



Bernstein
Center
Freiburg

PhD Position

“Hierarchies in Neuronal Networks”

Biomicrotechnology Lab – Prof. Ulrich Egert

Neuronal networks with inhomogeneous connectivity have been suggested to be more robust against saturation and excessive synchronization in high input regimes. The spatial distribution of connectivity in networks introduces a hierarchy into network organization. These type of multiscale structure appears in many physiological and pathophysiological conditions, ranging from cortical columns to injury, and influences initiation, pattern formation, synchronization and propagation of neuronal activity. In this context, we are interested in structural plasticity, homeostatic dynamics, interaction of networks, and the local balance of excitation and inhibition. We expect that local variability influences the activity structure and robustness of neuronal networks. We test this in synthetic networks of cultured cortical neurons and animal models using electrophysiological, optogenetic and computational approaches.

We invite applications to join the lab for a 3-4 year PhD project in neurophysiology within the PhD program “BrainDisC” at the Bernstein Center Freiburg. The project is financed by a fellowship of the DAAD that can only be awarded to non-German applicants that have not been staying in Germany for more than 15 months at the time of their application.

The ideal applicant has some prior training in neurophysiology, excellent command of the English language, high motivation for independent work in neuroscience, knowledge of some programming language, ideally Matlab or Python, and willingness to contribute to an international team. Experience with cell cultures, in vivo recording, network modeling or intracellular recording would be a plus.

The Bernstein Center Freiburg concentrates research in Computational Neuroscience and Neurotechnology at the University of Freiburg, Germany. The projects are highly interdisciplinary and span across mathematical-theoretical approaches on the function and dynamics of neuronal networks, neuroanatomy, experimentally driven neurophysiology and the development of technologies for medical application.

Further details on:

www.bcf.uni-freiburg.de/jobs

Contact:

Dr. Birgit Ahrens
Teaching & Training Coordinator
Hansastr. 9a
79104 Freiburg, Germany
birgit.ahrens@bcf.uni-freiburg.de



www.bcf.uni-freiburg.de