

Introductory Remarks to Symposium 2

Mechanisms of neuronal and synaptic plasticity in epilepsy

Jochen Meier and Günter Schwarz, Braunschweig and Cologne

Epilepsies are chronic neurological syndromes that degrade life quality due to sudden occurrence of seizures. Focal epilepsies are a serious health problem since antiepileptic drugs often become ineffective over time. Most focal epilepsies have no discernable genetic component, suggesting that they depend on environmental factors and involve disease-promoting mechanisms of neuronal plasticity which shall be discussed during the symposium. Günter Schwarz will discuss genetic mechanisms of epilepsy and focus on the gephyrin, the major postsynaptic synaptic GABA type A and glycine receptor anchoring protein (Dejanovic et al., 2014 and 2015). Marta Zagrebelsky will focus on the molecular mechanisms regulating synaptic plasticity at glutamatergic synapses and how they relate to cognitive function and learning and memory processes (Delekate et al., 2011; Kellner et al. 2016). Jochen Meier will discuss the role of glycine receptor RNA editing and reveal how presynaptic expression of this gain-of-function receptor variant affects GABAergic and glutamatergic synaptic transmission, network excitability and cognitive function including learning and memory (Winkelmann et al., 2014 and Caliskan et al., 2016). Nicola Maggio will provide insights into how life stress affects synaptic, cellular and network mechanisms of epilepsy (Maggio et al., 2013 and Maggio et al., 2012). The two student talks by Felix Beinlich and Esin Candemir will provide insights into the contribution of CLC-3 on the acidification of glutamatergic synaptic vesicles using fluorescence lifetime imaging microscopy and discuss neuronal nitric oxide synthase PDZ - interactions in schizophrenia-like behavior, respectively. Altogether, this symposium will provide an in-depth analysis of current "from molecule-to-behavior" discussions of mechanisms of neuronal and synaptic plasticity and their involvement in health and disease.

Symposium 2

Wednesday, March 22, 2017
14:30 – 16:30, Lecture Hall 9

Chairs: Jochen Meier and Günter Schwarz,
Braunschweig and Cologne

- 14:30 **Opening Remarks**
- 14:40 Marta Zagrebelsky,
MECHANISM OF NOGO-A ACTIONS IN
REGULATING FUNCTIONAL AND STRUCTURAL
SYNAPTIC PLASTICITY (S2-1)
- 15:00 Günter Schwarz, Cologne
GEPHYRIN-DEPENDENT EPILEPSIES (S2-2)
- 15:20 Jochen Meier, Braunschweig
RNA EDITING AND NEURON TYPE SPECIFIC
EFFECTS ON NEUROPSYCHIATRIC SYMPTOMS
IN EPILEPSY (S2-3)
- 15:40 Felix Beinlich, Jülich
MONITORING THE CONTRIBUTION OF
CLC-3 ON THE ACIDIFICATION OF
GLUTAMATERGIC SYNAPTIC VESICLES WITH
FLUORESCENCE LIFETIME IMAGING
MICROSCOPY (S2-4)
- 15:50 Nicola Maggio, Ramat Gan, Israel
THE ROLE OF STRESS IN SEIZURES AND
EPILEPSY (S2-5)
- 16:10 Esin Candemir, Frankfurt/Main
DISRUPTING NEURONAL NITRIC OXIDE SYN-
THASE PDZ - INTERACTIONS RESULTS IN
SCHIZOPHRENIA-LIKE BEHAVIOR (S2-6)
- 16:20 **Concluding Remarks**