

ERC-Funded Post-doc Position in Cellular Neurobiology, Grenoble, France

Deciphering the Role of Huntingtin in Energy Supply for Axonal Transport in Health and Huntington's Disease

Fast axonal transport (FAT) of brain-derived neurotrophic factor (BDNF) is essential for brain function. It depends on huntingtin (HTT), the protein that when mutated causes Huntington's disease (HD), a devastating and still incurable disorder. BDNF is regulated by neuronal activity and its transport requires energy. Yet we do not know if FAT of BDNF is regulated by neuronal activity and if HTT facilitates activity-dependent transport. The energy sources for FAT of BDNF and their regulations by activity remain unclear, as do the exact mechanisms of BDNF transport reduction in the HD-causing mutation.

This multidisciplinary project will use neuronal cell biology, microfluidic reconstruction of neuronal networks, multi-electrode arrays, super-resolution videomicroscopy and computational modeling. It aims at investigating whether and how neuronal activity induces specific adaptations to modes of axonal transport. These include activation of specific signaling pathways and/or modification of energy sources to adapt to high neuronal demands. The lab is expert in such approaches (Cell Reports 2018, Embo Mol Med 2020) and has recently shown the importance of glycolysis to provide energy for FAT (Cell 2013, Nat Comm 2016). The success of this project may provide understanding of basic mechanisms of transport and potential new therapeutics targets and strategies for Huntington's diseases and others degenerative disorders.

We are seeking a highly motivated scientist with less than 2 years of postdoctoral experience. Experience in cellular biology is required. Additional knowledge in neurological disorders would be a bonus.

The laboratory is part of the Grenoble Institute of Neurosciences GIN, a research center devoted to understanding brain functions in health and diseases. The GIN is founder member of the Grenoble center of excellence in neurodegenerative disorders (CoEN GREEN) and member of the IDEX NeuroCoG. Grenoble is an active research city in France located in the French Alps three hours from Paris by train.

Candidates should apply by sending a CV, a brief outline of current research, scientific interests and career goals, as well as the name and contact details of at least two academic references to frederic.saudou@inserm.fr

