

## Microboregulators to sort autoimmune disorders

Initiative: "Experiment!" (beendet)

Ausschreibung: Explorative Phase

Bewilligung: 01.11.2017

Laufzeit: 1 Jahre 6 Monate

Projekt-Website: [www.fuhrmann-lab.de](http://www.fuhrmann-lab.de)

Autoimmune diseases such as type-1-diabetes or coeliac disease are severe, unbalanced overreactions of the human immune system against erroneously recognized antigens. These overreactions are frequently accompanied by strong self-reactions towards healthy tissue. Subsequently, loss of physiological regulatory immune mechanisms is leading to disease manifestation. Although some pharmacological approaches are available for some diseases with certain success, a causal approach with long-term improvement is lacking at the moment. This project aims to establish the first cell-free microboregulatory system exploiting pathogens' ability to manipulate host immune responses by using microorganism-derived outer membrane vesicles (i.e. pathogen-derived entities will be exploited for the treatment of autoimmune diseases). The main tasks will be to isolate and characterize vesicles from microbial sources, to engineer microboregulators by coupling the vesicles onto microparticles and finally to assess the immunomodulatory capabilities of the microboregulators in complex in vitro models. Overall, this project tries to answer the question whether outer membrane vesicles can be used to regulate unbalanced T cell activity in coeliac disease thereby inducing regulatory processes and training the human immune system to elicit normal response.

### Projektbeteiligte

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