Postdoc Program between the Freie Universität Berlin (FUB) and the China Scholarship Council (CSC)

Open Postdoc position for CSC scholarship candidates 2015

Please note: the postdoc position is only offered to Chinese who graduated with a PhD degree from a Chinese university.

Department/Institute:	FB Biology, Chemistry, Pharmacy; Institute of Chemistry; Division of Biochemistry
Subject area:	Biochemistry, Neuroscience
Professor / Research Group:	Volker Haucke
Number of open positions:	1
Project title:	Role of Arl8 and associated factors in axonal transport and lysosomal function

Project description:

Nervous system function critically depends on presynaptic neurotransmitter release by synaptic vesicle fusion at specialized sites termed active zones and the subsequent activation of postsynaptic receptors. While much is known about the function of exo-endocytic proteins at synapses (1,2), we know comparably little about the process of presynaptic biogenesis and maintenance. Unpublished work from my lab has identified the small Ras superfamily GTPase Arf-like protein 8 (Arl8) in presynaptic biogenesis. Specifically, we have shown that loss of function of *arl8* in Drosophila melanogaster (*darl8* mutants) leads to underdeveloped dwarf boutons that are only about 20-25% the size of their wild-type counterparts. These severe presynaptic defects correlate with the accumulation of active zone and endocytic proteins in neuronal cell bodies in the fly brain. Neuronal re-expression of dArl8 restores presynaptic biogenesis, while darl8 loss is mimicked in hypomorphic mutants of the kinesin *unc104* (KIF1A). Based on these and other data we hypothesize that dArl8 acts as a master regulator of presynaptic biogenesis.

The proposed project aims at dissecting the molecular mechanism by which dArl8 and its mammalian counterparts Arl8a and 8b regulate presynaptic biogenesis in vivo and in cultured neurons using combined genetics, biochemistry, and RNAi or CRISPR/Cas technology. Furthermore, we will explore the putative function of DENN/MADD proteins as potential Arl8 guanine nucleotide exchange factors.

References:

1. Haucke, V., Neher, E., Sigrist, S.J. (2011) Protein scaffolds in the coupling of synaptic exocytosis and endocytosis. *Nat Rev Neurosci*., **12**, 125-136

2. Kononenko, N.L., Puchkov, D., Classen, G.A., Walter, A., Pechstein, A., Sawade, L., Kaempf, N., Trimbuch, T., Lorenz, D., Rosenmund, C., Maritzen, T., Haucke, V. Clathrin/ AP-2 mediate synaptic vesicle reformation from endosome-like vacuoles but are not essential for membrane retrieval at central synapses. *Neuron* **82**, 981-988 (2014).

Academic requirements:

PhD in genetics, molecular biology, or neuroscience; publications in international peer-reviewed journals; good command of the English language

Link to professor/contact and further information:

http://www.fmp-berlin.info/research/molecular-physiology-and-cell-biology/research-groups/haucke/department.html

In a first step the complete application should submit to the Beijing Office for evaluation by November 21, 2014. Please don't contact the professor before. He will get in contact with you after having received the complete application.