

## Natural Science PhD Student (m/f/d) - Institute of Physiology

### Topic: Neurobiology / Optogenetics at the Otto-von-Guericke-University Magdeburg

The research group Neurophysiology and Optogenetics, Institute of Physiology, Medical Faculty, Otto-von-Guericke-University Magdeburg is looking for PhD students (salary on TVL-basis) with a strong interest in neurobiological questions.

#### Our research question:

Our senses enable us to react quickly to our environment. However, what we actually perceive (and what we don't!) is strongly influenced by our attention as well as expectations and past experiences.

Thus, our brain actively filters and modulates information we receive from our senses, primarily through the use of so-called "top-down" inputs. "Top-down" systems are brain areas that have access to goal-directed, as well as multimodal information and are highly interconnected with a variety of other brain areas. A disturbance of these systems can lead to severe disorders such as attention deficit syndrome or autism. However, little is known about how these "top-down" inputs exactly influence sensory information processing. Our DFG-funded research group is investigating these "top-down" modulations using the olfactory system (sense of smell) of mice as a model.

#### Our Methods:

Ph.D. students will be involved in ongoing research projects. In these projects, we record neuronal activity at the single-cell level using high-resolution imaging or electrophysiological methods. Combined with optogenetic manipulations, these methods allow us not only to observe activity in neuronal networks "live" and in real-time, but also to selectively alter (activate or inhibit) them to determine which networks in the brain influence sensory processing.

For this research, we use a variety of innovative techniques in which PhD students will be trained, including in vivo two-photon microscopy, in vivo extracellular electrical recordings, in vivo calcium imaging, genetic, pharmacological, and optogenetic manipulations of brain activity, and behavioral experiments.

#### Your profile:

You have completed a degree in biology, biochemistry, engineering, or related disciplines, have a strong interest in neuroscience, and the ability to work in a multidisciplinary team.

#### Our Offer:

We are looking for motivated individuals to join our DFG-funded projects (research group, priority program). We offer an open working atmosphere where we mutually benefit from each other's experience without limiting individual creativity. Our research group is embedded in the neurobiological orientation of the Institute of Physiology, Medical Faculty, Otto von Guericke University, and has several international cooperation partners, thus offering a stimulating environment for a Ph.D. in the field of neuroscience (stays abroad are possible if needed).

Start-up funding is 3 years, an extension is possible. Intensive supervision of the scientific development is offered by the FOR/SPP and the graduate program of the Magdeburg CBBS (see also [gp.cbbs.eu](http://gp.cbbs.eu)).

**Remuneration:** The remuneration group E13 according to the collective agreement for the public service of the federal states is waiting for you.

**Appointment:** The position is to be filled immediately, part-time (65%), and for a limited period.

If you have any questions, please do not hesitate to contact us by e-mail: Prof. Dr. M. Rothermel ([markus.rothermel@med.ovgu.de](mailto:markus.rothermel@med.ovgu.de)) and Dr. D. Brunert ([daniela.brunert@med.ovgu.de](mailto:daniela.brunert@med.ovgu.de)).

Please apply via email: [markus.rothermel@med.ovgu.de](mailto:markus.rothermel@med.ovgu.de) (a single PDF file) and include final certificates, short summary of the final thesis, curriculum vitae, and 2 potential references.