

FACTSHEET

The Research Consortium PolyAiD

Polymer-Assisted Administration of Autoantigens for the Curative Treatment of Autoimmune Diseases

Project Details



Copyright: J. Heeren, UKE

Figure: Selective inclusion of nanoparticles in LSECs.
(Source: Universitätsklinikum Hamburg-Eppendorf - UKE)

Project Focus

Pharmacy, autoimmune diseases, drug delivery, nanotechnology

Coordination

Dr. Theo Schotten,
Fraunhofer Institute for Applied Polymer Research IAP
Center for Applied Nanotechnology CAN

Project Duration

01.02.2019 - 31.01.2022

Project Description

An excessive response of the immune system against the body's own substances causes numerous serious **autoimmune diseases**, such as type I diabetes, multiple sclerosis, Crohn's disease and rheumatoid arthritis. **So far, there is no causal treatment** that promises a lasting cure. Existing therapies, which are associated with severe side effects, **only aim at suppressing the immune system** and thus only alleviating the clinical picture.

In recent years, the research association has found initial evidence of a cure for these diseases by **administering small proteins, so-called peptides**, which normalise the body's immune response. For this purpose, **the peptides must be transported to specific liver cells (LSECs)**, which regulate the immune response, and subsequently be released. In the project, **nanocapsules** are being researched **as transport containers** for the peptides.

An additional research goal is to fill these nanocapsules with **peptide mixtures that are adapted individually to the patient**, so that optimal treatment can take place. The project combines recent experimental findings into an **innovative concept** and offers the prospect of **curing very different autoimmune diseases** using a new material and a common platform technology, as well as the **possibility of personalized treatment**.

Partners of the Research Consortium and Project Tasks

Fraunhofer Institute for Applied Polymer Research IAP Center for Applied Nanotechnology CAN, Hamburg (FKZ: 13XP5079A)

Polymer capsules as selective nanocarriers for autoantigen peptides.

Topas Therapeutics GmbH, Hamburg (FKZ: 13XP5079B)

Validation of polymer nanocapsules for the generation of tolerance in autoimmune diseases.

Universitätsklinikum Hamburg-Eppendorf (UKE) - Institut für Biochemie und Molekulare Zellbiologie (FKZ: 13XP5079C)

Targeting and processing of polymer capsules.

