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) April 16, 2024

TSCAN THERAPEUTICS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**001-40603**	**82-5282075**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(I.R.S. Employer Identification No.)**

830 Winter Street, Waltham, Massachusetts	**02451**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code (857) 399-9500

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	**Trade Symbol(s)**	**Name of each exchange on which registered**
Voting Common Stock, $0.0001 par value per share	TCRX	The Nasdaq Global 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 7.01 Regulation FD Disclosure.

On April 16, 2024, TScan Therapeutics, Inc. (the "Company") issued a press release to provide an update on its solid tumor and heme malignancies clinical programs. The Company also released an updated company presentation, which includes, among others, additional details of its solid tumor and heme malignancies clinical programs. Copies of the press release and the updated company presentation are attached as Exhibits 99.1 and 99.2 to this Current Report on Form 8-K. The updated company presentation will also be available in the investor relations section of the Company's website at https://ir.tscan.com. Information contained on the Company's website is not incorporated by reference into this Current Report on Form 8-K, and you should not consider any information on, or that can be accessed from, the Company's website as part of this Current Report on Form 8-K.

The information under this Item 7.01, including Exhibits 99.1 and 99.2 hereto, is being furnished and shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such a filing. The Company undertakes no obligation to update, supplement or amend the material attached hereto as Exhibits 99.1 and 99.2.

Item 8.01 Other Events.

On April 16, 2024, the Company provided an update on its solid tumor and heme malignancies clinical programs.

Solid Tumor Program: TScan continues to expand the ImmunoBank, a collection of therapeutic TCR-Ts that target different cancer-associated antigens presented on diverse HLA types. TScan's strategy is to treat patients with multiple TCR-Ts to overcome tumor heterogeneity and prevent resistance that may arise from either target or HLA loss (screening protocol: NCT05812027; treatment protocol: NCT05973487).

- Phase 1 solid tumor clinical study has been initiated; first three patients expected to be dosed in early May 2024.
- More than 40 patients have completed all biomarker testing in the screening protocol across a broad array of tumor types. 60% of patients qualify for at least one TCR-T in the ImmunoBank and approximately 30% are eligible for multiplex therapy (T-Plex), potentially enabling rapid enrollment into the treatment protocol upon disease progression.
- Patients have been identified across all six TCR-T cohorts with dosing expected to commence early May.
- Initial data on patients from both singleplex and multiplex cohorts expected in the second half of 2024.
- Additional IND filings planned to continue to expand the ImmunoBank.
- Long-term duration of response data for multiplex therapy anticipated in 2025.

Heme Malignancies Program: TScan's two lead TCR-T cell therapy candidates, TSC-100 and TSC-101, are designed to treat residual disease and prevent relapse in patients with acute myeloid leukemia (AML), acute lymphocytic leukemia (ALL), or myelodysplastic syndromes (MDS) undergoing allogeneic hematopoietic cell transplantation (HCT) (NCT05473910).

- All eight patients treated with TSC-100 or TSC-101 remain MRD negative, relapse-free with no detectable cancer to date in either bone marrow biopsies or peripheral blood (median follow-up of >10 months) and no dose limiting toxicities observed to date.
- To date, all but one patient has exhibited complete donor chimerism in all subsets of blood cells at all time-points, indicating that only donor-derived cells are present in these patients following treatment with either TSC-100 or TSC-101. One patient with T-ALL who was treated with TSC-100 at the lowest dose level exhibited minimally detectable (<0.3%) mixed donor chimerism at 10.5 months and 12 months post-transplant.
    - No detectable mixed chimerism was observed in the malignant cell lineage (CD3+ T-cells) for this patient; mixed chimerism was only observed in healthy nonmalignant blood cells (CD33+ myeloid cells)

- In contrast, for the control arm (transplant alone), eight patients have now been enrolled and only one has achieved and maintained complete donor chimerism to date. Two patients relapsed approximate six months post-transplant and one of these patients died approximately three months later. A third patient required clinical intervention on day 133 because of concerns of impending relapse, and a fourth died 21 days post-transplant.
- Opening of expansion cohorts at the recommended Phase 2 dose level to further characterize safety and evaluate translational and efficacy endpoints is planned for the third quarter of 2024.
- Completion of Phase 1 enrollment and reporting of one-year clinical and translational data on initial patients is anticipated in the second half of 2024.
- Expects to initiate registration trial pending feedback from regulatory authorities and report two-year relapse data in 2025.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits:

Exhibit No.	Description
99.1	Press release, dated April 16, 2024
99.2	Company Presentation
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

Forward-Looking Statements

This Current Report on Form 8-K contains forward-looking statements that are based on the Company's beliefs and assumptions and on information currently available to the Company on the date of this Current Report. These forward-looking statements involve substantial risks and uncertainties. Any statements in this Current Report on Form 8-K other than statements of historical fact, including statements about the Company's future expectations, plans and prospects, constitute forward-looking statements for purposes of the safe harbor provisions under the Private Securities Litigation Reform Act of 1995. Forward-looking statements include any statements about the Company's strategy, operations and future expectations and plans and prospects for the Company, and any other statements containing the words "anticipate," "believe," "estimate," "expect," "intend", "goal," "may", "might," "plan," "predict," "project," "seek," "target," "potential," "will," "would," "could," "should," "continue," and similar expressions. Such forward-looking statements involve substantial risks and uncertainties that could cause the Company's financial and operating results, performance or achievements to differ significantly from those expressed or implied by the forward-looking statements, including the factors discussed in the "Risk Factors" section contained in the quarterly and annual reports that the Company files with the Securities and Exchange Commission. Any forward-looking statements represent the Company's views only as of the date of this Current Report on Form 8-K. The Company anticipates that subsequent events and developments may cause its views to change. While the Company may elect to update these forward-looking statements at some point in the future, the Company specifically disclaims any obligation to do so except as required by law even if new information becomes available in the future.

SIGNATURE

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.

TScan Therapeutics, Inc.

Date: April 16, 2024

By: /s/ Gavin MacBeath
Gavin MacBeath
Chief Executive Officer

TScan Therapeutics Provides Clinical Pipeline Update and Highlights Near-Term Priorities

Over 40 solid tumor patients have completed all biomarker testing in the screening protocol; ~60% of these patients qualify for at least one TCR-T in the ImmunoBank and ~30% are eligible for multiplex therapy

Patients identified across all six TCR-T cohorts in solid tumor program with dosing of first three expected in early May

All eight patients in the heme program treated with TSC-100 or TSC-101 remain relapse-free with no detectable cancer to date; median follow-up of >10 months

WALTHAM, Mass., April 16, 2024 — TScan Therapeutics, Inc. (Nasdaq: TCRX), a clinical-stage biopharmaceutical company focused on the development of T cell receptor (TCR)-engineered T cell therapies (TCR-T) for the treatment of patients with cancer, today provided an update on its solid tumor and heme malignancies clinical programs.

"We continue to make meaningful progress across both our solid tumor and heme malignancies Phase 1 clinical programs. As we rapidly approach dosing the first patients in the solid tumor program, I am pleased to share that over 40 patients have completed all biomarker testing in the screening protocol, with the majority qualifying for at least one TCR-T in our ImmunoBank and many qualifying for multiplex therapy. This should allow for rapid enrollment into the treatment protocol over the course of the year," said Gavin MacBeath, Ph.D., Chief Executive Officer. "With respect to the heme program, we are encouraged to see continued positive data with all treatment-arm patients remaining relapse-free with no detectable cancer to date, now with a median follow-up of over 10 months."

Solid Tumor Program: TScan continues to expand the ImmunoBank, a collection of therapeutic TCR-Ts that target different cancer-associated antigens presented on diverse HLA types. TScan's strategy is to treat patients with multiple TCR-Ts to overcome tumor heterogeneity and prevent resistance that may arise from either target or HLA loss (screening protocol: NCT05812027; treatment protocol: NCT05973487).

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About TScan Therapeutics, Inc.

TScan is a clinical-stage biopharmaceutical company focused on the development of T cell receptor (TCR)-engineered T cell therapies (TCR-T) for the treatment of patients with cancer. The Company's lead TCR-T candidates, TSC-100 and TSC-101, are in development for the treatment of patients with hematologic malignancies to prevent relapse following allogeneic hematopoietic cell transplantation. The Company is also developing multiplex TCR-T candidates for the treatment of various solid tumors. The Company has developed and continues to expand its ImmunoBank, the Company's repository of therapeutic TCRs that recognize diverse targets and are associated with multiple HLA types, to provide customized multiplex TCR-T candidates for patients with a variety of cancers.

Forward-Looking Statements

This release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including, but not limited to, express or implied statements regarding the Company's plans, progress, and timing relating to the Company's hematologic malignancies and solid tumor programs; the potential benefits of any of the Company's proprietary platforms, multiplexing, or current or future product candidates in treating patients; and the Company's goals, strategy, and focus. TScan intends such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 21E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. In some cases, you can identify forward-looking statements by terms such as, but not limited to, "may," "might," "will," "objective," "intend," "should," "could," "can," "would," "expect," "believe," "anticipate," "project," "target," "design," "estimate," "predict," "potential," "plan," "on track," or similar expressions or the negative of those terms. Such forward-looking statements are based upon current expectations that involve risks, changes in circumstances, assumptions, and uncertainties. The express or implied forward-looking statements included in this release are only predictions and are subject to a number of risks, uncertainties and assumptions, including, without limitation: the beneficial characteristics, safety, efficacy, therapeutic effects and potential advantages of TScan's TCR-T therapy candidates; the progress of the solid tumor and heme malignancies Phase 1 clinical programs being indicative or predictive of the success of each program; TScan's expectations regarding its preclinical studies being predictive of clinical trial results; the completion of biomarker testing of over 40 patients being indicative or predictive of enrollment of the patients over the course of the year; TScan's recently approved INDs being indicative or predictive of bringing TScan closer to its goal of providing customized TCR-T therapies to treat patients with cancer; the timing of the launch, initiation, progress, expected results and announcements of TScan's preclinical studies, clinical trials and its research and development programs; TScan's timeline regarding its filing of INDs for its TCRs throughout the year; TScan's timeline of the solid tumor program and the heme malignancies program; TScan's ability to enroll patients for its clinical trials within its expected timeline; TScan's plans relating to developing and commercializing its TCR-T therapy candidates, if approved, including sales strategy; estimates of the size of the addressable market for TScan's TCR-T therapy candidates; TScan's manufacturing capabilities and the scalable nature of its manufacturing process; TScan's estimates regarding expenses, future milestone payments and revenue, capital requirements and needs for additional financing; TScan's expectations regarding competition; TScan's

anticipated growth strategies; TScan's ability to attract or retain key personnel; TScan's ability to establish and maintain development partnerships and collaborations; TScan's expectations regarding federal, state and foreign regulatory requirements; TScan's ability to obtain and maintain intellectual property protection for its proprietary platform technology and our product candidates; the sufficiency of TScan's existing capital resources to fund its future operating expenses and capital expenditure requirements; and other factors that are described in the "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" sections of TScan's most recent Annual Report on Form 10-K and any other filings that TScan has made or may make with the SEC in the future. Any forward-looking statements contained in this release represent TScan's views only as of the date hereof and should not be relied upon as representing its views as of any subsequent date. Except as required by law, TScan explicitly disclaims any obligation to update any forward-looking statements.

