Master Thesis at the Department of Neurology:

Investigating Neuro-immune Interactions in Fibromyalgia Syndrome

Topic: Exploring neuro-immune mechanisms in fibromyalgia syndrome using a co-culture system composed of human iPSC-derived sensory-like neurons and peripheral blood mononuclear cells

Background: Fibromyalgia syndrome (FMS) is a chronic pain disorder that affects millions of patients worldwide. The pathophysiology of pain in FMS is incompletely understood. There is increasing evidence for an immune component triggering FMS pain. Our research focuses on investigating the impact of patient-derived peripheral blood mononuclear cells (PBMCs) on human iPSC-derived sensory-like neurons (iSN). Using an established *in vitro* co-culture model, we aim to better understand the cellular and molecular mechanisms underlying neuro-immune interactions in FMS pain.

Tasks and Techniques:
- Cultivation and maintenance of human iSN from two healthy donor cell lines
- Co-culturing of iSN with patient-derived PBMC
- Isolation of RNA and proteins from cell culture samples
- Analysis of selected molecular markers using RT-qPCR and Western blotting
- Quantitative data analysis and interpretation of experimental results

Requirements:
- Enrollment in a MSc programme in biology, biomedicine, neuroscience, biochemistry or a related field.
- Strong interest in neuro-immunology, pain research, and human cell-based models.
- Careful, reliable, and well-organized laboratory work with accurate documentation.
- Motivation to acquire new experimental skills, develop independence in laboratory work, and follow established procedures for handling human biosamples
- Basic experience in cell culture
- Basic knowledge of molecular biology
- Experience with qPCR or western blot is advantageous

Start and duration: At the earliest possible date for 9 months.

Team of supervisors: Prof. Dr. N. Üçeyler, Vijay Medala, M.Sc. (Medala_V@ukw.de), Simran Jeet Kaur, M.Sc. (Kaur_s@ukw.de)

Contact: Application documents (CV and motivation letter) to Prof. Dr. N. Üçeyler: ueceyler_n@ukw.de