CAAR4NAD – Preclinical development and GMP-compliant manufacturing of Chimeric Autoantibody Receptor T cells for Neurologic Autoimmune Diseases

Consortium coordinator:
Dr. med. Momsen Reincke
Department of Neurology with Experimental Neurology
Charité – University Hospital Berlin

Project partners:
Prof. Dr. med. Harald Prüß
Dr. med. Niels von Wardenburg
Department of Neurology with Experimental Neurology
Charité – University Hospital Berlin

Prof. Dr. med. Annette Künkele-Langer
Department of Pediatric Oncology and Hematology
Charité – University Hospital Berlin

CAAR-T cells are a promising new treatment approach for neurological autoimmune diseases. They are genetically modified to selectively recognize and destroy autoreactive B cells that are responsible for the development of the disease. This project focuses on two main objectives:

(i) Current treatments weaken the immune system, making patients more susceptible to infections. The therapy to be developed targets the root cause of the disease without compromising the entire immune system.

(ii) Goal is to enable patients to recover more quickly and achieve longer-lasting remission.

The project consists of two parts. In the first part, the scientists will test three different CAAR-T cell treatments for various neurological autoimmune diseases in animal models and use a membrane proteome array to analyze potential off-target interactions that could cause unintended attacks on healthy tissue. Based on safety, efficacy, and commercial potential, they will then select the most promising treatment. In the second part, a manufacturing process for the selected therapy will be developed, that meets the high standards required for clinical trials. By the end of the project, the researcher will have a complete production process and the necessary data to proceed with clinical trials.