

Master-Project

for students in Integrative Neuroscience, Psychology, PNK and similar

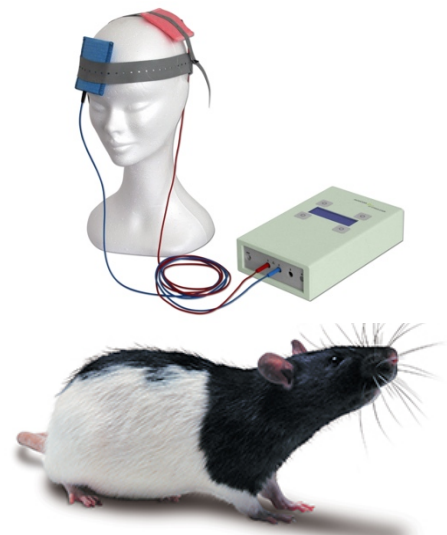
How does current applied to the head change neurotransmitter concentration?

A study investigating the effects of transcranial direct current stimulation (tDCS) using magnetic resonance spectroscopy (MRS) in rodents

We are seeking a master student for a joint project of the Neuropsychology Group of the University Hospital Magdeburg (PD Dr. T. Zähle, Dr. K. Heimrath) and the Small-Animal MRT Lab of the Leibniz Institute for Neurobiology (PD Dr. Budinger).

Topic:

It is well known that small currents, non-invasively applied to the surface of the head, change the physiological state of the brain like ongoing oscillations across different areas (Antal et al., 2013, Front Hum Neurosci). It is also assumed that this stimulation changes the balance of neurotransmitters like glutamate and GABA (Stagg et al., 2009, J Neurosci); however, this issue is poorly investigated so far. In the proposed project, we like to investigate possible alterations of the neurotransmitter balance in rats using non-invasive tDCS and MRS (Yoon et al., 2012, Brain Res; Takano et al., 2011, Neurosci Lett).



Methods:

You will learn modern neuroscience and clinical methods like

- animal handling, training, and anesthesia
- transcranial direct current stimulation (tDCS)
- magnetic resonance spectroscopy (MRS)
- complex data analysis (using software like LCModel, jMRUI)

Contact:

If you are interested in this project and in joining our interdisciplinary team please contact either Dr. Kai Heimrath (kai.heimrath@med.ovgu.de) or PD Dr. Eike Budinger (budinger@lin-magdeburg.de).

