NATIONAL CANCER INSTITUTE
Technology Transfer Center

T cell Receptors Which Recognize Mutated EGFR

Summary

Researchers at the National Cancer Institute (NCI) have isolated T cell receptors (TCRs) that target specific mutations in the epidermal growth factor receptor (EGFR). The mutated protein recognized by these TCRs is frequently expressed in non-small cell lung cancer (NSCLC). These TCRs can be used for a variety of therapeutic applications, including engineered adoptive cell immunotherapy. Researchers at the NCI seek licensing and/or co-development research collaborations for these novel T cell receptors that recognize EGFR mutations.

NIH Reference Number

E-098-2018

Product Type

- Therapeutics

Keywords

- Epidermal Growth Factor Receptor, EGFR mutation, T cell Receptor, TCR, Immunotherapy, Hanada

Collaboration Opportunity

This invention is available for licensing and co-development.

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Description of Technology

Epidermal growth factor receptor (EGFR) is a transmembrane protein involved in cell growth and proliferation. Mutations in this protein can lead to overexpression, causing several types of cancer; notably, non-small cell lung cancer (NSCLC). For example, mutations in EGFR are found in up to 50% of NSCLC patients and the E746-A750 deletion accounts for 30-40% of such EGFR mutations. Currently, there are no available therapeutics that specifically target the E746-A750 deletion.

Researchers at the National Cancer Institute (NCI) have isolated T cells that recognize the EGFR E746-A750 deletion. Retroviral transfer of the TCR genes conferred recognition of

tumor cell lines with EGFR E746-A750 deletion in the context of HLA DPA1*02:01 and DPB1*01:01. These HLAs exists in about 10% of Caucasians and 50% African Americans, respectively, in the US. This discovery allows for the specific elimination of tumor cells with E746-A750 deletion mutation present in a significant portion of the more than 222,500 NSCLC patients.

The National Cancer Institute, Surgery Branch, is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize these novel, EGFR mutation-reactive TCRs.

Potential Commercial Applications

- Significant number of lung cancer patients may benefit from this receptor
- Use of the TCRs in chimeric proteins for research purposes in cancers with mutated EGFR

Competitive Advantages

- First T cell receptor that can kill tumors by targeting the EGFR E746-A750 deletion
- EGFR mutations common in non-small cell lung cancer patients

Inventor(s)

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Development Stage

- Pre-clinical (in vivo)

Patent Status

- **U.S. Provisional:** U.S. Provisional Patent Application Number 62/665,234 , Filed 01 May 2018

Related Technologies

- E-237-2017 - T Cell Receptors Targeting p53 Mutations for Cancer Immunotherapy and Adoptive Cell Therapy
- E-028-2015 - Novel Cancer Immunotherapy: A T Cell Receptor That Specifically Recognizes Common KRAS Mutations
- E-181-2017

Therapeutic Area

- Cancer/Neoplasm

Updated

Wednesday, January 25, 2023