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Exhibit 99.2

TScan Therapeutics

April 2024

Disclaimers and forward-looking statements

This presentation and the accompanying discussion contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including, but not limited to, express or implied statements regarding the Company's plans, progress, and timing relating to the Company's solid tumor programs and the presentation of data, the Company's current and future research and development plans or expectations, the structure, timing and success of the Company's planned preclinical development, submission of INDs, and clinical trials, the potential benefits of any of the Company's proprietary platforms, multiplexing, or current or future product candidates in treating patients, the Company's ability to fund its operating expenses and capital expenditure requirements with its existing cash and cash equivalents, and the Company's goals and strategy. TScan intends such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 21E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. In some cases, you can identify forward-looking statements by terms such as, but not limited to, "may," "might," "will," "objective," "intend," "should," "could," "can," "would," "expect," "believe," "anticipate," "project," "target," "design," "estimate," "predict," "potential," "plan," "on track," or similar expressions or the negative of those terms. Such forward-looking statements are based upon current expectations that involve risks, changes in circumstances, assumptions, and uncertainties. The express or implied forward-looking statements included in this presentation are only predictions and are subject to a number of risks, uncertainties and assumptions, including, without limitation: the beneficial characteristics, safety, efficacy, therapeutic effects and potential advantages of TScan's TCR-T therapy candidates; TScan's expectations regarding its preclinical studies being predictive of clinical trial results; the timing of the initiation, progress and expected results of TScan's preclinical studies, clinical trials and its research and development programs; TScan's plans relating to developing and commercializing its TCR-T therapy candidates, if approved, including sales strategy; estimates of the size of the addressable market for TScan's TCR-T therapy candidates; TScan's manufacturing capabilities and the scalable nature of its manufacturing process; TScan's estimates regarding expenses, future milestone payments and revenue, capital requirements and needs for additional financing; TScan's expectations regarding competition; TScan's anticipated growth strategies; TScan's ability to attract or retain key personnel; TScan's ability to establish and maintain development partnerships and collaborations; TScan's expectations regarding federal, state and foreign regulatory requirements; TScan's ability to obtain and maintain intellectual property protection for its proprietary platform technology and our product candidates; the sufficiency of TScan's existing capital resources to fund its future operating expenses and capital expenditure requirements; and other factors that are described in the "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" sections of TScan's most recent Annual Report on Form 10-K and any other filings that TScan has made or may make with the SEC in the future.

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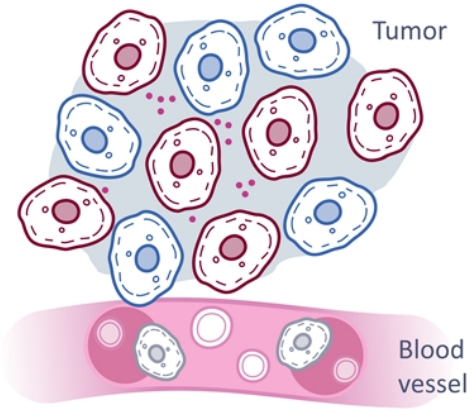
How do we aim to cure cancer?

PROBLEM

- Cancer is heterogeneous
- Cancer is rapidly evolving

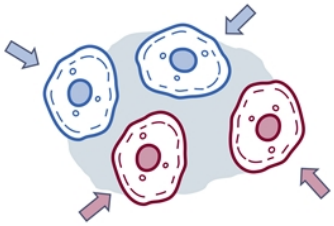


PROVEN SOLUTIONS

1. Treat cancer when it is at its lowest

HEME PROGRAM

2. Treat with multiple agents simultaneously



SOLID TUMOR PROGRAM

TSCAN THERAPEUTICS

TScan is building on the remarkable success of immunotherapy

What we have learned from immuno-oncology

Checkpoint therapy (Keytruda®, Yervoy®, Opdivo®)

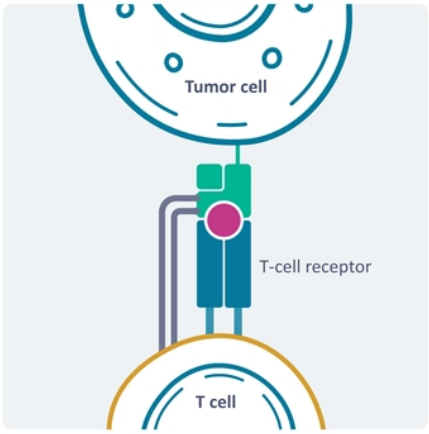
- ✓ Unleashing a patient's T cells can lead to long-term remissions and even cures
- ✗ Most patients lack anti-cancer T cells and do not respond

CAR-T therapy (Kymriah®, Yescarta®, Breyanzi®)

- ✓ Genetically reprogramming T cells cures patients with certain heme malignancies
- ✗ Broader applications of CAR-T, particularly in solid tumors, remains challenging

Our proposed solution is TCR-T cell therapy

Genetically reprogramming T cells with T-cell receptors leverages the body's natural mechanism for fighting cancer



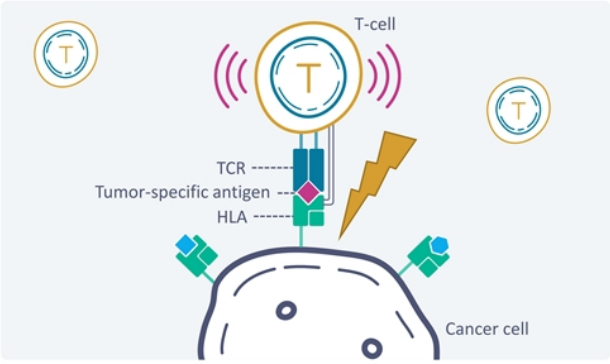
TSCAN THERAPEUTICS

T-cells search for and kill abnormal cells

Normal cell

Healthy cells display normal self-antigens that do not activate circulating T-cells

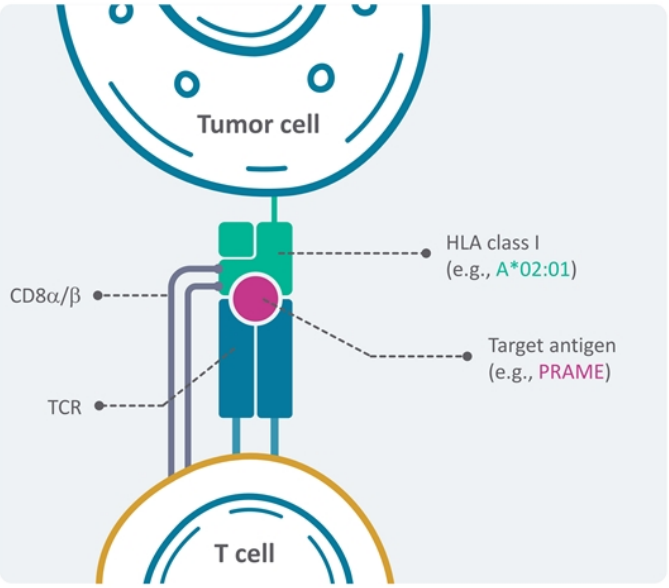
Cancer cell



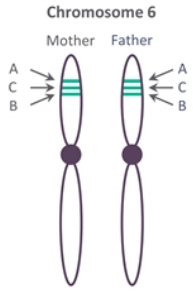
Tumor-specific antigens activate circulating T-cells to kill cancer cells

TSCAN THERAPEUTICS

TScan is targeting the most frequent HLAs to address a broad patient population



Everyone has six class I HLAs



There are 100s of different HLA types

~90% of people in the U.S. are positive for at least one of the top six HLA types

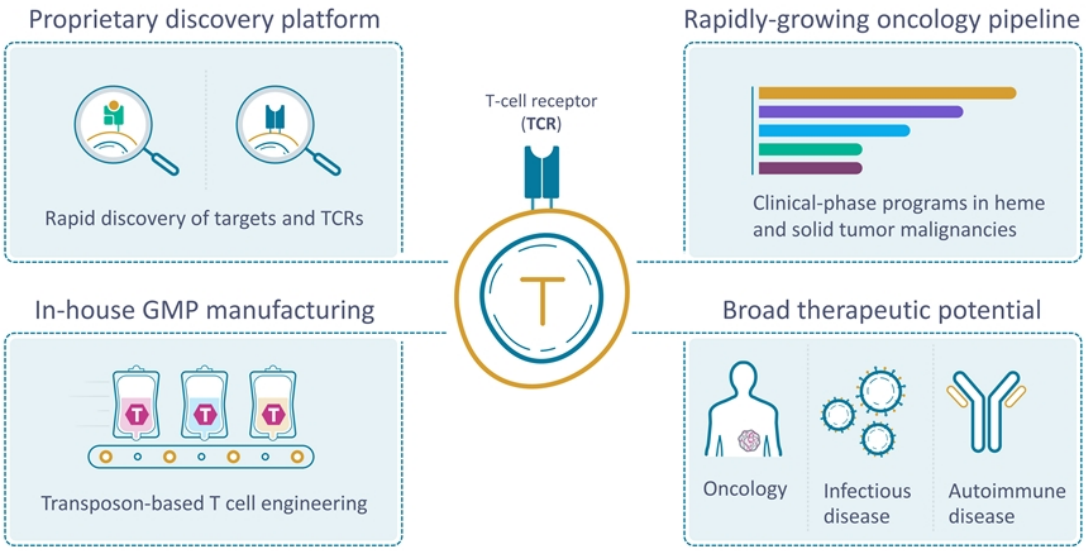
	% people positive for each HLA type		
HLA type	United States	Europe	Asia
A*02:01	42	47	19
A*01:01	24	26	14
A*03:01	22	25	7.0
B*07:02	20	21	8.1
C*07:02	24	23	24
A*24:02	17	19	37

Most TCR-T companies only target **one** HLA (A*02:01)

