



PhD position available

**Project: “Changes in brain communication and cognition in depressive patients who undergo electroconvulsive therapy”**

Major depressive disorder (MDD) is a severe mental disorder that is estimated to affect as many as one in five adults during their lifetime. 15-30% of MDD patients have a treatment resistant depression, i.e. they do not show a clinical response to two successive antidepressant (psychological or pharmacological) interventions of adequate dose and duration. One of the most effective options to treat treatment resistant depression is electroconvulsive therapy (ECT), in which a series of brief seizures is intentionally triggered by electrical stimulation of the brain under general anesthesia.

In this project we follow patients throughout ECT treatment compared to patients receiving treatment as usual (TAU) and regularly assess cognitive and affective parameters using behavioral testing as well as biomarkers for brain communication using functional magnetic resonance imaging and blood sampling. We use machine learning methods to characterize patients in terms of cognition, affect and brain communication and to predict their responses to ECT. The PhD candidate will interact with the patients, and will be involved in acquiring, analyzing and interpreting behavioral and imaging data and developing prediction models.

Interest in clinical neuroscience, brain imaging, and machine learning/statistical methods are essential. The lab’s language is English, but interacting with patients requires the ability to converse on a good level in German. Start of the position is foreseen for July 1st, 2023. The position is funded for up to three years, according to the German pay scale TV-L E13 (65%). The project is part of the DFG graduate program “Neurobiology of Social and Emotional Dysfunctions” GRK 2174 (<https://www.uni-regensburg.de/research/grk-emotion/grk-home/index.html>).

**Prof. Dr. Caroline Nothdurfter**  
**Department of Psychiatry and Psychotherapy**  
**Molecular Psychopharmacology Group**  
**University of Regensburg**

[Caroline.Nothdurfter@medbo.de](mailto:Caroline.Nothdurfter@medbo.de)

<https://www.uni-regensburg.de/medizin/psychiatrie-psychotherapie/forschung/molekulare-neurowissenschaften/index.html>

**Prof. Dr. Jens Schwarzbach**  
**Department of Psychiatry and Psychotherapy**  
**Biomedical Imaging Group**  
**University of Regensburg**

[Jens.Schwarzbach@ukr.de](mailto:Jens.Schwarzbach@ukr.de)

<https://www.uni-regensburg.de/medizin/psychiatrie-psychotherapie/forschung/biomedizinische-bildgebung/index.html>