

TITLE

PhD student Neurotechnology

SUMMARY

You will investigate the potential of an innovative experimental approach to stimulate specific neural circuits in the brain to improve functional recovery after stroke.

YOUR ROLE

Brain stimulation methods have shown great promise as a treatment for multiple brain disorders. These methods suffer however from limitations, including poor spatial resolution, which makes it impossible to target specific neuronal circuits, and poorly understood neurophysiological bases, which raises reproducibility concerns. Together with European colleagues, we are developing and testing a groundbreaking method of mechanogenetic stimulation in an interdisciplinary project called SynMech (www.synmech.eu). Our approach is based on the application of functionalized biocompatible magnetic nanoparticles and bioengineered synaptic mechano-sensors that synergistically integrate at specific synaptic connections to repair dysfunctional brain circuits in response to externally applied magnetic fields. Your role will be to assess the effects of this novel mechanogenetic toolkit on different neurobehavioral, neurophysiological and neuroimaging markers in rodent models of stroke. You will apply the novel experimental treatment, involving intracortical gene and nanoparticle delivery, followed by repetitive transcranial magnetic stimulation (rTMS) in mouse and/or rat models of stroke, together with a biotechnician. You will execute serial in vivo functional MRI, optical imaging, electrophysiological recordings and behavioral tests. You will analyze and correlate multiparametric datasets, which you will frequently discuss with colleagues internally, as well as with international partners within the SynMech consortium.

OUR TEAM

You will work in the Translational Neuroimaging Group, part of the Center for Image Sciences of the University Medical Center Utrecht. This dynamic team of physicists, neuroscientists, biomedical engineers and clinical researchers develops and applies imaging methods for (pre)clinical research on cerebrovascular disorders with a particular emphasis on development of novel brain treatments. There is access to two preclinical high-field MRI systems, an optical imaging system, TMS and electrophysiology equipment, animal surgery labs and a behavioral testing room. Research projects are part of (inter)national collaborations with preclinical and clinical researchers working in different disciplines.

YOUR BACKGROUND

You are a highly motivated scientist with great enthusiasm for experimental and translational brain research. You have a master degree in a biomedical field, and you have experience with animal research (preferably with an art. 9 certificate), ideally including imaging/electrophysiology experiments. Good

computer programming skills are desirable. You are eager to learn different techniques and can quickly acquire new competences. You are able to work independently as well as in a team. You have a good command of both written and spoken English.

EMPLOYMENT CONDITIONS

- A salary between €2901,- and €3677,- gross per month (salary scale OIO), based on full-time employment (36 hours).
- Year-end bonus of 8.3% and holiday allowance of 8%.
- Pension insurance with ABP. We take care of approximately 70% of the monthly contribution.
- Access to a variety of online courses through GoodHabitZ.
- The option to select additional employment benefits in exchange for gross salary, such as purchasing a bicycle and memberships.

HOW TO APPLY

www.careersatumcutrecht.com/vacancies/wetenschap-en-onderzoek/phd-student-neurotechnology-2024-4423

CONTACT

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