

Neuroscience Colloquium

Summer Semester 2019

Lectures are held Thursdays, **5 p.m.**

Venue: Paul-Ehrlich Lecturehall, Virchowweg 4, next to CCO

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Interrogating the Function of Endogenous GABA Receptors in the Brain with Optogenetic Pharmacology

Optogenetic pharmacology is a powerful strategy for conferring light-sensitivity onto specific types of ion channels and neurotransmitter receptors in the mammalian brain. This strategy employs synthetic azobenzene photoswitch compounds that attach covalently to genetically-specified channel or receptor proteins. We have applied this approach to an ever-expanding list of channels and receptors, including voltage-gated K⁺ channels, glutamate receptors, nicotinic acetylcholine receptors, and receptors for GABA, the main inhibitory neurotransmitter in the brain. Each of these proteins come in a variety of isoforms, but their distinct functions have been elusive, mainly because drugs have limited selectivity. Optogenetic pharmacology enables control with high spatial, temporal and biochemical precision, revealing what each type of channel or receptor “does for a living” in the brain. In this talk, I will focus on how optogenetic pharmacology is elucidating surprising functional roles of GABA receptors in controlling neural circuits in the neocortex and hippocampal long-term synaptic plasticity and learning and memory in mice.

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- Location:** Paul Ehrlich-Hörsaal,
Charité – Universitätsmedizin Berlin, Campus Mitte
Virchowweg 4, next to CCO
- Date:** Thursday, **Sept 5th, 5 p.m.**
- Host:** Christian Rosenmund