UNIVERSITY OF MINNESOTA
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Derivation of human T-(progenitor) cells from human T-cells derived induced pluripotent stem cells (T-iPSCs)

A method for generating T cells from patient-derived induced pluripotent stem cells, enabling scalable and customizable immunotherapies for cancer and other diseases.

IP Status: US Patent Issued; Patent Number 12,270,050

Applications

- Cell-based therapies
- Regenerative Medicine
- Oncology

Key Benefits & Differentiators

- **Personalized Immunotherapy:** Utilizing a patient's own cells minimizes the risk of immune rejection and enhances treatment specificity.
- **Scalable Production:** The method allows for the expansion of T cells in vitro, facilitating large-scale production necessary for clinical applications.
- **Versatile Engineering:** The generated T cells can be modified to express CARs or TCRs, enabling targeted therapies for various diseases, including cancer and infectious diseases.
- **Broad Therapeutic Potential:** Applicable in oncology, infectious diseases, and regenerative medicine, this technology supports the development of advanced cell-based therapies.

Technology Overview

Researchers at the University of Minnesota have developed a novel method for generating T-progenitor cells from human T cell-derived induced pluripotent stem cells (TiPSCs). This approach enables the reprogramming of a patient's own T cells into TiPSCs, which can then be differentiated back into functional T cells. These regenerated T cells can be genetically engineered to express specific receptors, such as chimeric antigen receptors (CARs) or T cell receptors (TCRs), enhancing their ability to target and eliminate cancer cells or pathogens. This technology requires less than half the time of other available methods while using fewer reagents and reducing the complexity of the procedure. This method creates a renewable and patient-specific source of T cells, potentially improving the efficacy and accessibility of immunotherapies.

Phase of Development

TRL: 3-4
This technology has been optimized for the generation of human T progenitors from various human T-iPSCs

Desired Partnerships

This technology is now available for:

Technology ID
20150124

Category
All Technologies
Life Sciences/Biologics
Life Sciences/Human Health
Life Sciences/Pharmaceuticals
Life Sciences/Therapeutics

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