

## Glial responses at neuronal synapses and their purinergic modulation

**Speaker:**

Professor Dr. Joachim W. Deitmer  
Technische Universität Kaiserslautern  
Fachbereich Biologie  
Fachgebiet Zoologie/Neurobiologie

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**Project description:**

Our knowledge about the significance of glia, in particular with respect to its role for information processing in the brain, is still rather limited. One of the prime locations of this information processing are chemical synapses between neurons. In view of new findings, glial cells, and astrocytes in particular, must be included in the synaptic process as a third, integrative partner. Astrocytes, which by far outnumber neurons in the mammalian brain, often approach synaptic domains with their small perisynaptic processes. The close association of Purkinje neurons (PN) and Bergmann glia (BG) in the cerebellum, offers a favourable preparation to study neuronglia interactions at synaptic domains. Each PN, which receives a vast number of synaptic inputs, is surrounded by several BGs, whose processes project into the extensive dendritic tree of the PN and engulf synaptic microdomains. We have shown that electrical stimulation of single BG cells reduces the frequency of synaptic events in the neighbouring PN. This modulation is mediated by the activation of ionotropic, non-NMDA, glutamatergic and of purinergic P<sub>2</sub> receptors. In this project we want to elucidate the processes initiated by BG stimulation, and the mechanisms by which BG cells modulate the synaptic input to PN. It is the aim of the present study to establish, whether BG cells are directly or indirectly involved in modulating the circuit activity of the molecular layer, and thus the information processing of the cerebellar cortex.

**Quelle:**

<https://gepris.dfg.de/gepris/projekt/5429660>