TETHERED INTERLEUKIN-15 (IL-15)/IL-21 TO ENHANCE T CELLS FOR CELLULAR THERAPY

SUMMARY (1024-CHARACTER LIMIT)

Researchers at the National Cancer Institute (NCI) have developed a method to improve the function of therapeutic engineered T cells used for Adoptive T Cell Therapy (ACT) for various cancers and diseases through the co-expression of Interleukin-15 (IL-15) and IL-21 by a flexible linker to the cell membrane. Researchers at the NCI seek licensing and/or co-development research collaborations for this invention.

NIH REFERENCE NUMBER

E-068-2018

PRODUCT TYPE

- Therapeutics

KEYWORDS

- Interleukin-15, Il-15, Interleukin-21, IL-21, T Cells, Adoptive Cell Therapy, ACT, Chimeric Antigen Receptor, CAR, Cancer, Hinrichs

COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

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STATUS

Active

DESCRIPTION OF TECHNOLOGY

Interleukin-15 (IL-15) and IL-21 have been reported to support the function of anti-tumor T cells. However, their use in the clinic has been constrained, in part, by dose-limiting toxicity and the need for repeated administration. To overcome these limitations, researchers in the National Cancer Institute (NCI) Experimental Transplantation and Immunology Branch (ETIB) have developed synthetic IL-15 and IL-21 molecules for autocrine expression by the engineered therapeutic T cells. These molecules were designed with flexible linkers that connect to cell membrane anchors. This, in turn, reduces systemic

toxicity caused by free cytokine molecules. The inventors have shown that co-expression of the novel IL-15 and IL-21 tethered molecules improves the anti-tumor efficacy of the therapeutic engineered T cells in vivo.

POTENTIAL COMMERCIAL APPLICATIONS

- Treatment of cancer patients receiving T cell-based immunotherapy

COMPETITIVE ADVANTAGES

- T cells that co-express the tethered IL-15 and IL-21 on their cell membrane can increase therapeutic effectiveness of adoptive immunotherapy because it can reduce systemic toxicity caused by free cytokine molecules
- T cells that co-express the tethered IL-15 and IL-21 on their cell membrane are already known to have a greater decrease in tumor size compared to those mice treated with T cell-based immunotherapies using unmodified T cells

INVENTOR(S)

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DEVELOPMENT STAGE

- Pre-clinical (in vivo)

PATENT STATUS

- **U.S. Provisional:** U.S. Provisional Patent Application Number 62/628,454 , Filed 09 Feb 2018

THERAPEUTIC AREA

- Cancer/Neoplasm