TScan is developing a broad pipeline targeting the top **six** HLAs

TSCAN THERAPEUTICS

TScan is a fully integrated, next-generation TCR-T cell therapy company

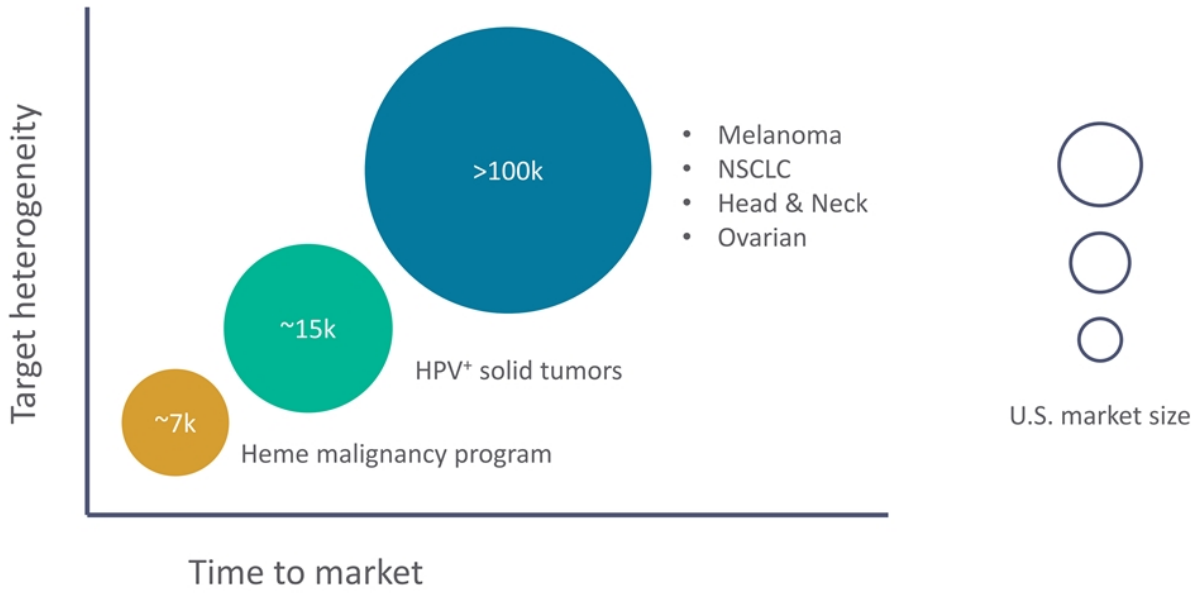


TSCAN THERAPEUTICS

Platform delivers broad proprietary pipeline

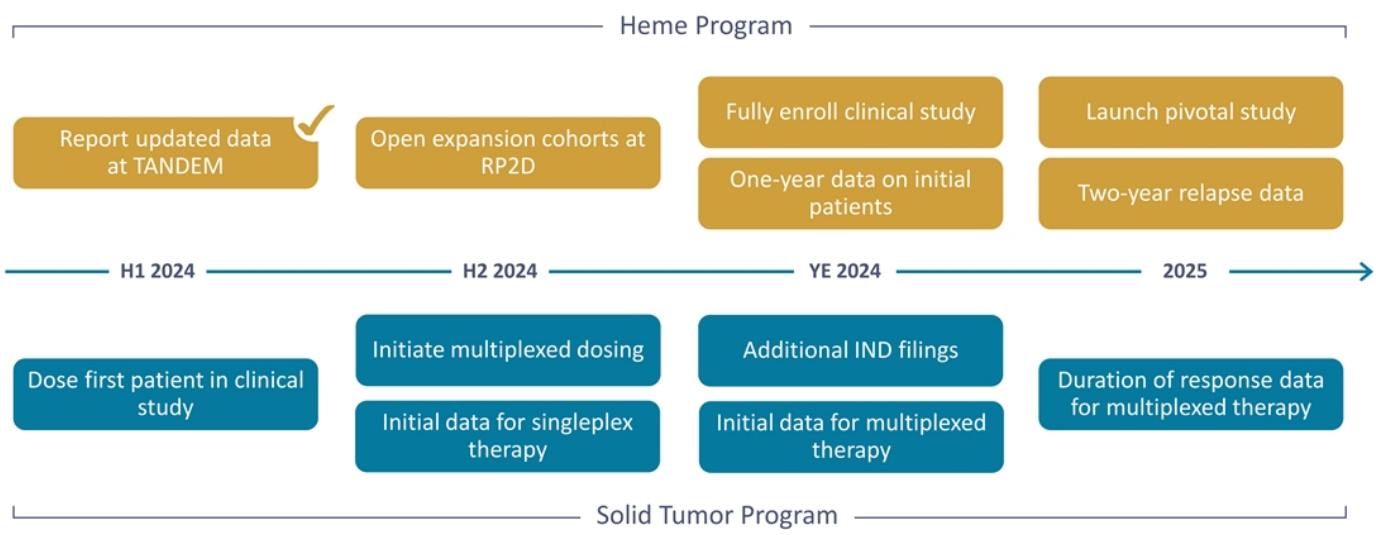
TSCAN THERAPEUTICS

TScan programs are designed to sequentially build value



TSCAN THERAPEUTICS

Steady value-generating data flow planned across clinical programs



TSCAN THERAPEUTICS

Heme malignancies: targeting residual disease to prevent relapse in patients undergoing allogeneic HCT

TSCAN THERAPEUTICS

Relapse after hematopoietic cell transplant remains an unmet need

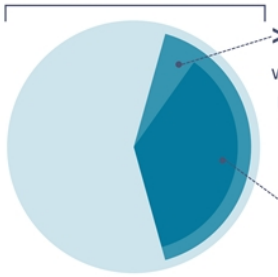
AML, MDS, some ALL not addressed by CAR-T due to shared antigens with normal blood cells

~35,000
cases/year US

Allogeneic hematopoietic cell transplant (HCT) expected to remain standard of care

Allo-HCT creates a unique opportunity to safely target residual cancer cells while sparing normal blood cells

~7,350[1]
undergo transplant



>33% relapse within 2 years[2]
RIC range 38-44%
MAC range 26-30%

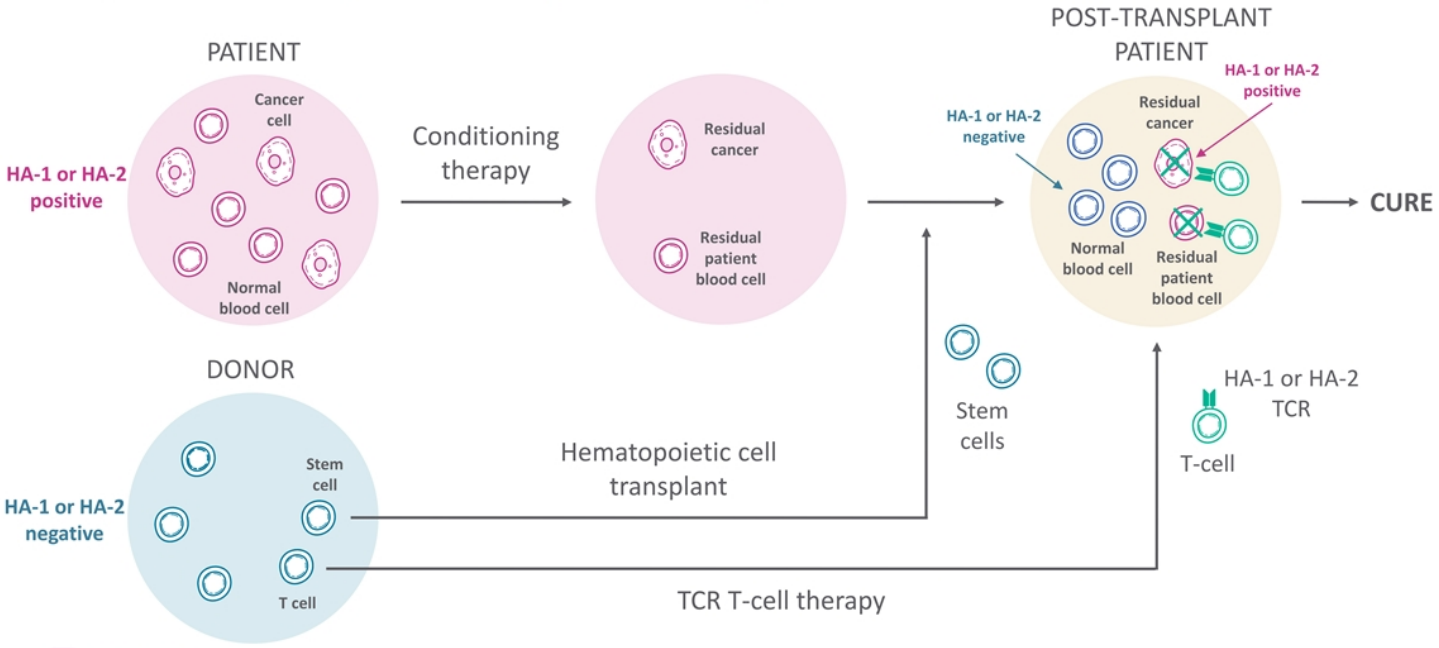
↓

>90% mortality within 1 year[2]

Targeting antigens mismatched between patients and donors can potentially prevent relapse after allo-HCT

1. CIBMTR summary statistics 2022, allogeneic transplants for malignant diseases in 2019 before the COVID-19 pandemic
2. CIBMTR analysis of AML, ALL, MDS allogeneic transplants with myeloablative (MAC) or reduced intensity conditioning (RIC) between 2017-2019 with 2-year follow-up; MAC relapse range 26-30%, RIC relapse range 38-44%

TSC-100 and TSC-101 are engineered TCR-T cells designed to eliminate residual recipient cells and prevent relapse following HCT

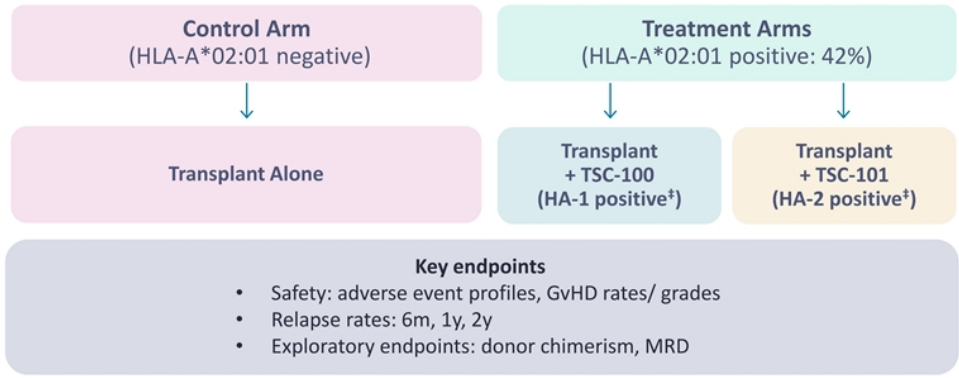


TSCAN THERAPEUTICS

Multi-arm Phase 1 trial for TSC-100 & TSC-101 has reached highest dose level

AML, MDS, ALL undergoing haploidentical transplant with reduced intensity conditioning

Dose Level	Day 21	Day 61
1	5×10^6/kg	
2	5×10^6/kg	5×10^6/kg
3	5×10^6/kg	2×10^7/kg



Key endpoints

- Safety: adverse event profiles, GvHD rates/ grades
- Relapse rates: 6m, 1y, 2y
- Exploratory endpoints: donor chimerism, MRD

