



MAFIL

- Multimodal And Functional Imaging Laboratory

What we do

Cognitive and affective aspects of agency (EMOAGENT)

In the EMOAGENT project we focused on the bodily aspects of our Self experience and the effect it has on how much we perceive ourselves to be an authors of our bodily actions. Our research can have implications for the understanding of mechanisms behind various issues like Functional Movement Disorder. In this project, we are using realtime neurophysiology feedback, functional magnetic resonance imaging and a psychological sense of agency task.

An evaluation of empathy induction within driver-rehabilitation programs

The goal of the project is finding better understanding of the empathy capability of different groups of drivers and to identify the possibilities of modifying social behaviour in the drivers' population with a complicated record of their driving practice. The project utilises the so-called "hyperscanning" - the brain activity is scanned simultaneously in two interacting individuals (the measurements are taken simultaneously at two MR devices). Thus, neurophysiology of socio-emotional behaviour is analysed in real time interactions.

Neurologic and psychological markers of stress / resistance in the survivors of the holocaust and their descendants

This three-generation study is a research project aimed at investigating the psychological, neurobiological and genetic factors of strong stress in the survivors of the Shoah (holocaust) and finding an association between them. Another goal is to reveal mechanisms of trans-generation transfers of biomarkers by which chronic stress affects the lives of the second and third generations compared to control subjects of corresponding age, gender and education.

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MRI scanning room

3T Siemens Prisma MR scanner with participant prepared for functional MRI study.



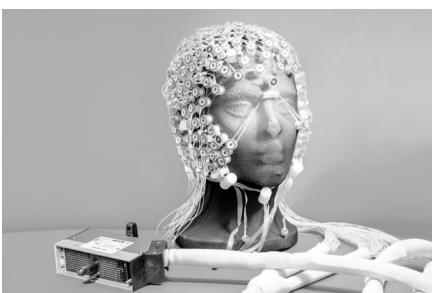
MRI control room

Siemens MR console, stimulation PC and hardware for recording of physiological signals.



rTMS lab

Alien technik DuoMag XT-100 system for guided rTMS brain stimulation.



High-density EEG cap (256 channels) for EGI GES 400 MR compatible EEG system

Predictors of Alzheimer's disease and other dementias

In this project, patients suffering from Alzheimer's disease and Parkinson's disease have been monitored on a long-term basis, in comparison with age-linked healthy subjects. The goal of the project is finding early biomarkers of the analyzed diseases. CF MAFIL performs measurements for the project (combining functional structural and diffusion MR data).

Services and Methodologies Provided

- Human MR imaging in high field (3 T) with focus on neuroimaging (anatomical, functional, diffusion and perfusion imaging and MR spectroscopy)
- Hyperscanning (MR scanners can be used for simultaneous fMRI measurement of two competing or cooperating subjects)
- Human electrophysiological studies including neuro-modulation
- Simultaneous recording of MR and electrophysiology
- Various types of data processing

Equipment

- Two whole-body human 3T MR scanners (Siemens Prisma 3T)
- 256-channel MR compatible EEG + other MR compatible systems for simultaneous EEG/ExG recordings
- Specialized hardware for stimulation and response recording inside or outside the MRI
- rTMS with frameless stereotaxy for noninvasive brain stimulation + MR compatible tDCS/tACS device

Contact and Location

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