

Job Market Syntophagy

Two PhD positions are available at Leibniz Institute for Neurobiology (Magdeburg) in the research group “Neuroplasticity” headed by Michael R. Kreutz.

We are seeking highly motivated PhD students to join our team for a project dealing with synaptic autophagy funded by DFG (FOR5228 Syntophagy “Membrane trafficking processes underlying presynaptic proteostasis). An intriguing possibility that has not been investigated in detail is whether and how autophagy directly contributes to activity-dependent synaptic change. Unfortunately, it is currently unknown whether autophagy has a specific role in synaptic neurotransmission that goes beyond protein degradation and whether endosomal sorting processes and removal of membrane proteins at boutons actively contribute to synaptic plasticity. In support of this latter notion several recent studies suggest that different membrane sources and mechanisms might underlie phagophore formation in a stimulus-dependent manner. In this project we will try to understand whether the assembly of amphisomes at boutons is involved in presynaptic plasticity and long-range signaling. Autophagosomes fuse with late endosomes in order to undergo robust retrograde transport and we hypothesize that in the absence of autolysosome formation, the resulting amphisomes serve as signaling and sorting platforms while trafficking in a retrograde direction to the cell soma (see Andres-Alonso et al., Nat Comm., 2019). Our overarching hypothesis is that the enormous complexity of neuronal cytoarchitecture has led to ways of long-distance protein transport that combine degradative with signaling functions.

We offer a stimulating environment and access to up-to-date methodology and a highly relevant collaborative research topic. A variety of techniques including primary neurons from transgenic animals growing in microfluidic devices, CRISPR-CAS9 gene editing in combination with imaging (spinning disk confocal, TIRF, STED) and in-vitro electrophysiology will be employed.

The successful candidate will play a key role in designing, conducting and analyzing experimental data and will work as part of an international multi-disciplinary research team. The Leibniz Institute for Neurobiology (LIN) is a member of the Leibniz Association (WGL) and a research institution dedicated to the study of the mechanisms of learning and memory. The LIN is a foundation under public law and observes the General Equality Law.

Both positions are open from 1. October 2021. Please submit your application including a detailed CV and names of two referees and brief statements of motivation and research interest via e-mail to: Michael R. Kreutz (kreutz@ifn-magdeburg.de) and Anna Karpova (akarpova@ifn-magdeburg.de).

For more information about LIN and NPlast, please visit <https://www.lin-magdeburg.de> and <http://www.kreutzlab.com>

Only those applicants selected for an interview will be contacted.