NU Tech
Technology Partnership of Nagoya University, Inc.

(A-65)

Method for Preparing Genetically-Modified T Cells Which Express Chimeric Antigen Receptor

Background

Clinical studies of Chimeric Antigen Receptor T (CAR-T) therapy have been conducted in the US for chemotherapy resistant patients. CAR-T therapy is recognized as an outstanding scientific achievement and the most promising cancer treatment. However, since viral vectors are occasionally created from pathogenic viruses, CAR-T therapy has some potential risks. In addition to safety concerns of using viral vector systems, its large medical care costs have been a challenge.

In order to solve the problem of the cost and the safety in CAR-T therapy and to improve the efficiency of gene introduction, a non-viral system for preparing genetically-modified T cells which express chimeric antigen receptor has been developed.

Technology Overview

The research team at Nagoya University has improved the large-scale T cell culture method and achieved the highest introduction efficiency in a non-viral system; over 50%, by mixing and co-culturing Genetically-modified T Cells with activated T Cells that were separately prepared. Additionally, they have succeeded in developing a method of efficient preparation for viral specific CAR-T cells by co-culturing Genetically-Modified T Cells with activated T Cells carrying viral peptides.

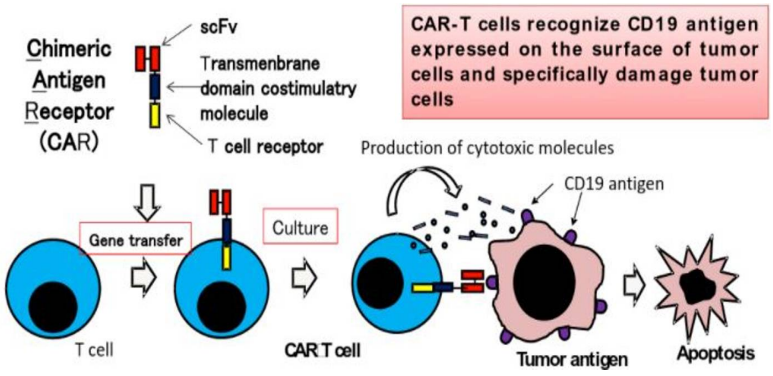

Figure1. Application of CAR-T Therapy

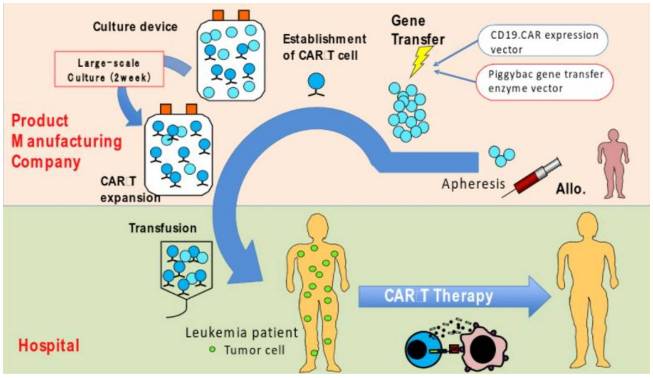

Figure2. Future Model of CAR-T Therapy with regenerative medicine product

Benefits

Cost reduction and increase safety. Applicable not only to an autologous setting but also an allogeneic setting due to the diminished allogeneic reaction from the non-viral gene transfer method.

Seeking

Licensing

IP Status

Patent application submitted

Patents

PCT/JP2016/079989, JP2015-255539

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