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Bonn Lecture Series in Neuroscience

Towards understanding positive symptoms of DiGeorge syndrome and schizophrenia

Stanislav S. Zakharenko, MD/PhD
Developmental Neurobiology
St. Jude Children's Research Hospital
Memphis, USA

Friday, July 03rd 2015, 10:00h
Life & Brain Center
Seminar Room, Ground Floor

I have a long-standing interest in the synaptic mechanisms of learning and memory. My laboratory uses a combination of electrophysiological and molecular methods, behavioral tools, 2-photon imaging, 2-photon glutamate uncaging, and optogenetics to elucidate the presynaptic and postsynaptic mechanisms of synaptic plasticity. We focus our efforts on synaptic plasticity in the hippocampus and auditory cortex as cellular substrates of spatial and perceptual learning and memory. These brain areas are also among those affected in schizophrenia. We, therefore, expanded our studies to mouse models of that disease. Specifically, we are interested in 22q11 deletion syndrome (or DiGeorge syndrome), a disorder that is one of the strongest genetic predictors of schizophrenia.

Selected Publications

Chun S, Westmoreland JJ, Bayazitov IT, Eddins D, Pani AK, Smeyne RJ, Yu J, Blundon JA, **Zakharenko SS**. (2014) Specific disruption of thalamic inputs to the auditory cortex in schizophrenia models. Science 344(6188):1178-82.

Blundon JA, **Zakharenko SS.** (2013) Presynaptic gating of postsynaptic plasticity: a plasticity filter in the adult auditory cortex. The Neuroscientist 19(5):465-78.

Earls LR, Fricke RG, Yu J, Berry RB, Baldwin L, **Zakharenko SS.** (2012) Age-dependent microRNA control of synaptic plasticity in 22q11 deletion syndrome and schizophrenia. Journal of Neuroscience 32(41):14132-14144.

Earls LR, Bayazitov IT, Fricke RG, Berry RB, Illingworth E, Mittleman G, **Zakharenko SS.** (2010) Dysregulation of presynaptic calcium, synaptic plasticity and spatial memory in a mouse model of 22q11 deletion syndrome. Journal of Neuroscience 30(47):15843-15855.

Host contact: Prof. Dr. Susanne Schoch, susanne.schoch@uni-bonn.de