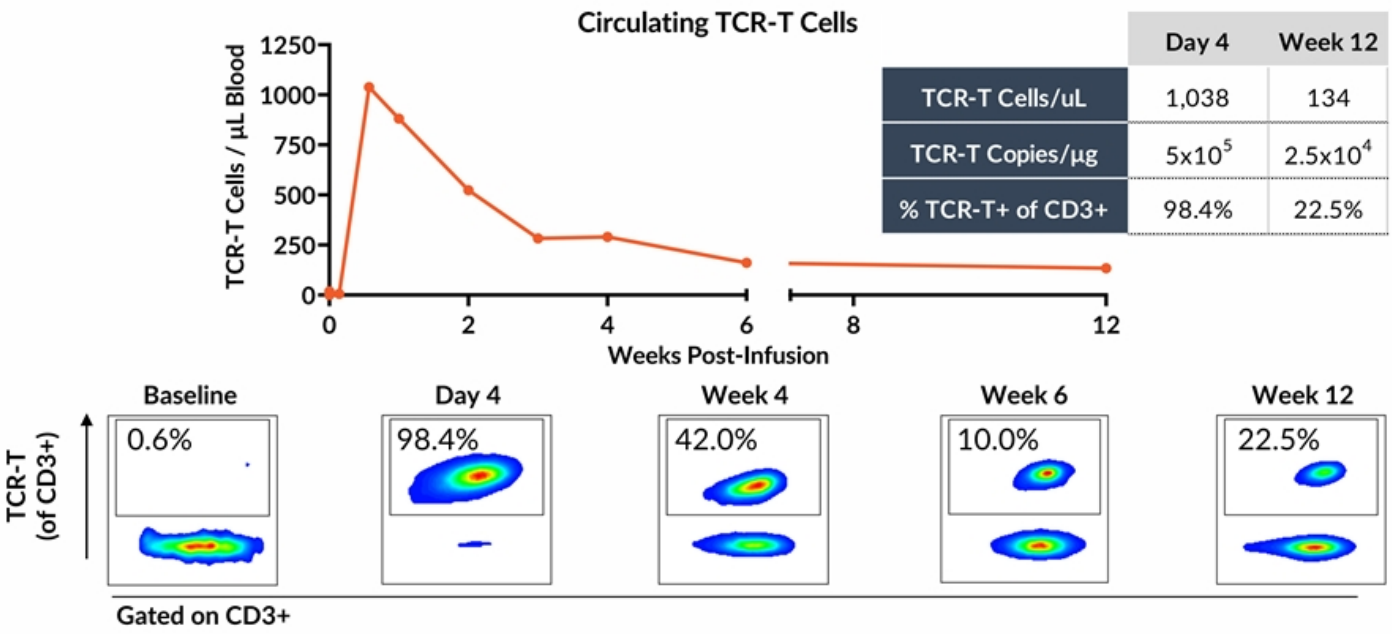
Patient 1: Reduction of Right Hilar Lymphadenopathy and of Non-Measurable Right Upper Lobe Lesion



Patient 1 Had a Confirmed Objective Partial Response at Week 12

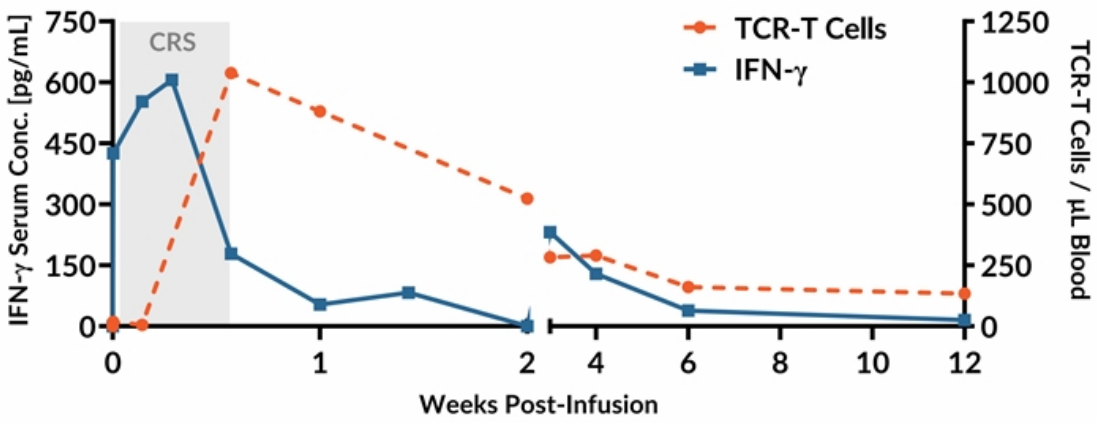
	Baseline	Week 6	Week 12
Target Lesions (mm)			
#1: Right lower lobe	13	0	0
#2: Right upper lobe	13	11	10
#3: Right hilar lymph node	15	11	10
Sum of Diameters (mm)	41	22	20
Percent Change		**-46.30%**	**-51.20%**
Non-Target Lesions			
Bilateral lung nodules		Non-CR/Non-PD	Non-CR/Non-PD
Overall Response		**Partial Response**	**Partial Response**

