

Master's thesis

High-Field Quantitative MRI to investigate microstructural changes in Migraine and Epilepsy Patients

For a current project in the field of clinical quantitative MRI, applications are invited for a master's thesis in the Neuroimaging Group in the Spinal Cord Injury Center at the Balgrist Research Campus in Zurich. The neuroimaging group is a multidisciplinary team with physicians, physicists, engineers, and neurobiologists. The project will be carried out under supervision of Prof. Dr. Dr. Patrick Freund and MSc Lynn Farner.

Project background and objective

Migraine can be observed more often in patients with epilepsy. Both diseases are probably network diseases. However, for both diseases cortical as well as non-cortical (e.g. brainstem and spinal cord) regions have been insufficiently investigated anatomically and functionally using modern high-field MR imaging. The goal of this project is to provide the first detailed in vivo and mechanistic quantification of functional and microstructural network changes with clinically certified high-field MRI (7 Tesla) in patients with DRE and migraine.

Tasks

- To utilize MR technologies to acquire new MR data in patients.
- To optimise the developed post-processing pipeline for the acquired image data.
- To assist with the recruitment of patients and to be the primary contact person.

Person specification

- Enrolment in a master's program in biomedical engineering, neuroscience, biology or equivalent
- Familiar with MATLAB and statistics software
- Strong interest in medical image processing
- Desire to work and be in contact with patients
- Analytical skills (preferably with some knowledge of statistics and neurobiology)
- Good communication skills – **fluent in German** – and a good English level

Start/Duration

- Start: Immediately
- Duration: 6 months (or longer, depending on UZH/ETH regulations)

Contact information

If you are interested in the research project or would like additional information, please send an email with your CV to:

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