Expected relapse rates for HCT alone	
6 months	22%
1 year	33%
2 years	42%

CIBMTR analysis of RIC-haplo transplants from 2017-2019

TSCAN THERAPEUTICS

‡ >99% patients are either HA-1 or HA-2 positive

Risk factors well-balanced between control-arm and treatment-arm patients

	Control Arm								TSC-100				TSC-101			
Patient ID	Control 1	Control 2	Control 3	Control 4	Control 5	Control 6	Control 7	Control 8	TSC-100 DL1	TSC-100 DL2	TSC-100 DL3	TSC-100 DL3	TSC-101 DL1	TSC-101 DL2-supp	TSC-101 DL2	TSC-101 DL3-supp
Diagnosis	MDS	MDS	MDS	AML	AML	AML	AML	AML	T-ALL	AML	AML	MDS	MDS	AML	B-ALL	B-ALL
Molecular Markers	Trisomy 8, SRSF2 ASXL1	None	Del5q Mono 7 mTP53	Mono 7, RUNX1, EZH2	SETB1, WT1, DNMT3A	FLT3-ITD NPM1 WT1	Pending	mTP53 KRAS ALK	ATM <2%	FLT3-ITD	Trisomy 8 IDH2, NRAS, ASXL1	SRSF2 ASXL1 STAG2	Del5q, mTP53	IDH2, SRSF2, ASXL1 CUX1	n/a	n/a
Pre-HCT MRD	**Positive**	Negative	**Positive**	Negative	**Positive**	Negative	Negative	**Positive**	**Positive**	Negative	**Positive**	**Positive**	**Positive**	**Positive**	Negative	Negative
RIC regimen	Flu/ Cy/ TBI	Flu/ Cy/ TBI	Flu/Mel/ Thio	Flu/ Cy/ TBI	Flu/Mel/TBI	Flu/Mel/ TBI	Flu/Mel/ TBI	Flu/Cy/ TBI	Flu/ Cy/ TBI	Thio/ Bu/ Flu	Flu/Mel / TBI	Flu/Cy/ TBI	Flu/ Mel/ TBI	Flu/Mel / TBI	Flu/Mel / TBI	Flu/Mel / TBI
Dose Level	N/A								DL1	DL2	DL3	DL3	DL1	sDL2‡	DL2	sDL3‡
TCR-T dosing Day	N/A								Day 29	Day 25 Day 76	Day 34 Day 75	Day 27 Day 69	Day 21	Day 27 Day 82	Day 21 Day 62	Day 27 Day 70
Last Post-HCT Day	Day 528	Day 161*	Day 180*	Day 227	Day 148	Day 133	Day 21*	Day 63	Day 388	Day 351	Day 217	Day 164	Day 421	Day 358	Day 295	Day 190

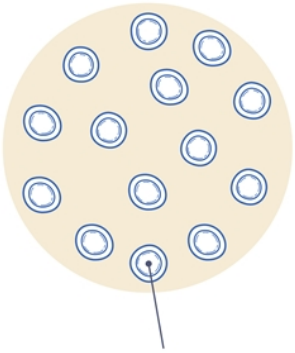
‡ Dose did not meet target dose criteria; *Patient came off study due to relapse or death

Data cutoff April 12, 2024

Donor chimerism serves as an early surrogate of efficacy

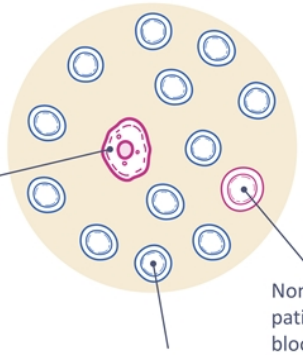
Post-transplant Patient

Complete donor chimerism
(low risk of relapse[1,2])



Normal, donor-derived blood cell

Mixed donor chimerism
(high risk of relapse[1,2])



Malignant, patient-derived blood cell

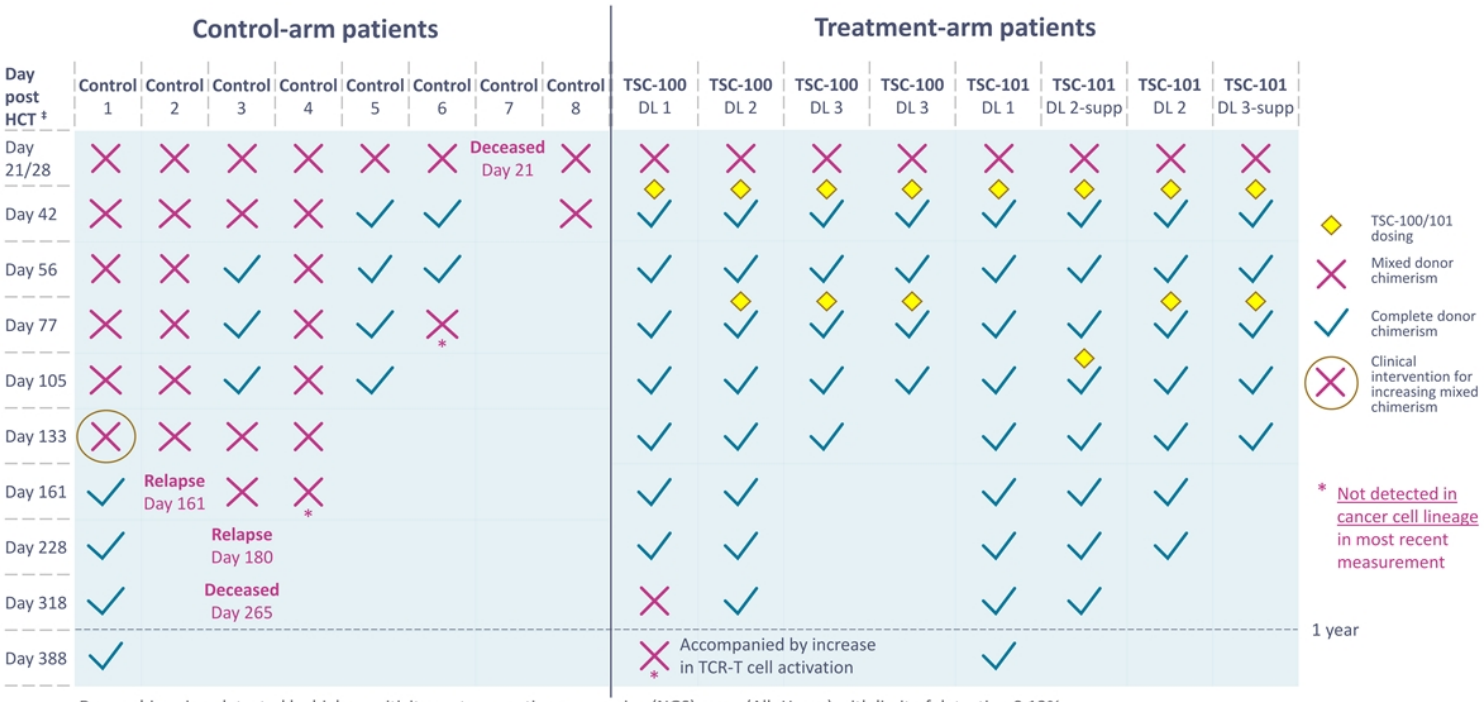
Nonmalignant, patient-derived blood cell

Normal, donor-derived blood cell

TSCAN THERAPEUTICS

1. Lindhal, Bone Marrow Transpl, 2022
2. Ciurea, Al Malki, Blood Rev, 2023

All 8 patients on the treatment arm remain relapse-free with no detectable cancer



Donor chimerism detected by high-sensitivity next-generation sequencing (NGS) assay (AlloHeme) with limit of detection 0.13%

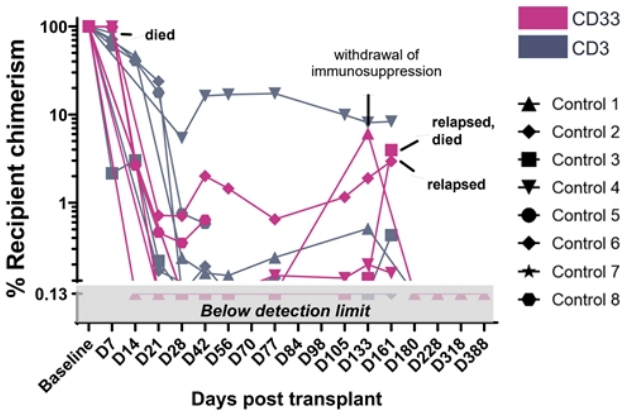
‡ Measurements taken at indicated day post HCT ± 3 days

Data cutoff April 12, 2024

No relapses and complete chimerism in cancer lineage in treatment arms
Two relapses, two deaths and mixed chimerism in cancer lineage in control arm

Control arm

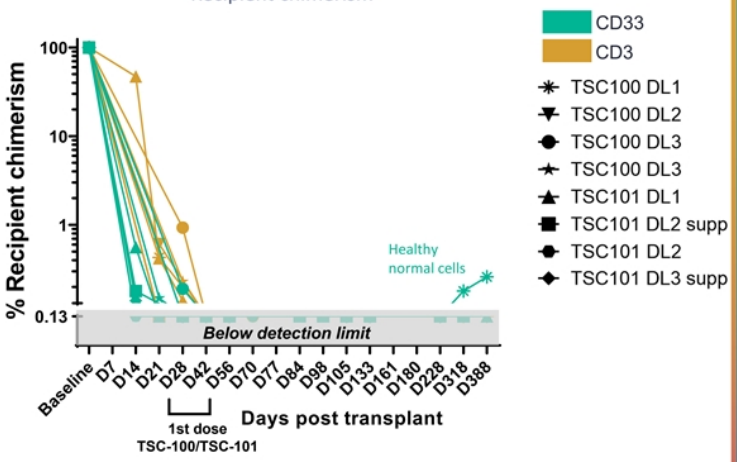
Recipient chimerism



All relapses occurred in patients with mixed chimerism in cancer lineage

Treatment arms

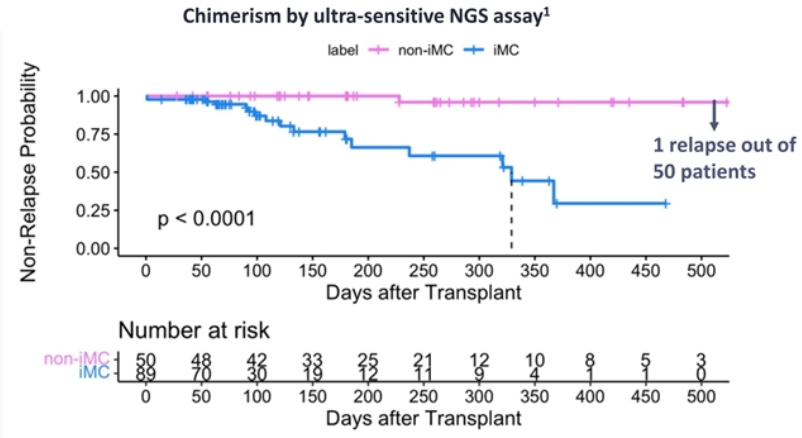
Recipient chimerism



Median post-transplant follow-up in treatment arms: 10.7 months (range 5.5-14 months);
Median follow-up in control arm: 5.2 months (range 0.7-18 months)

Data cutoff April 12, 2024

Early data from ACROBAT trial* show low risk of relapse in patients not showing increasing mixed chimerism



[1] Limit of detection ~0.13% recipient chimerism
iMC: ≥0.2% increasing mixed chimerism in CD3⁺, CD33⁺, or whole blood

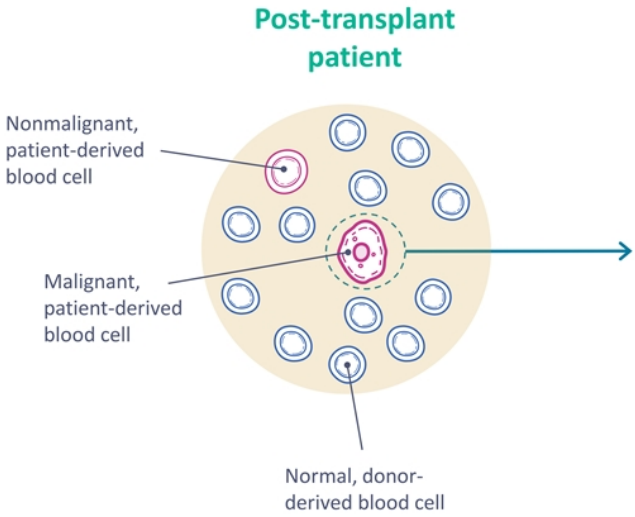
139 patients with complete NGS and STR chimerism testing, median F/U [Q1,Q3] = 365 [270,484] days

