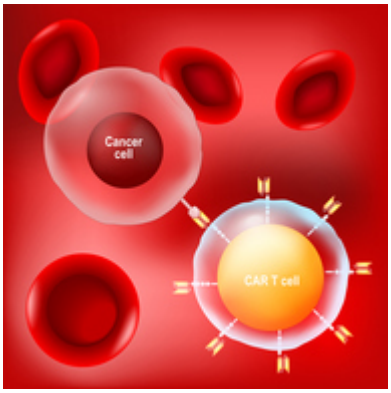
INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

BanLec-CAR T Cells for Cancer Therapy

TECHNOLOGY NUMBER: 2019-123



OVERVIEW

First-in-class CAR-T cell therapy that utilizes sugar binding without antibody compositions

- BanLec-CAR T results from a banana-derived lectin that tightly binds mannose residues
- Proven effective against chemorefractory lung cancer cell lines

---

MODALITY

Cell therapy via intravenous administration (engineered T cell infusion)

INDICATION

Therapy for chemorefractory lung cancers; potential expansion to other solid tumors and blood cancers

INTELLECTUAL PROPERTY

- US11760786 "Chimeric antigen receptors targeting abnormal glycobiology"
- US12428463 "Chimeric antigen receptors targeting abnormal glycobiology"

BACKGROUND

Chimeric antigen receptor T-cell (CAR-T) therapy is an immuno-oncology strategy that involves the harvesting and engineering of a patient's own immune cells to selectively combat their cancer cells when re-introduced to the patient. CAR-T cells are engineered to recognize specific antigens that are selectively expressed on malignant cells in order to target them for

Technology ID
2019-123

Category
Therapeutics and Vaccines
Life Sciences

Inventor
Alnawaz Rehemtulla
Challice Bonifant
David Markovitz

Further information
Seohee You
shyou@umich.edu

Innovation Partnerships Tech Marketing Team
IPInventions@umich.edu

View online

destruction. While there has been great success in adoptive therapy with engineered T cells for acute lymphoblastic leukemia, one limitation to development of this therapy for solid tumors is the lack of specific target antigens on tumor tissue. Though there are many different antigens available for targeting in various cancers, especially in difficult to treat solid tumors, where cell surface marker expression is highly heterogeneous. The vast majority of all other CAR-T cell therapies have been engineered with an extracellular domain derived from an antibody. A need exists to further discover new cell surface targets on solid tumors for develop additional CAR-T therapies.

INNOVATION

Researchers at the University of Michigan have engineered a T cell that selectively targets malignant cells decorated with altered sugar residues for treatment with CAR-T cell therapy. The invention takes advantage of the propensity for malignant cells to exhibit altered glycobiology, such that their extracellular sugar landscape differentiates them from normal tissue. Researchers identified a lectin that binds high mannose residues within which the mutation of a single amino acid moiety has made this molecule extraordinarily specific such that it does not promote the non-specific mitogenicity common to other lectins. The name of the discovery, BanLec-CAR T, alludes to its construction from a banana-derived lectin that binds mannose residues. The scientists have demonstrated antigen specific activity of BanLec-CAR T cells against chemorefractory lung cancer cell lines. The likelihood exists that other types of solid tumors or hematologic malignancies will respond to this new form of treatment, as well.