

New Chimeric Antigen Receptor (CAR) Format for Developing Improved Adoptive Cell Therapies

Summary (1024-character limit)

Researchers at the National Cancer Institute (NCI) have developed a new format for expressing Chimeric Antigen Receptors (CARs) that is available for licensing and co-development. The inventors found that there was an increased therapeutic effect when using their proprietary (anti-glypican 3 [GPC3]) hYP7 antibody in this format. The novel technology is useful for improving CAR therapies to treat a range of cancers.

NIH Reference Number

E-016-2018

Product Type

- Therapeutics

Keywords

- Cancer, Chimeric Antigen Receptor (CAR), GPC3, GPC2, solid tumor, tumor antigen, Mesothelin, Ho

Collaboration Opportunity

This invention is available for licensing and co-development.

Contact

- John D. Hewes
NCI - National Cancer Institute

240-276-5515

John.Hewes@nih.gov

Description of Technology

Adoptive cell therapy (ACT) is an attractive new therapeutic approach for treating various cancers. ACT has recently demonstrated a high degree of efficacy when treating patients with hematological malignancies. However, to date, no effective Chimeric Antigen Receptors (CAR) T cell therapy exists for solid tumors.

Researchers in the National Cancer Institute (NCI) Laboratory of Molecular Biology (LMB) have created a new CAR format that is available for licensing and further co-development. This new format uses a specific promoter and signal peptide in a specific order allowing for increased efficiency of CAR T therapy. The inventors found that there was an increased therapeutic effect when using their proprietary (anti-glypican 3 [GPC3]) hYP7 antibody in this format.

Additionally, the inventors are exploring the use of this new CAR T format in conjunction with other antibodies against multiple other cancer antigens, including mesothelin and glypican 2 (GPC2).

Potential Commercial Applications

- Treating cancer patients eligible for ACT
- Treating patients with diseases associated with expression of GPC3, GPC2, and other tumor antigens (e.g. mesothelin)

Competitive Advantages

- The novel technology (new CAR format) can increase therapeutic effectiveness of CAR T therapies for patients with solid tumor cancers (i.e., hepatocellular carcinoma or pancreatic cancer) where no long term or effective therapy currently exists
- The novel technology (new CAR format) when used for immunotherapy in preclinical in vivo studies is already known to have a greater decrease in tumor size compared to those mice treated with other CAR formats

Inventor(s)

[Mitchell Ho Ph.D. \(NCI, CCR, LMB\)](#), [Nan Li Ph.D. \(NCI, CCR, LMB\)](#), [Dan Li \(NCI, CCR, LMB\)](#)

Development Stage

- Pre-clinical (in vivo)

Patent Status

- **U.S. Provisional:** U.S. Provisional Patent Application Number 62/584,421 , Filed 11 Nov 2017

Related Technologies

- [E-136-2012 - High-Affinity Mouse Monoclonal Antibodies to GPC-3 for Liver Cancer Research](#)
- [E-211-2016 - Human Monoclonal Antibodies Targeting Glypican-2 in Neuroblastoma](#)
- [E-198-2012 - High-Affinity Rabbit Monoclonal Antibodies for Cancer Treatment](#)
- [E-130-2011 - Single-domain monoclonal antibodies for the treatment of hepatocellular carcinoma](#)
- [E-091-2009 - Antibody and Immunotoxin Treatments for Mesothelin-expressing Cancers](#)

Therapeutic Area

- Cancer/Neoplasm