Patient 1 TCR-T Cells Exhibited Rapid Expansion and Ongoing Persistence at Week 12



	Day 4	Week 12
TCR-T Cells/uL	1,038	134
TCR-T Copies/µg	$5x10^5$	$2.5x10^4$
% TCR-T+ of CD3+	98.4%	22.5%

Patient 1 Serum Interferon-γ was Associated with TCR-T Cell Expansion and Persistence



CRS = Cytokine Release Syndrome

Patient 2: Previously Treated Advanced CRC

- 54yo, female, metastatic colorectal cancer
- Progressed on one prior line of therapy (FOLFIRI+Bevacizumab)
- Library TCR match:

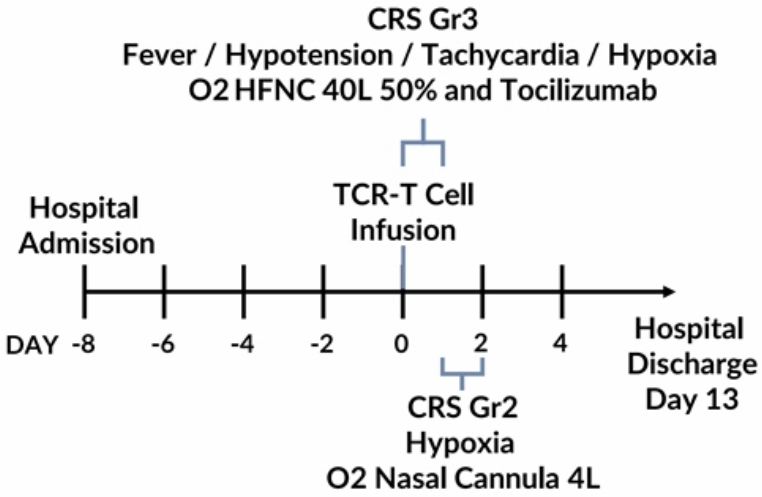
TP53 R175H	HLA-A*02:01

- TCR-T infusion of **$64x10^9$ TCR-T cells - Dose Level 2**

Patient 2 Had Manageable Safety Events After TCR-T Cell Infusion

TCR-T Cell Target	Dose
TP53 R175H/HLA-A*02:01	$64x10^9$ TCR+ T Cells (Dose Level 2)

Lymphodepletion Drug	Dose	Days of Administration Prior to TCR-T Infusion
Cyclophosphasmide	60 mg/kg	-7, -6
Fludarabine	25 mg/m^2	-7, -6, -5, -4, -3



HFNC = High flow nasal cannula

Patient 2 Achieved Best Overall Response of Stable Disease

	Baseline	Week 6	Week 12
Target Lesions			
#1: Pelvic Mass (mm)	65	48	67
#2: Retroperitoneal Lymph Node (mm)	27	30	28
Sum of Diameters (mm)	**92**	**78**	**95**
Percent Change		**-15.20%**	**21.80%**
New Lesion		No	Liver / Lung
Overall Response		**Stable Disease**	**Progressive Disease**

Note: Patient off study due to disease progression

Treatment of Patients 1 and 2 was Tolerable with a Manageable Safety Profile

- Cytopenias expected with lymphodepletion regimen were observed in both patients
- Manageable CRS observed
  - No mechanical ventilation
  - No ICU admission
  - No vasopressors
- No TCR-T cell related DLTs
- No ICANS

DLT = Dose limiting toxicity; ICANS = Immune effector cell-associated neurotoxicity syndrome

Confirmed Objective Response in Immune Checkpoint Inhibitor Refractory KRAS G12D-mutant NSCLC Treated with TCR-T Cells

- Immune checkpoint inhibitor refractory advanced NSCLC patient treated with TCR-T cells has confirmed partial response
- First confirmed response to TCR-T cell therapy targeting hotspot cancer gene mutation in advanced NSCLC to our knowledge
- KRAS G12D / HLA-A*11:01: viable target for TCR-T cell therapy

Sleeping Beauty System is a Promising Platform for TCR-T Cell Therapy and Trial Enrollment is Ongoing

- First report of successful TCR-T cell therapy using non-viral *Sleeping Beauty* system for solid tumors
- Proof of concept of manufacturing TCR-T targeting *KRAS* and *TP53*
- Ongoing persistence of TCR-T cells at Week 12 at Dose Level 1 in Patient 1
- Phase I dose escalation: enrollment ongoing for patients with advanced solid tumors harboring *KRAS*, *TP53* and *EGFR* mutations

Acknowledgements

Thank you to all the patients and their families

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Alaunos Therapeutics
Nathan Demars
Jaymes Holland
Matthew R. Collinson-Pautz
Frances Adeyemi
Amanda Montoya
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Lauren Heese
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Vanessa Jackson
Kim Cooper
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ClinicalTrials.gov: NCT05194735