

New T-Cell Immunotherapy that Targets Aggressive Epithelial Tumors

Summary

Researchers at the National Cancer Institute's Experimental Transplantation and Immunology Branch (NCI ETIB) developed a T Cell receptor that specifically targets the Kita-Kyushu Lung Cancer Antigen 1 (KK-LC-1) 52-60 epitope that is highly expressed by several common and aggressive epithelial tumor types.

NIH Reference Number

E-153-2016

Product Type

- Therapeutics

Keywords

- T-cell receptor, TCR, Kita-Kyushu Lung Cancer Antigen, KK-LC-1, Immunotherapy, Testis, CT83

Collaboration Opportunity

This invention is available for licensing.

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Description of Technology

Metastatic cancers are the cause of up to 90% of cancer deaths, yet few treatment options exist for patients with metastatic disease. Adoptive transfer of T cells that express tumor-reactive T-cell receptors (TCRs) has been shown to mediate regression of metastatic cancers in some patients. Unfortunately, identification of antigens that are expressed solely by cancer cells and not normal tissues has been a major challenge for the development of T-cell based immunotherapies. Thus, it is essential to find novel target antigens that are differentially expressed in cancer versus normal tissues.

Researchers at the National Cancer Institute's [Experimental Transplantation and Immunology Branch](#) (NCI ETIB) have developed a TCR that specifically targets the Kita-Kyushu Lung Cancer Antigen 1 (KK-LC-1) 52-60 epitope. KK-LC-1 antigen (encoded by the CT83 gene) is highly expressed by several common and aggressive epithelial tumor

types. Importantly, KK-LC-1 is expressed at very low levels in normal tissues, and is not expressed in life-essential tissues. This expression profile makes KK-LC-1 an attractive target for T-cell based anti-cancer therapies.

This TCR may be used to genetically modify peripheral blood lymphocytes from eligible patients. After expansion, these genetically modified T cells can be used to treat patients. It may also be possible to use portions of the KK-LC-1 TCR in chimeric proteins for cancer therapy and/or for antigen detection assays

Potential Commercial Applications

- Therapeutic use against several common and aggressive epithelial tumor types

Competitive Advantages

- Differential expression profile of KK-LC-1 in cancers versus normal tissues suggests that therapy with a specific KK-LC-1 TCR would be cancer-specific and would not damage life-essential tissues;
- Thousands of cancer patients each year with otherwise untreatable disease may be eligible for gene therapy with this TCR

Inventor(s)

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Development Stage

- Discovery (Lead Identification)

Patent Status

- **U.S. Provisional:** U.S. Provisional Patent Application Number 62/327,529, Filed 26 Apr 2016
- **U.S. Patent Filed:** U.S. Patent Application Number PCT/US2017/027865 , Filed 17 Apr 2017

Therapeutic Area

- Cancer/Neoplasm

Updated

Wednesday, March 1, 2023

Source URL:<https://techtransfer.cancer.gov/availabletechnologies/e-153-2016>