Leibniz Institute for Immunotherapy
Cells built to cure

New insights into immune cell function in the anti-tumour response of T cell receptor (TCR) or chimeric antigen receptor (CAR) modified immune cells in order to optimise TCR/CAR-based adoptive cell therapy

One form of adoptive immunotherapy is to give the patient's immune cells a defined specificity ex vivo so that they can recognize and eliminate target tissues, such as tumours or inflammatory tissues. Similarly, adoptive immunotherapy with suppressor cells can be used to limit an autoimmune response. Immune cells can be genetically engineered to express a T cell receptor (TCR) or a chimeric antigen receptor (CAR). However, little is known about the cellular requirements on the side of the immune cells for their respective use in enhancing or reducing an inflammatory response, which hinders further optimisation of the therapy.

The aim of this project is to study the requirements of immune cells, preferably T cells, in terms of their cellular function after TCR or CAR binding to the target tissue and/or after stimulation by immune messengers. The aim is to identify the immune cells that appear to be best suited for the respective therapy (tumour therapy, autoimmune therapy, infection). We want to expose immune cells to stimulatory or inhibitory signals via their TZR or CAR in vitro, and measure their influence on immune cell development and function using molecular and functional in vitro methods. We also want to understand how function, metabolism and gene expression change in response to these signals in order to understand the regulatory relationships and ultimately optimise therapeutic protocols.

Data protection relevant: Information about your age and sex will be required. Parts of your genetic material will be sequenced.

Specific research project: "Use of PBMC from healthy donors to optimise TCR/CAR-based cell therapy" (Ethics vote 21-2224-101)

Cooperation with other institutions:
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