

# Two PhD positions at the Department of Neurology, University of Würzburg

**Topic:** Determining the pathogenicity of genetic variants in pain-associated genes of patients with small fiber pathology and pain.

**Background:** Screening for genetic alterations in pain-associated genes is increasingly performed in patients with pain syndromes of so far idiopathic origin and often results in findings that remain of unclear pathogenicity. Investigating patient-derived sensory neurons and Schwann cells differentiated from induced pluripotent stem cells (iPSC) in mono- and co-culture enables the analysis of the cellular impact of such genetic alterations. For this, sophisticated protocols are mandatory to reach homogeneous cell cultures for multidimensional analysis. Adding in depth electrophysiological assessment of these neuronal cells and co-cultures with Schwann cells will set the robust basis for translational research directly linked to patients and their clinical symptoms.

**Funding:** Our project combines highly innovative clinical and basic research and is funded by the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG).

## Tasks PhD candidate 1:

- Generation of patient-derived sensory neurons via iPSC reprogrammed from skin fibroblasts
- Establishing an advanced cell culture protocol for iPSC and sensory neurons
- Multidimensional analysis of cultured sensory neurons using e.g. immunocytochemistry, qRT-PCR, and FACS
- RNA analysis of sensory neurons
- High-resolution microscopy of sensory neurons and Schwann cells

## Tasks PhD candidate 2:

- Generation of patient-derived Schwann cells via iPSC reprogrammed from skin fibroblasts
- Multidimensional analysis of cultured Schwann cells using e.g. immunocytochemistry, qRT-PCR, and FACS
- Electrophysiological analysis of sensory neurons and Schwann cells in mono- and co-culture including patch-clamp and multielectrode array (MEA) analysis
- HEK cell transfection and electrophysiological analysis

**Prerequisites:** We are seeking for very industrious, eager, and reliable PhD candidates of Life Sciences or related Faculty who are enthusiastic about scientific work, and have experience in cell culture, molecular biology, microscopy techniques, and electrophysiology, respectively. He/she is motivated to engage himself/herself in this exciting project and to become part of our enthusiastic research team!

**Constellation:** Our project will be performed by two PhD candidates who will team-up and work complementarily, however, on separate topics of the entire project.

**Start and duration:** Earliest time point from now on for 3 years, 65% E13.

**PI and contact:** Please send your application including a motivational letter to Prof. Dr. N. Üçeyler [ueceyler\\_n@ukw.de](mailto:ueceyler_n@ukw.de).