

SPP 1172



## New transgenic mouse models to study the role of astrocytes in synaptogenesis in vivo

**Speaker:**

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**Project description:**

During brain development, the large majority of synaptic connections is formed after the differentiation of astrocytes, a specific type of neuroglia, and in the adult brain most synapses are in close contact with astrocytic processes. There is increasing evidence, mainly from in vitro studies, that astrocytes support or even actively control the formation and function of synaptic connections, but the relevance of these interactions in vivo is still unproven due to a lack of suitable animal models. Our project aims to establish new transgenic mouse models, which allow for temporally controlled gene elimination in astrocytes using the Cre-loxP technique. These transgenic models will allow for the first time to test the role of astrocytes in the formation, function and plasticity of synapses as well as their degeneration under pathologic conditions in vivo. Specifically, we would like to test our current working hypothesis that postnatal synaptogenesis requires cholesterol that is produced by astrocytes and delivered via lipoproteins. To accomplish this, we will eliminate selectively in astrocytes the squalene synthase, a specific enzyme of cholesterol biosynthesis, and study the effects on synaptogenesis.

**Quelle:**

<https://gepris.dfg.de/gepris/projekt/5430051?language=en>