- Early data from the ACROBAT trial suggest a favorable prognosis for patients that rapidly achieve and maintain complete chimerism
- None of the patients treated with TSC-100/TSC-101 show increasing mixed chimerism, suggesting a very low risk of relapse

- NCT04635384, Kothari, TCT 2024 abstract # 555; CareDx sponsored clinical study

TSCAN THERAPEUTICS

Minimal residual disease serves as a supportive surrogate of efficacy



Minimal Residual Disease (MRD)

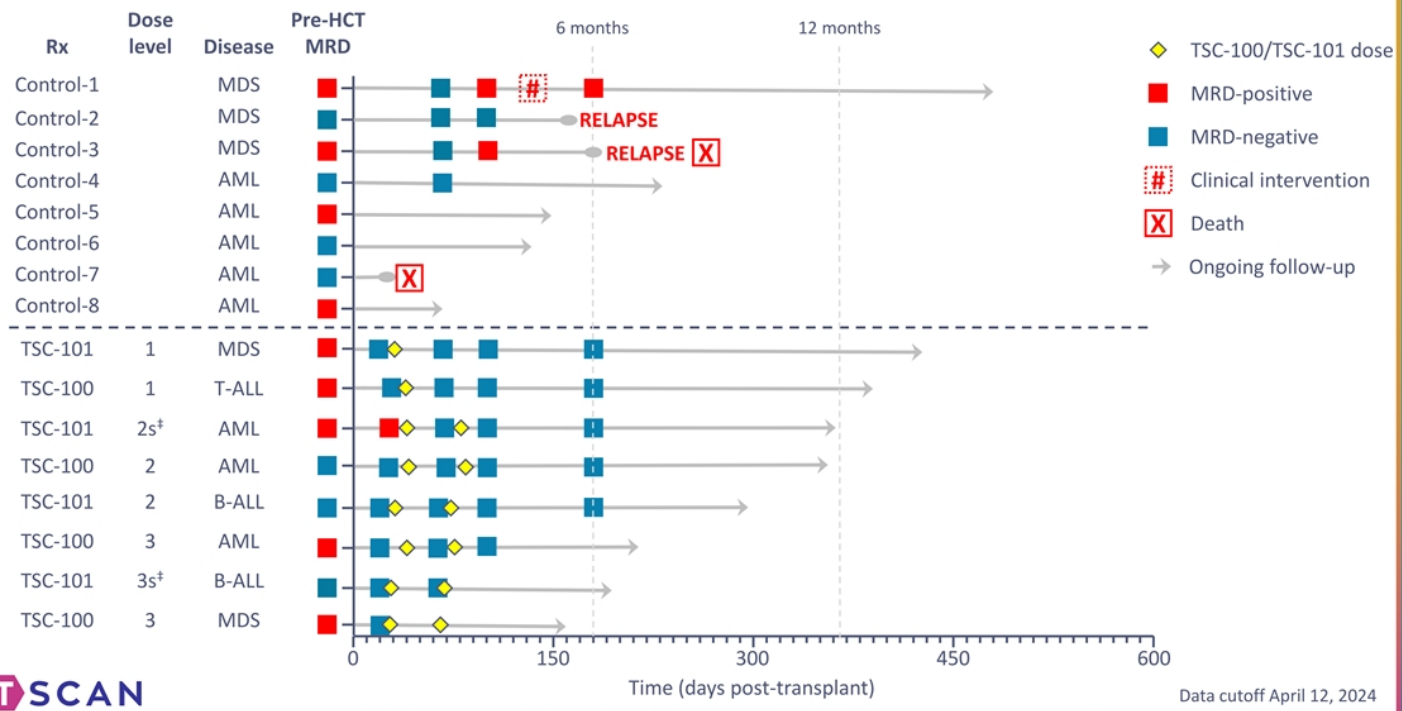
Next-generation sequencing

- Deep sequencing of leukemia-associated genes (centrally)
- Sensitivity 0.05-0.1%

MRD+ patients post-transplant have ~90% chance of relapse[1,2]

1. Craddock, J Clin Oncol, 2021
2. Loke, ASH, 2021

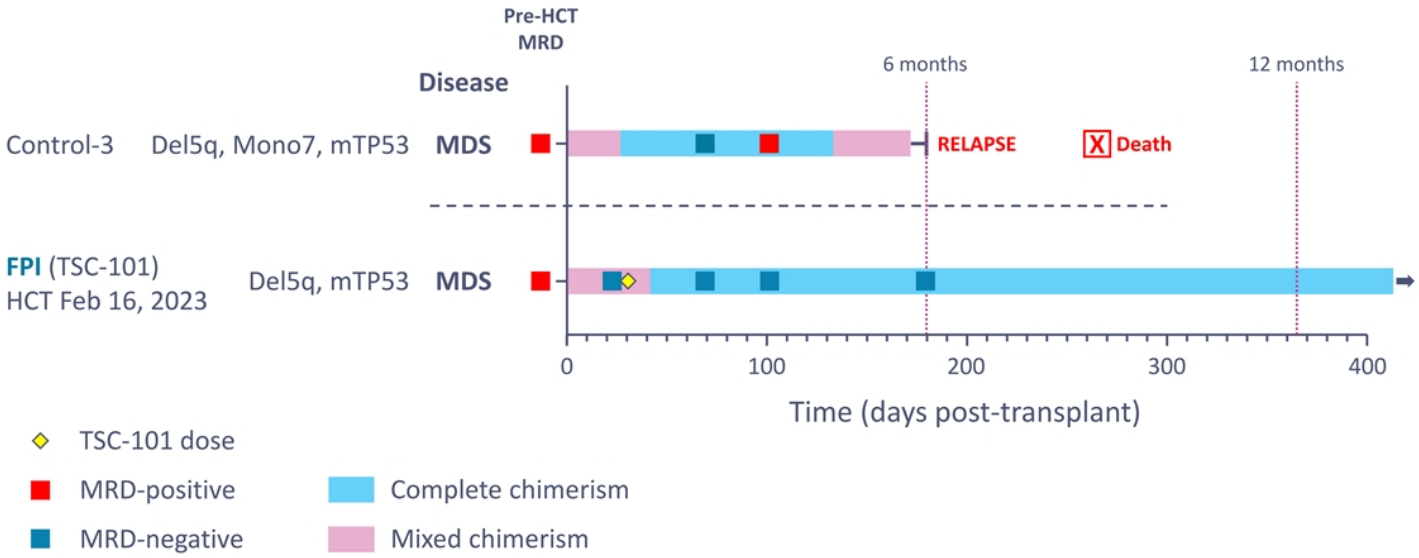
All treated patients to date achieved MRD negativity*



Data cutoff April 12, 2024

*MRD determined by NGS (lower limit of detection 0.05-0.1%) ‡Dose did not meet target dose criteria in supplemental cohorts

Very different outcomes observed for two patients with TP53-mutated MDS



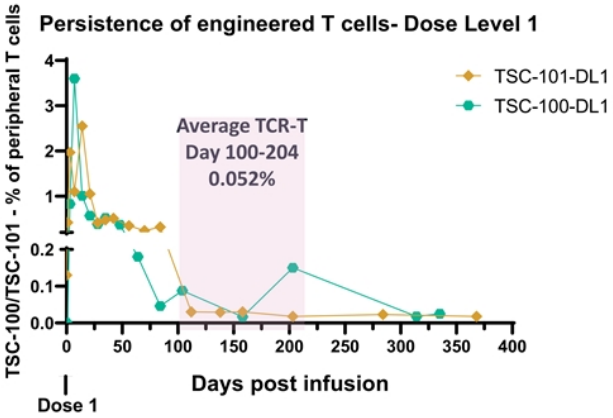
MRD and chimerism determined by NGS (lower limits of detection 0.1% and 0.13%, respectively)

Data cutoff April 12, 2024

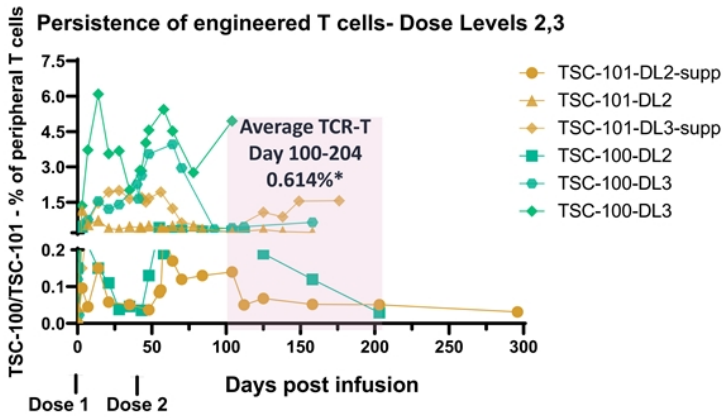
TSC-100 & TSC-101 persisted in peripheral circulation for over 12 months

- TSC-100 and TSC-101 TCR-T cells detected in all patients at all time points to date
- Repeat dosing resulted in increased levels of circulating TCR-T cells

Single dose cohorts



Repeat dose cohorts



*Average TCR-T Day 100-204 DL3: 1.73%; DL2 and DL-supp: 0.22%

TSCAN THERAPEUTICS

Data cutoff April 12, 2024

Serious adverse events were similar between treatment and control arms

Control-arm Patient	Serious Adverse Event	Highest Grade*	Post-transplant Day	TSC Relatedness
Control 3	Cytokine release syndrome	2	+2	Not Applicable
Control 4	Neck pain	3	+53	Not Applicable
Control 2	Acute graft versus host disease in skin	3	+49	Not Applicable
Control 2	Acute graft versus host disease in gastrointestinal tract	3	+53	Not Applicable
Control 2	Pneumonia	3	+56	Not Applicable
Control 5	RSV Pneumonia	3	+28	Not Applicable
Control 7	Acute kidney injury, septic shock	5	+7	Not Applicable

Same patient

*Grading by CTCAE v5.0 or MAGIC consortium grading for GvHD

Serious adverse events were similar between treatment and control arms

	Treatment-arm Patient	Serious Adverse Event	Highest Grade*	Post-transplant Day	TSC Relatedness
	TSC-100-DL3	Sepsis, respiratory failure	4	+9	Not applicable (pre-TSC)
	TSC-100-DL2	Pyrexia	1	+136	Not related
	TSC-100-DL3	Pericardial effusion#	4	+77	Not related
Same patient	TSC-101-DL1	Acute graft versus host disease in gastrointestinal tract#, acute kidney injury	3	+49	Possibly related
Same patient	TSC-101-DL1	Adenovirus viremia, Pneumonia, Clostridium difficile infection	2	+71	Not Related
Same patient	TSC-101-DL1	Pyrexia	1	+148	Not Related
Same patient	TSC-101-DL1	Interstitial pneumonitis	2	+182	Not Related
Same patient	TSC-101-DL1	Pneumonia	3	+368	Not Related
Same patient	TSC-101-DL1	Pneumonia, pleural effusion	3	+400	Not Related
Same patient	TSC-101-sDL2	HHV-6 reactivation	1	+21	Not applicable (pre-TSC)
Same patient	TSC-101-sDL2	Influenza viremia, pneumonia, pleural effusion	3	+252	Not Related
Same patient	TSC-101-sDL2	Urinary tract infection	2	+295	Not Related
Same patient	TSC-101-sDL3	COVID-19, catheter infection	3	+95	Not Related
	Donor	Acute pulmonary embolism	3	N/A	Not applicable

