Hochschule Kaiserslautern
University of Applied Sciences

Applied Research Center
Integrated Miniaturised Systems

IMS

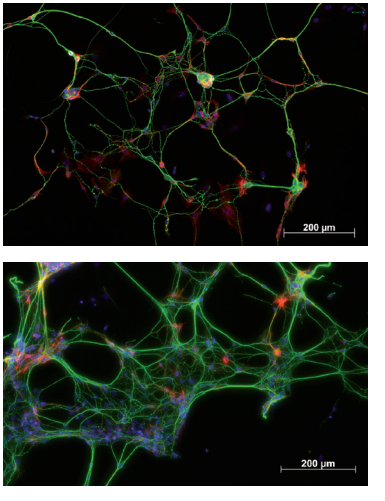
ENSAD

The enteric nervous system as predictor for pathological changes and therapeutically effectiveness by Alzheimer disease

During the last decades the lifespan increases and therefore age- related diseases like the Alzheimer disease (AD). For the modern medicine AD is a big challenge since already before the clinical manifestation numerous of nerve cells have been mortified in the central nervous system (CNS). The project ENSAD is believed to answering three major questions:

1. Does the enteric nervous system features physiological changes similar to these found in the CNS before clinical manifestation of AD?
2. Does an early pharmacological intervention leads to improvements of the AD pathology in ENS and CNS tissues?
3. Does the manipulation of the proteases ADAM10, a pivotal enzyme for the amyloid precursor protein (APP) processing, induces positive effects?

To accomplish our objectives we employing an AD mouse model (5xFAD) which sustains all genes responsible for heritable AD in humans. In the course of this project we are using measurements of gut motility, electrophysiological methods, and immune histological methods. The answers of the ENSAD project will conclusively clarify whether we can transfer these ideas into the human medicine.



Immunohistochemically staining of 14 days co-cultured dissociated neurons (green) and glia cells (red) of myenteric plexus from mouse colon. The cell nuclei were stained blue. Top, wild type. Bottom, 5XFAD mice. Please notice the enhanced reticulation and neurite gauge in the bottom picture (bachelor thesis S. Ull-Sopha).

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