Innovations
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Novel Costimulatory Platform for CAR-Based Adoptive Cell Therapies

Product

CAR Intracellular Domain Constructs

Indication

Hematological and Solid Tumors

Value Propositions

- Improved Persistence
- Reduced Antigen Stimulation Threshold
- Increased Memory-Like Phenotype

Market

- $1.8B – US CAR T Cell Market Size in 2020

Intellectual Property

- PCT pending: published WO2023014922A1

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Ineffective targeting of current CAR T

Chimeric antigen receptor (CAR) T cell therapy is a powerful treatment tool for multiple types of malignancies. There are six FDA approved CAR T therapies that have demonstrated efficacy in patients who are refractory to standard chemotherapy, with many patients entering remission after treatment. However, most of these patients relapse within a few months. Relapse has been associated with ineffective targeting of low antigen-expressing malignant cells and/or the inability of CAR T cells to persist for a long period of time after infusion.

CAR Intracellular Domain Constructs

A team led by Dr. M. Eric Kohler has designed novel bicistronic CAR constructs that include a LAT (ALAT-CART) or CD3e (CD3e-CART) domain to improve persistence and sensitivity to tumors with low antigen expression and clinically active 2nd Generation CAR T cells. Using CD22 AND CD19 targeting ALAT-CART or CD3e-CART to treat CD22-low acute lymphoid leukemia (ALL) in xenograft mouse models resulted in improved efficacy relative to clinically active 2nd generation CD22 CAR T-cells.

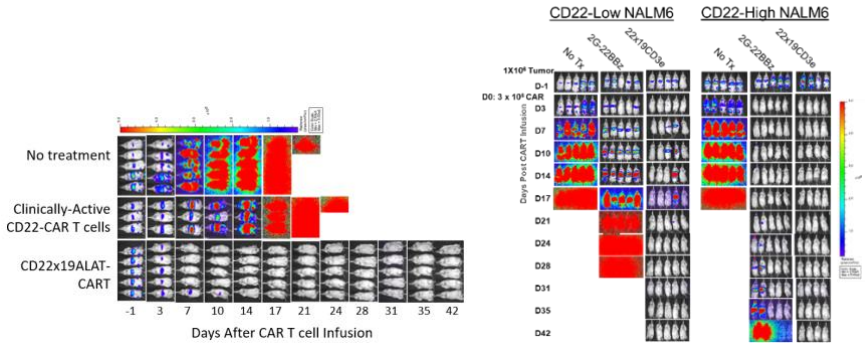

Figure 1: Tumor progression in CD22-low ALL mouse models with ALAT-CART (left) and CD3e-CART (right)

Furthermore, ALAT-CART and CD3e-CART displayed improved persistence over clinically active 2nd generation CAR T-cell therapies in their CD22-low ALL in-vivo model.

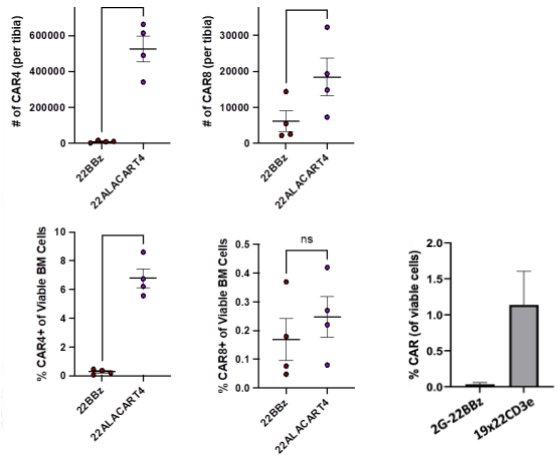

Figure 2: Persistence of ALAT-CART (left) and CD3e-CART (right) cells

Updated: 09/21/2023