*Grading by CTCAE v5.0 or MAGIC consortium grading for GvHD
Research testing by flow cytometry or immunohistochemistry for TSC-100/101 markers did not find evidence of involvement

See previous slide for control-arm patients

Adverse events of special interest similar between treatment and control arms

All cytokine release syndrome (CRS) events occurred before TSC-100/ TSC-101 treatment

Arm-Dose Level	Grade*	Adverse Event	HCT Day of Onset	Duration	TSC relatedness
TSC-100-DL2	Grade 1	CRS	+3	2 days	Not applicable (pre-TSC)
TSC-100-DL3	Grade 1	CRS	+3	3 days	Not applicable (pre-TSC)
TSC-101- DL2supp	Grade 2	CRS	+1	3 days	Not applicable (pre-TSC)
TSC-101-DL2	Grade 1	CRS	+1	5 days	Not applicable (pre-TSC)
TSC-101-sDL3	Grade 1	CRS	+1	3 days	Not applicable (pre-TSC)
Control 1	Grade 1	CRS	+2	3 days	Not applicable
Control 2	Grade 1	CRS	+3	2 days	Not applicable
Control 3	Grade 2	CRS	+2	2 days	Not applicable
Control 6	Grade 1	CRS	+1	3 days	Not applicable
TSC-100-DL1	Grade 1	Skin GvHD	+48	8 days	Possibly related
TSC-101-DL1	Grade 3	GI GvHD	+49	8 days	Possibly related
TSC-101-DL2supp	Grade 1	Skin GvHD	+43	3 days	Possibly related
TSC-101-DL2	Grade 1	Skin GvHD	+127	7 days	Possibly related
Control 2	Grade 3	GI GvHD	+53	18 days	Not applicable
Control 2	Grade 3	Skin GvHD	+49	12 days	Not applicable
Control 1	Grade 1	Skin GvHD	+180	Pending	Not applicable
Control 3	Grade 1	Skin GvHD	+131	>50 days (off study)	Not applicable

*MAGIC consortium grading for graft-versus host disease (GvHD); ASTCT grading for cytokine release syndrome (CRS)

Data cutoff April 12, 2024

Significant increase in enrollment of heme trial post-TANDEM

Feb/Mar

SUN	MON	TUE	WED	THU	FRI	SAT
25	26	27	28	29	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

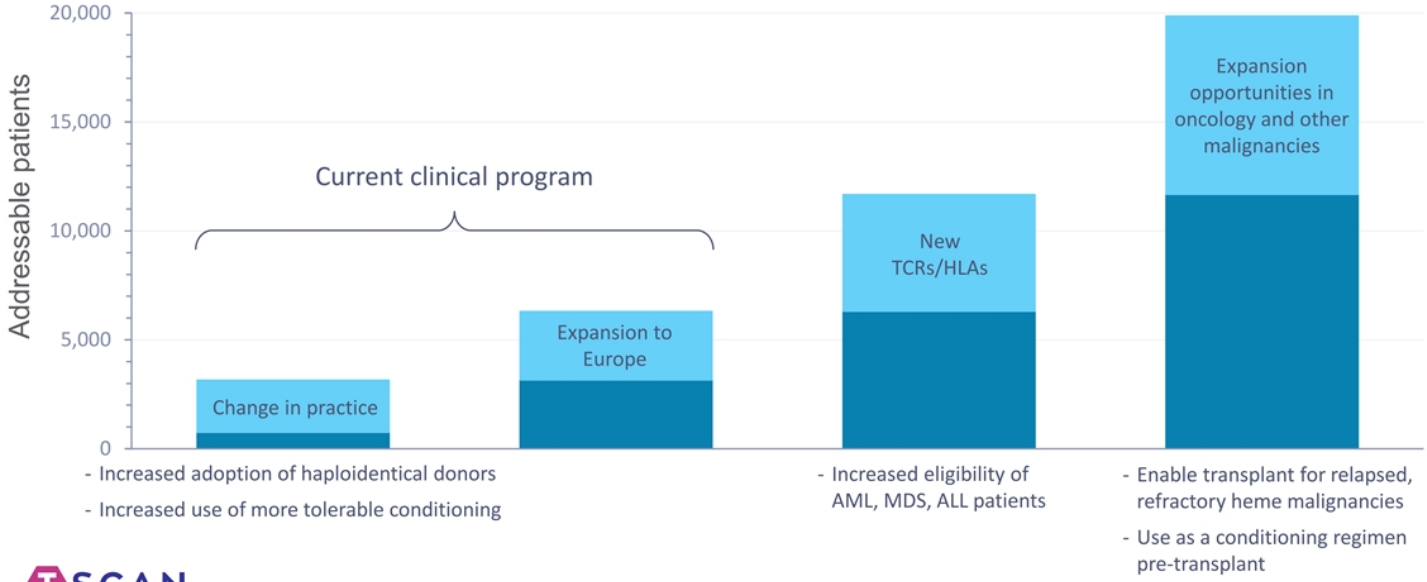
April/May

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

TSCAN THERAPEUTICS

Manufacturing initiated Heme

Current program addresses sizable patient population, with several global and lifecycle management opportunities



- Increased adoption of haploidentical donors
- Increased use of more tolerable conditioning

- Increased eligibility of AML, MDS, ALL patients

- Enable transplant for relapsed, refractory heme malignancies
- Use as a conditioning regimen pre-transplant

TSCAN THERAPEUTICS

Source: SEER, CIBMTR, ClearView analysis

Solid Tumors:
Developing multiplex TCR-T to overcome tumor heterogeneity

TSCAN THERAPEUTICS

TScan is learning from nature to understand, exploit, and enhance how T cells recognize and fight cancer

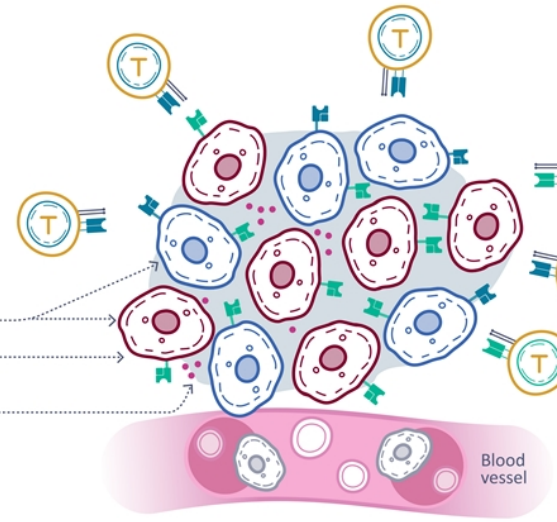
The challenge:

Cancer cells

Heterogeneous target expression

HLA loss

Hostile TME (e.g., TGFβ)



Nature's solution:

T cells

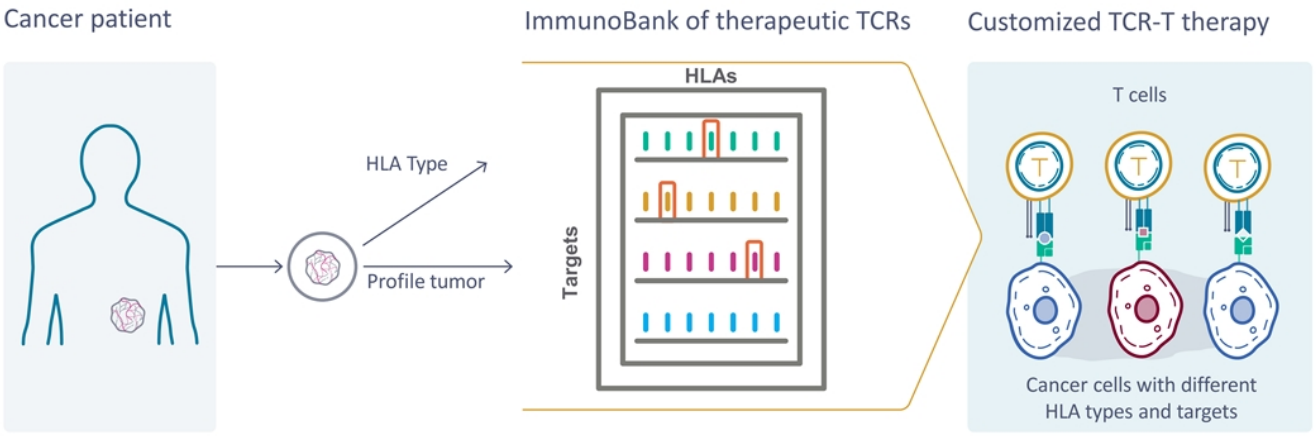
CD8+ CD4+

Diverse repertoire of CD4+ and CD8+ T cells

What do T cells naturally recognize and how can we use that information to design better therapeutics?

TSCAN THERAPEUTICS

TScan is building an ImmunoBank of TCRs to enable enhanced, multiplex TCR-T cell therapy



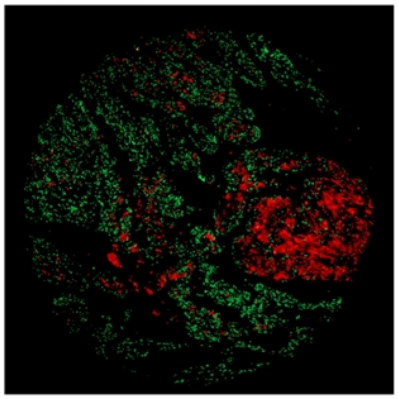
- Determine target and HLA expression in patient tumor
- Manufacture and administer customized, multiplex TCR-T therapy

TSCAN THERAPEUTICS

Target heterogeneity in solid tumors limits the efficacy of singleplex therapies

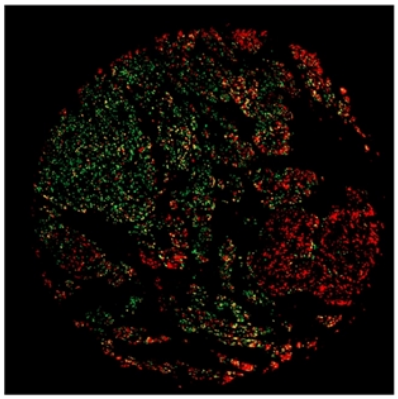
Melanoma

MAGE-C2 MAGE-A4



Melanoma

MAGE-C2 PRAME

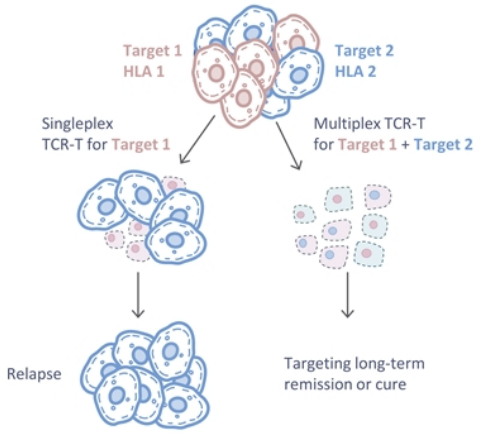


- Treatment with a TCR-T against one target does not address the full tumor
- TCR-T therapy against multiple targets may be required improve efficacy and durability

