

SPP 1172

## Synaptically-induced sodium transients in glial cells



**Speaker:**

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### Project discription:

At glutamatergic synapses in the brain, electrogenic Na<sup>+</sup>-dependent glutamate transporters are central for termination of transmission and for maintenance of low levels of extracellular glutamate. Such transporters are highly expressed on glial cells. Failure of glial glutamate uptake results in altered excitatory transmission between neurons and has been implicated in neurologic disease. The functional role of glial glutamate transporter at synapses and their interaction with glial glutamate receptor activation are not known in detail. In the present project, I will use quantitative two-photon Na<sup>+</sup> imaging combined with whole-cell patch-clamp to analyse intracellular Na<sup>+</sup> transients and membrane currents induced by exogenous glutamate application and synaptic activity in fine processes of Bergmann glial cells. These measurements allow for the first time a physiological mapping of Na<sup>+</sup>-dependent glutamate transport, glutamate receptors and their funtional inter-relationship in different cellular microdomains of Bergmann glial cells. They will also provide important insights into our understanding of the interaction between Bergmann glial cells and Purkinje neurons at glutamatergic synapses in the cerebellum.

Quelle:

<https://gepris.dfg.de/gepris/projekt/5429464?language=de>