NATIONAL CANCER INSTITUTE
Technology Transfer Center

Methods of Producing T-cell Populations Using P38 MAPK Inhibitors

Summary

Researchers at the National Cancer Institute (NCI) developed a method of producing larger populations of minimally-differentiated, persistent T-cells, which is critical for successful treatments, using p38 mitogen-activated protein kinase (MAPK) inhibitors. NCI seeks licensing and/or co-development research collaborations to further develop, evaluate, and/or commercialize this new method.

NIH Reference Number

E-002-2018

Product Type

- Therapeutics

Keywords

- p38, MAPK, Inhibitor, T-cells, Immunotherapy. Restifo

Collaboration Opportunity

This invention is available for licensing.

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Description of Technology

Adoptive cell therapy (ACT) uses cancer reactive T-cells to effectively treat patients. However, several obstacles inhibit the successful use of ACT for cancer treatment. Current approaches for the expansion of T-cells may produce T-cells with a terminally differentiated phenotype that is associated with diminished anti-tumor activity and poor capacity for long-term persistence. Studies have shown that improving metabolic properties and persistence of T-cells during ex vivo expansion could improve anti-tumor efficacy of T-cells. Thus, there is a need for improved methods of obtaining an isolated population of effective T-cells for ACT.

Researchers at the National Cancer Institute (NCI) developed a method of producing larger populations of minimally-differentiated T-cells using p38 mitogen-activated protein kinase (MAPK) inhibitors. The researchers have identified p38 kinase as a key target

molecule to preserve several desired qualities of T-cells while they are expanded prior to infusion in cancer patients. The researchers found that pharmacologic or genetic inhibition of p38 kinase improves expansion, metabolic properties, genomic stress, and cytolytic function of T-cells to clear tumors. P38 kinase serves as novel target that uncouples T-cell expansion to differentiation and enhances tumor clearance in adoptive cell transfer therapies for cancer.

The NCI Surgery Branch is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, and/or commercialize a novel method of producing effective T-cell populations using p38 MAPK inhibitors.

Potential Commercial Applications

- Clinically-feasible method to enhance the efficacy of immunotherapy for advanced cancer patients
- Useful for the generation of highly effective cancer reactive T-cells

Competitive Advantages

- Produces increased number of persistent, cancer reactive T-cells
- Reduces cell death during T-cell expansion and improves effector function of T-cells
- Potential for increased dosage and/or number of infusions from a single patient harvest

Inventor(s)

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Development Stage

- Pre-clinical (in vivo)

Patent Status

- **U.S. Provisional:** U.S. Provisional Patent Application Number 62/570,708 , Filed 10 Oct 2017
- **PCT:** PCT Application Number PCT/US2018/055206 , Filed 10 Oct 2018

Related Technologies

- E-094-2018 - Potassium Hydroxy Citrate Promotes Longevity and Efficacy of Anti-Tumor T cells for Adoptive Cell Therapy (ACT)

Therapeutic Area

- Cancer/Neoplasm

Updated

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