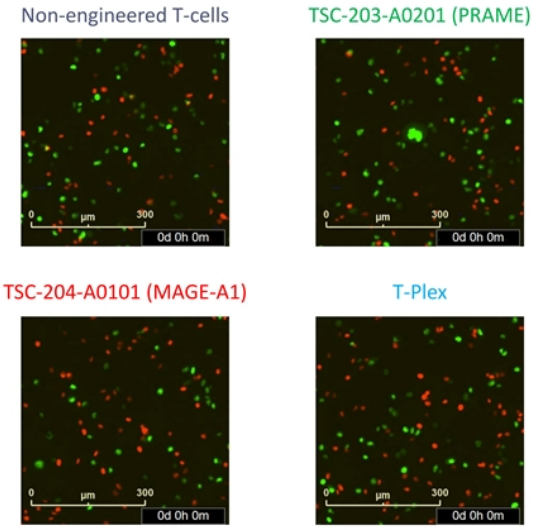
TSCAN THERAPEUTICS

Multiplex TCR-T may address the problem of heterogeneity in solid tumors

Multiplex TCR-T is designed to overcome target heterogeneity and HLA loss



- Treat patients with multiple TCR-Ts
- Prospectively select patients for target and HLA expression

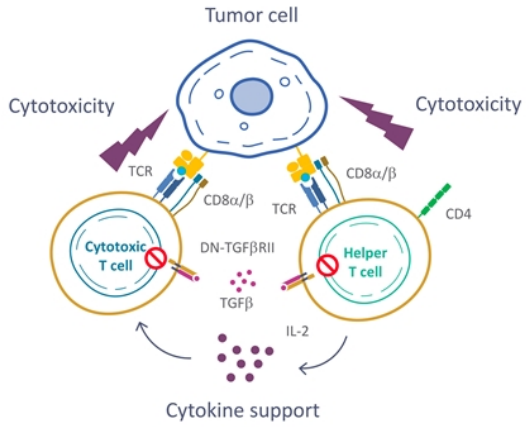


Green cells: SKMEL5 (PRAME-positive)
Red cells: A101D (MAGE-A1-positive)

TSCAN THERAPEUTICS

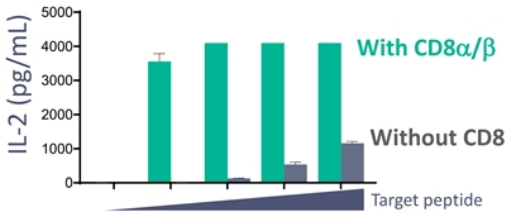
TScan's enhancements address the hostile tumor microenvironment

Enhanced TCR-T to combat the hostile tumor microenvironment

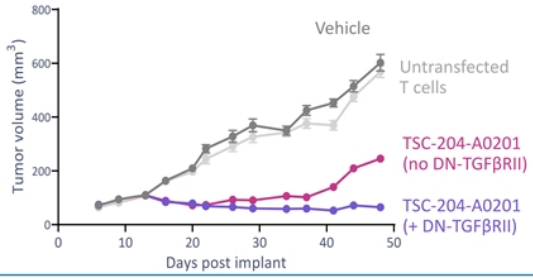


- Co-deliver CD8α/β to engage helper T-cells
- Co-deliver DN-TGFβRII to enhance T-cell expansion/persistence

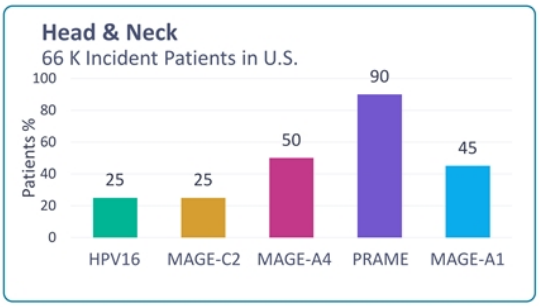
CD8α/β enhances cytokine production in vitro

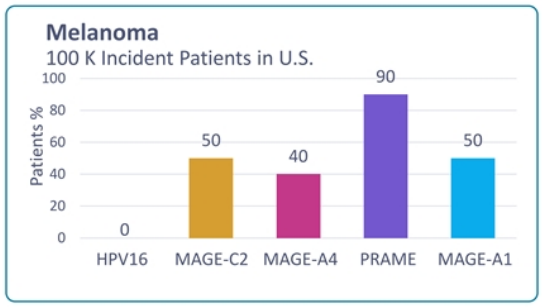


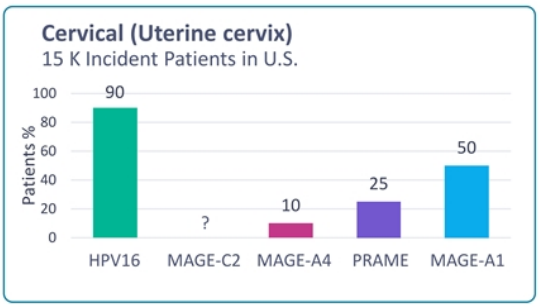
DN-TGFβRII improves responses in mouse models

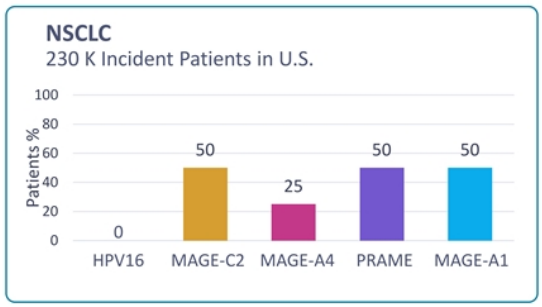


Programs address targets frequently co-expressed in prevalent solid tumors



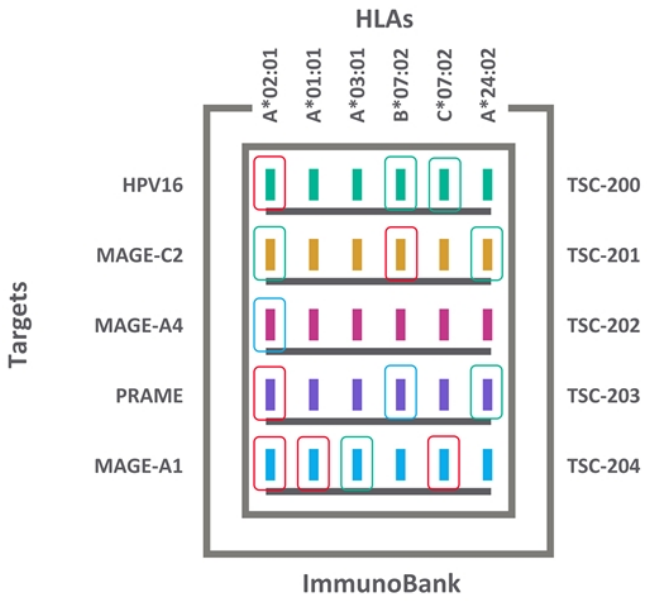






Source: American Cancer Society

TScan is rapidly filling the ImmunoBank to enable multiplexed TCR-T therapy in solid tumors



TCRs covering multiple antigen and HLA alleles may enable 50-75% of patients to receive multiplex therapy

INDs

- Cleared
- Planned 2024 INDs
- Discovery

Currently INDs for 6 TCRs

INDs planned for this year

Expand the ImmunoBank through ongoing discovery

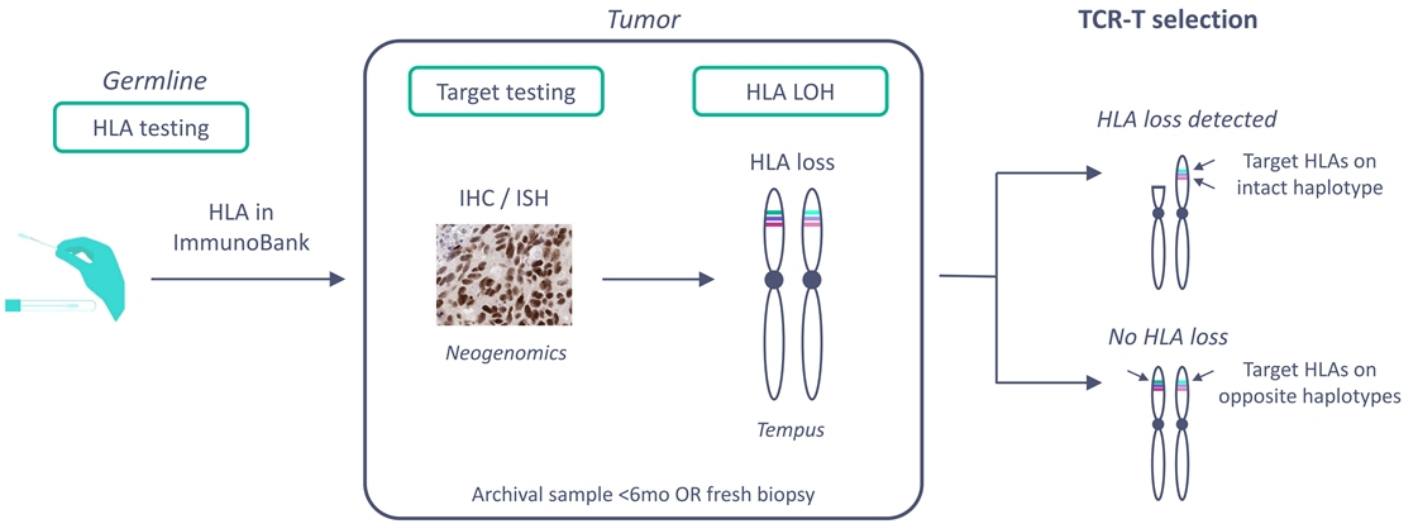
TSCAN THERAPEUTICS

Dose escalation scheme provides a rapid path to multiplex TCR-T in Phase 1

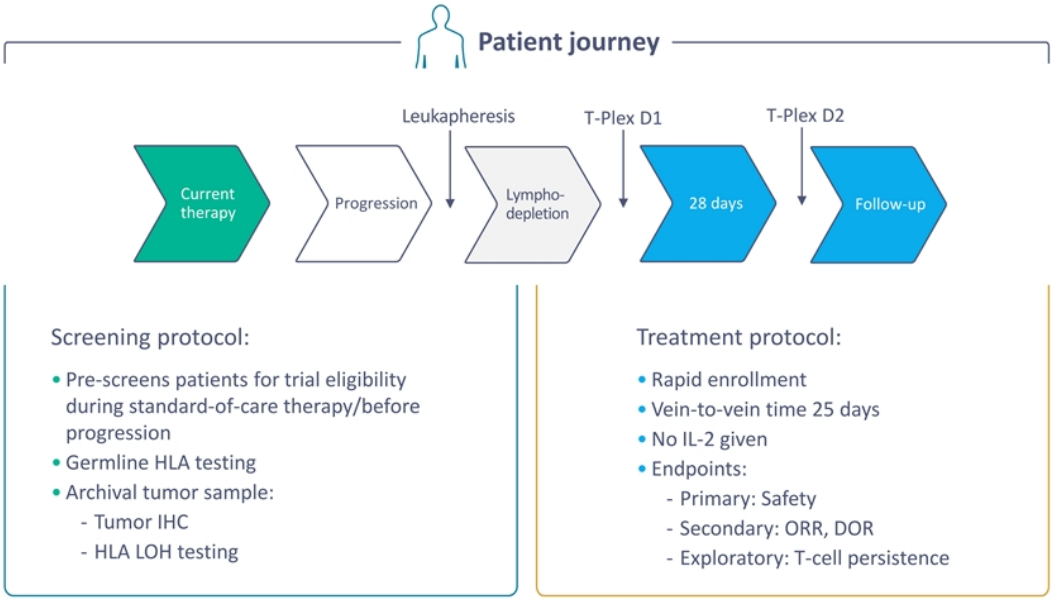
	TSC-204-A0201 (MAGE-A1)	TSC-204-C0702 (MAGE-A1)	TSC-200-A0201 (HPV16)	TSC-203-A0201 (PRAME)	TSC-201-B0702 (MAGE-C2)	TSC-204-A0101 (MAGE-A1)
DL1	0.5B	0.5B	0.5B	0.5B	0.5B	0.5B
DL2	2B	2B	2B	2B	2B	2B
DL3	Any two TCR-Ts that have cleared DL2		T-Plex: 2B + 2B → 28 days → 2B + 2B (First dose / Second dose)		Option for singleplex (HPV16): 4B → 28 days → 4B (First dose / Second dose)	
DL4	Any two TCR-Ts that have cleared DL3		5B + 5B → 28 days → 5B + 5B (First dose / Second dose)		10B → 28 days → 10B (First dose / Second dose)	

