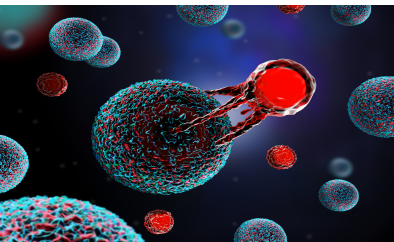


Dual-Acting T Cell Platforms for Cancer Therapy

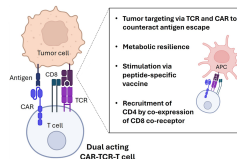
Engineered T cell therapies modify patient or donor T cells with viral vectors to express synthetic receptors such as CARs and transgenic TCRs for highly specific tumor recognition and killing. They are used to treat hematologic malignancies and increasingly solid tumors, while addressing challenges like tumor heterogeneity, antigen loss, immunosuppression, limited persistence and complex vector-based manufacturing.



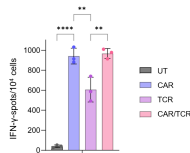
Combining CAR and TCR for enhanced tumor targeting

The invention provides a dual-acting T cell platform in which T cells, via an optimized γ -retroviral vector, co-express a CAR and a transgenic TCR. Modified 5'LTR sequences and selected drugs enhance vector production and transduction, yielding robust T cells for cancer therapy.

- 01 Integrated CAR+TCR platform with optimized viral LTRs and drug support yields high dual expression, potency and persistence
- 02 Tackles tumor heterogeneity and antigen escape via dual, switchable targeting mechanisms
- 03 Drug-enhanced producer lines boost viral titers for efficient, scalable T cell manufacture
- 04 Preclinically validated with in vivo proof-of-concept in heterogeneous tumor models



Dual acting CAR-TCR-T cell platform. T cell engagement with a tumor cell line via CAR and TCR



IFN- γ ELISpot of T cell co-cultured with tumor cells expressing both targets for CAR and TCR

IP RIGHTS

PCT planned

2026

CHALLENGE

Heterogeneous and antigen-switching tumors can evade single-target CAR approaches, while immunosuppressive microenvironments promote T cell exhaustion and loss of effector function. At the same time, limited persistence and metabolic deprivation of modified T cells, together with low-titer, variable viral vector production, hinder robust, scalable and economically viable manufacturing of advanced T cell therapies.

INNOVATION

The technology introduces a dual-acting T cell platform in which a single γ -retroviral vector drives co-expression of a CAR and a transgenic TCR, enabling robust, multi-antigen targeting with improved persistence and metabolic fitness. An optimized 5'LTR architecture is combined with pharmacological enhancement of producer cell lines to increase viral titers and transduction efficiency, enabling more consistent, scalable generation of advanced cell therapies.

TRL 08

TRL 07

TRL 06

TRL 05

TRL 04

TRL 03

TRL 02

TRL 01

Technology Readiness Level (TRL)

01 Basic principles observed · 02 Technology concept formulated · 03 Experimental proof of concept · 04 Technology validated in lab · 05 Technology validated in relevant environment · 06 Technology demonstrated in relevant environment · 07 System prototype demonstrated in operational environment · 08 System complete and qualified



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