

Neuroscience Colloquium Summer Semester 2011

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Unraveling the role of astroglial connexin30 in synaptic strength

Astrocytes dynamically interact with neurons to regulate synaptic transmission. Although the gap junction protein connexin 30 (Cx30) mediates the astroglial extensive network organization, hemichannel-mediated exchange with the extracellular space, as well as channel-independent functions involving protein interactions, cell adhesion and intracellular signaling, its role in synaptic physiology is unknown. Here we show that inactivation of the Cx30 gene impairs hippocampal glutamatergic synaptic transmission in CA1 pyramidal neurons through unconventional non-channel function. By controlling excitatory synaptic strength, Cx30 plays an important role in short-term and long-term synaptic plasticity, as well as in hippocampal-based contextual memory. Altogether, these results establish astroglial Cx30 as a critical protein for synaptic strength.

Location: BCCN lecture theater,
Bernstein Center for Computational Neuroscience
Humboldt-Universität zu Berlin
Philippstr. 13, Haus 6

Date: Friday, June 24th, 4:00 p.m.

Host: Ulrike Pannasch

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SFB 665 "Developmental Disturbances in the Nervous System";

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