Postdoc in brain-circuit conduction velocity mapping

Are you curious to understand how fast brain regions communicate with each other and how the speed of communication is degraded by brain diseases? Are you curious to study disease-induced changes in the microstructure of myelinated axons and their electrophysical functional correlates? Are you eager to work in a dynamic multi-disciplinary research environment with a focus on structural brain imaging? If yes, you should send us your application.

The Danish Research Centre for Magnetic Resonance (DRCMR) at Copenhagen University Hospital Hvidovre (Denmark) is seeking a 3-year postdoc in brain circuit conduction velocity mapping. The postdoc position is supported by the European Research Council consolidator grant "CoM-BraiN" – Conduction velocity mapping in the brain network in health and disease - where the aim is to use an MRI scanner to non-invasively map the conduction velocity of neuronal transmissions in the brain network between brain regions.

Your tasks:

- To establish translational animal models (rodents) of neurodegenerative and demyelination diseases mimicking those in humans
- To use optogenetic techniques to ablate and stimulate specific neuronal populations in the brain network
- To measure and analyze the functional readout of brain stimulations using electrophysiology
- To image the microstructural neuronal changes in the animal models. Here you can use classical EM and immunohistochemistry but also 3D imaging techniques such as x-ray synchrotron imaging and light-sheet fluorescence microscopy to obtain 3D insights into anatomy.
- To be fully integrated with the team of preclinical researchers and to prepare the animals for MRI scanning

Your profile:

You should be a motivated international-minded team player and have:

- A PhD degree in Neuroscience or corresponding qualifications within circuit or degeneration neuroscience
- Worked with animals and have established/used animal models
- Documented practical skills in animal handling, stereotaxic surgeries, and anaesthesia
- Worked with tissue preparation for IHC and microscopic imaging used in your scientific publications
- Interest in combining different imaging and functional measurements, e.g. histology and MRI.
- Fluency in English writing and scientific communication
- Independent working and thinking but also integrate with and contribute to the research team.

Furthermore, having worked with viral injections and/or single-cell or LFP electrophysiological recordings is an advantage.

About us:

The project will be carried out at the Danish Research Centre for Magnetic Resonance (DRCMR) which is a leading research centre for biomedical MRI in Europe (www.drcmr.dk). Our mission is to triangulate MR physics and basic physiology from preclinical to clinical research. Approximately 75 researchers from a diverse range of disciplines are currently pursuing basic and clinically applied MR research and its validation with a focus on structural, functional, and metabolic MRI of the human brain and its disorders. The DRCMR is embedded in the Center for Functional and Diagnostic Imaging and Research, a large diagnostic imaging department including all biomedical imaging modalities at the **Copenhagen University Hospital Hvidovre**.

The DRCMR has a state-of-the-art MR-research infrastructure enabling translational research, which includes a pre-clinical 7T Bruker MR scanner, six whole-body MR scanners (one 7T, three 3T and two 1.5T scanners) and a High-Performance Computer cluster for neuroimaging. The DRCMR has pre-clinical labs, a neuropsychology laboratory, an EEG laboratory, and two laboratories for non-invasive brain stimulation.

Our preclinical labs perform basic research in functional, microstructure and plasticity imaging which is centred around the 7T Bruker BioSpec MRI system. The MRI scanner is fully equipped with powerful gradients and a cryo-coil system for rodent imaging. The preclinical labs include a GMO2 classified virus lab and are fully equipped with stereotaxic surgery equipment, and electrophysiology facilities. Our cross-disciplinary research team is designing and validating new types of diffusion MRI and quantitative MRI imaging technologies to non-invasively disentangle the microstructure of brain network and function. Here, it is key to have a true interest in how the microanatomy of the normal and diseased brain can look like and how it impacts brain function. It is our vision to improve the future non-invasive imaging technologies for better patient diagnosis.

Your position:
The candidate will be employed for **a postdoc period** of 36 months with the possibility of an extra year of extension at the Danish Research Centre for Magnetic Resonance where he/she will be part of the Microstructure and Plasticity Group (drcmr.dk/map) and the Preclinical Method group, both led by Associate Professor Tim B. Dyrby.

Salary and Terms of Employment
Salary, pension and terms of employment are by the agreement between the Danish Regions (Danske Regioner) and the relevant professional organization. The salary depends on background education and seniority. Further, supplements can be negotiated. Note that candidates coming from abroad may be eligible for tax reductions. The position is open for candidates of all nationalities. We expect you to start on December 1st, 2022 or soon thereafter.

We see diversity as a strength and encourage all persons regardless of gender, age, ethnicity, disabilities or religion to apply.

Applications should include a cover letter, CV and list of publications together with the names of three references. Applications must be submitted online through the RegionH job portal – Link:
https://candidate.hr-manager.net/ApplicationInit.aspx?cid=342&ProjectId=243019&DepartmentId=18051&MediaId=4754

Application deadline: September 26th, 2022 at 23:59 CET)

For further information regarding the position please contact Associate Professor Tim B. Dyrby
Email: Tim.Bjoern.Dyrby@regionh.dk