MerTK - a novel target for improved Adoptive T Cell Cancer Therapy

Stimulation of MerTK Pros1 positively regulates CD8+ T cell proliferation. T cells cultures for three days in the presence of absence of 50 nM Pros1.

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Background

New immunotherapies for treatment of cancer have been developed and implemented over the later years, including adoptive cell transfer (ATC) immunotherapy. T cells used for ATC can be derived from tumor tissue - tumor infiltrating lymphocytes (TILs). TILs comprise relatively high frequencies of tumor specific T cells which can be expanded in vitro and transferred back to the patient.

Cellular therapy will be part of clinical oncology in the near future highlighting the need for robust protocols to generate a homogenous cellular product which generates T cells with optimal functional capacity with respect to proliferation, cancer cell killing and cytokine production.

The invention

Activated CD4 and CD8 T cells express the Mer Tyrosine Kinase (MerTK) receptor as well as express the ligand Protein S (Pros1).

Addition of a MerTK ligand to a culture of CD8 T cells positively impacts the cell proliferation (illustration on front page) and cytokine release of the CD8 T cells.

Illustrated (right) is the increased release of interferon-γ (IFN-γ) with Pros 1 cultivation.

Key selling points

- An improved method for Adoptive T cell therapy
- Pros1 is a known endogenous ligand of MerTK
- in vitro stimulation for ATC

Development status

There is ongoing research further investigating the effect of Pros1 stimulation on CD8 T cells on the ability of the T cells to kill cancer cells.

Intellectual property rights

A patent application was filed in April 2018.