

T CELL RECEPTORS WHICH RECOGNIZE MUTATED EGFR

SUMMARY (1024-CHARACTER LIMIT)

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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STATUS

Active

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 exist 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 Hotspot Mutations and Methods of Isolating the Same](#)
- [E-028-2015](#)
- [E-181-2017](#)

THERAPEUTIC AREA

- Cancer/Neoplasm