TSCAN THERAPEUTICS

Prospectively selecting for target and HLA expression maximizes chance of success



Screening protocol pre-identifies patients for treatment



Screening protocol:

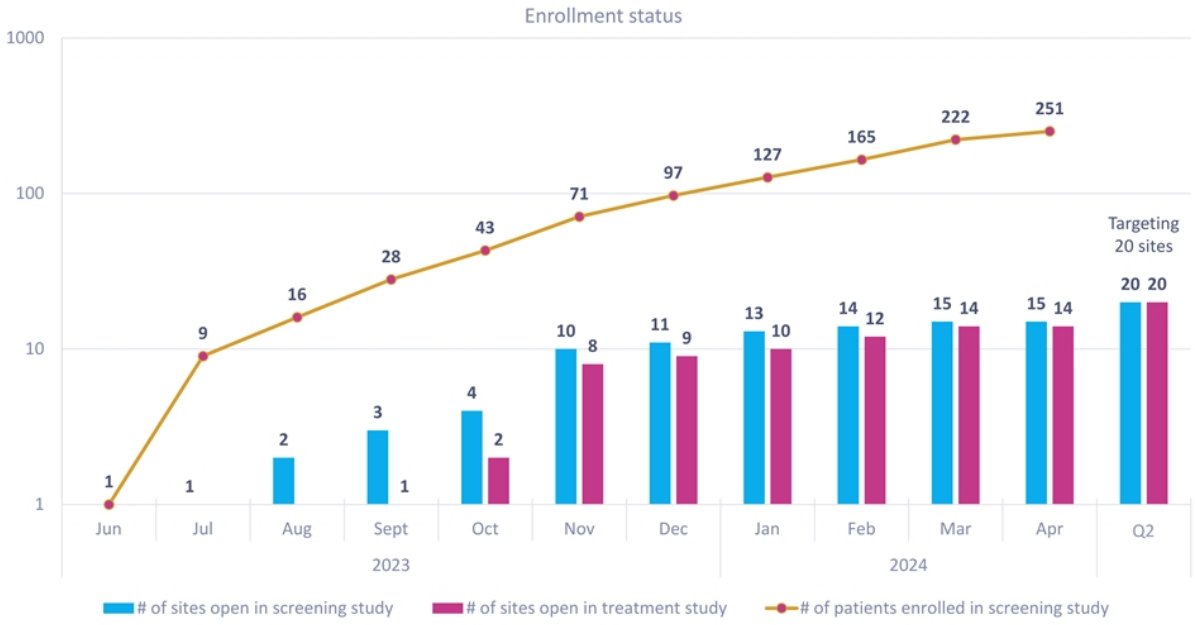
- Pre-screens patients for trial eligibility during standard-of-care therapy/before progression
- Germline HLA testing
- Archival tumor sample:
  - Tumor IHC
  - HLA LOH testing

Treatment protocol:

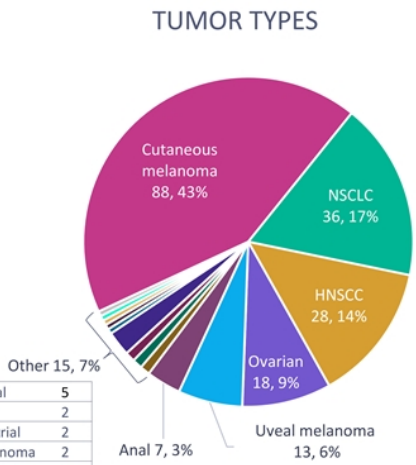
- Rapid enrollment
- Vein-to-vein time 25 days
- No IL-2 given
- Endpoints:
  - Primary: Safety
  - Secondary: ORR, DOR
  - Exploratory: T-cell persistence

TSCAN THERAPEUTICS

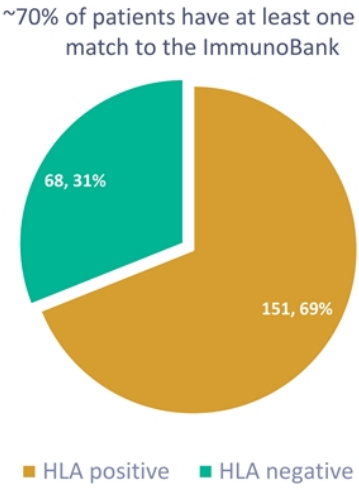
Investigators are highly motivated and have screened over 250 patients to date



Broad array of tumor types with ~70% matching to an HLA in the ImmunoBank

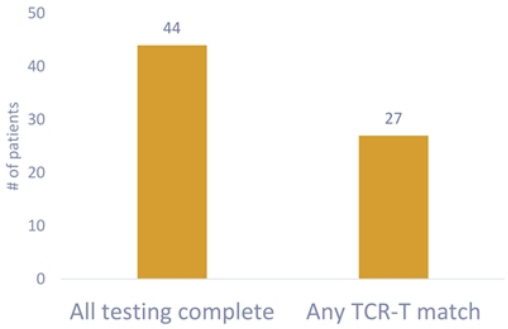


Cervical	5
Acral	2
Endometrial	2
Adenocarcinoma	2
Fallopian Tube	1
Osteosarcoma	1
Peritoneal	1
Meningioma	1
Unknown	1

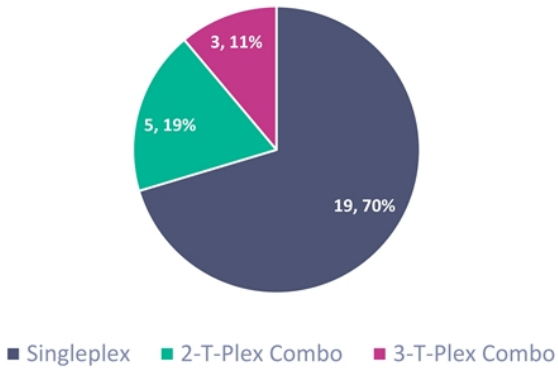


High percentage of patients have a TCR match for singleplex therapy and many would be eligible for T-Plex

~60% of patients with all testing completed have at least one TCR in ImmunoBank



~30% of patients with TCR-T would qualify for T-Plex



Patients identified across all cohorts and into DL2 and DL3 in some cohorts

Dose Level	MAGE-A1 A*02:01	MAGE-A1 C*07:02	HPV-16 A*02:01	PRAME A*02:01	MAGE-A1 A*0101	MAGE-C2 B*0702
DL1	• Melanoma (Yale) • **Apheresis 4/30** • First dose early June • Also PRAME positive	• Melanoma (Alleghany) • **Currently in manufacturing** • First dose early May	• Head & Neck (HonorHealth) • **Currently in manufacturing** • First dose early May	• Melanoma (Orlando) • **Manufacturing complete** • First dose early May	• Head & Neck (Alleghany) • **Apheresis 5/7** • First dose mid June	• Melanoma (HonorHealth) • Pending clinical status • **Targeting apheresis in May**
DL2			• Head & Neck (Norton) • **Targeting apheresis in May**	• Melanoma (Yale) • **Apheresis 4/23**		
DL3			• Anal (Columbia) • Pending clinical status • Also PRAME and MAGE-A1 positive	• NSCLC (Alleghany) • **Apheresis 5/1**		

Enrollment proceeding rapidly across heme and solid tumor programs

Feb/Mar

SUN	MON	TUE	WED	THU	FRI	SAT
25	26	27	28	29	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

April/May

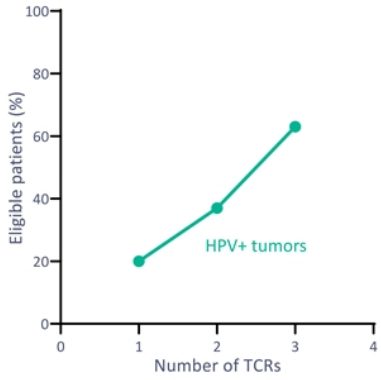
SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

TSCAN THERAPEUTICS

Manufacturing initiated Heme ST

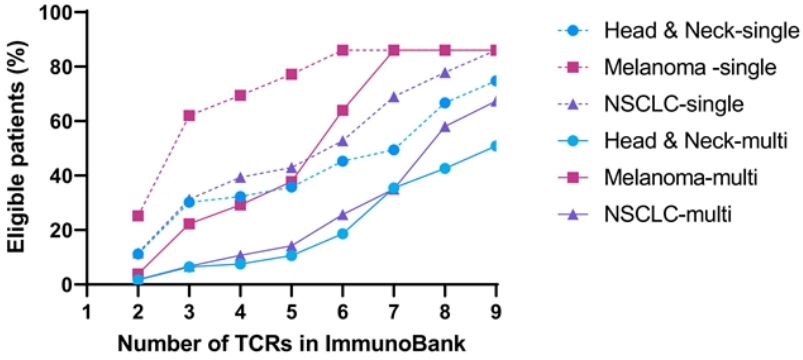
Patient eligibility expected to increase rapidly as ImmunoBank grows

HPV16+ cancers



Eligible patients include patients who do not require multiplexing (homozygous or hemizygous for targeted HLA type) or are eligible for at least 2 HPV16 TCRs.

Other solid tumors



Eligible patients include patients who are positive for at least 2 TCR-Ts in the ImmunoBank.

TScan highlights

Transformative platform enables rapid discovery of TCRs and targets for engineered T cell therapy

Recent collaboration highlights applicability outside oncology

In-house GMP manufacturing using non-viral vectors

Hematologic malignancies program to prevent relapse with HCT

Eight patients treated to date are relapse-free with no detectable cancer

No DLTs observed to date

TSC-100 and TSC-101 progressed to third and final dose level

Solid tumor program to deliver enhanced multiplex TCR-T

INDs cleared for six TCR-Ts with regulatory path to multiplexing

Patients identified and scheduled for all six TCR-Ts

First three patients to be dosed in early May 2024

Q4 2023:
$192.0 M

Net cash, cash equivalents, and marketable securities funds Company into 2026

TSCAN THERAPEUTICS


THANK YOU
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THERAPEUTICS