

Introductory Remarks to Symposium 26

New insights into functional and molecular dynamics of presynaptic calcium channels

Anna Fejtová and Martin Heine, Erlangen and Magdeburg

Voltage-gated calcium channels (VGCC) convert membrane potential changes into intracellular signaling by rapidly changing the intracellular calcium ion concentration. This property has been well studied at the presynapse where VGCC act as a part of multi-protein complexes with highly variable subunit composition, which determines their functional properties, subcellular localization and molecular dynamics. The characteristics of action potential-induced calcium influx through calcium channels dictate in turn the probability and short-term plasticity of synaptic neurotransmitter release. In this symposia we want to spot light on new insights on the traffic (Annette Dolphin), and macromolecular organization of presynaptic calcium channels (Bernd Fakler), their role in the regulation of fast neurotransmission (Stefan Hallermann) and in synaptic homeostatic plasticity (Martin Müller). Investigators have used broad spectra of methodological approaches ranging from live-cell imaging, quantitative proteomics, genetics in mouse and in fly, super-resolution microscopy, and mathematical modeling. With this symposium, we like to discuss the function of calcium channels beyond the ion conduction and highlight their role in the integration of presynaptic release machinery and as a target for manifold regulations.

Symposium 26

Friday, March 24, 2017
14:30 - 16:30, Lecture Hall 105

Chair: Anna Fejtová and Martin Heine,
Erlangen and Magdeburg

- 14:30 **Opening Remarks**
- 14:35 Annette Dolphin, London, UK
N-TYPE VOLTAGE-GATED CALCIUM CHANNELS: ROLE OF $\alpha 2\delta$ SUBUNITS IN TRAFFICKING AND FUNCTION (S26-1)
- 15:00 Bernd Fakler, Freiburg
ASSEMBLY AND DYNAMICS OF MACROMOLECULAR COMPLEXES IN CNS SYNAPSES (S26-2)
- 15:25 Stefan Hallermann, Leipzig
PRESYNAPTIC CALCIUM INFLUX AND BUFFERING AT A FAST CENTRAL SYNAPSE (S26-3)
- 15:50 Martin Müller, Zurich, Switzerland
LOCAL PROTEIN DEGRADATION CONTROLS PRESYNAPTIC CALCIUM INFLUX AND HOMEOSTATIC SYNAPTIC PLASTICITY (S26-4)
- 16:15 Jennifer Heck, Magdeburg
CALCIUM CHANNEL SURFACE DYNAMIC INFLUENCES SYNAPTIC TRANSMISSION (S26-5)
- 16:25 **Concluding Remarks**