Open PhD Position

Neural mechanisms of memory consolidation in neocortex

Place: Zürich, Switzerland

Institute: Brain Research Institute, University of Zürich

Project description

The SNSF AMBIZIONE junior research group of Dr. Shuting Han is seeking motivated candidates for a Ph.D. position available from March 1st, 2024 for four years. As a student, you will be enrolled in the ZNZ PhD program under the supervision of Dr. Shuting Han. The project will be conducted in the lab of and officially supervised by Prof. Fritjof Helmchen (https://www.hifo.uzh.ch/en/research/helmchen.html). The main goal of this project is to investigate the role of spontaneous brain activity in memory formation. We will employ a diverse set of techniques, including calcium imaging in awake mice, virtual reality, and machine learning, to approach this question. Working on this project presents an exceptional opportunity to collaborate with and learn from some of the best neuroscientists in the field.

Our research

The research group of Dr. Shuting Han, funded by the SNSF AMBIZIONE fellowship at the Brain Research Institute in the University of Zurich, will start on March 1st, 2024. Our research focuses on understanding the function of spontaneous activity in the neocortex, particularly with regard to the memory consolidation process, that is, the formation of stable long-term memory.

As a PhD student in the lab, you will be tightly integrated with the host lab of Fritjof Helmchen. Our research involves using a wide range of techniques to understand the fundamental principles of how neural activity in the brain relates to animal behavior, including multi-area two-photon calcium imaging, electrophysiology, machine learning, and rodent behavior. In this project, we specifically aim to unveil mechanisms of long-term memory consolidation in the neocortex, as well as interactions between cortical areas. Our goals are to advance our understanding of how long-term memories are formed and encoded in the neocortex and how internal models of the world, based on memorized experiences, are represented in the normal and abnormal brain.

Requirements for candidates

- A master's degree in a relevant field, such as neuroscience, biology, physics, engineering, or informatics
- Strong interest in systems neuroscience
- Enjoying solving problems
- Experience with or eagerness to learn the techniques required for this project, including microscopy/optics, mouse experiments, data analysis, and electrophysiology

- Experience with programming using Matlab or Python, or strong motivation to learn programming
- Good communication skills in English, willing to work in an international and diverse team Proficient in English

We offer

- An interdisciplinary research environment and a diverse team of excellent neuroscientists
- Opportunity to learn a variety of approaches and state-of-the-art tools to study system neuroscience (optical engineering, single cell physiology, advanced microscopy, neural circuits, electrophysiology, computational methods, rodent behavior, etc.)
- A fantastic living environment in Zurich

Application guideline

Please submit your application as a single pdf file, including the following:

- A CV that includes your education history, research experience, skills relevant to this project, publications, and the contact details of two persons for references
- A motivation letter that covers how your previous experience and personal interest fit this project, and what you would like to learn and achieve during your PhD
- Transcript of records

Contact details

Name: Dr. Shuting Han

Email: han@hifo.uzh.ch