

Targeting astroglial metabolism in vivo: Consequences for astrocytes, neurons and synapses

Speaker:

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Project description:

Metabolic cooperation between different types of brain cells is necessary for proper brain function like synaptic transmission and plasticity. The NAD⁺ / NADH-redox state is a central point of cellular metabolism, and is coupled to neuronal activity as well as to the metabolic interaction of astrocytes and neurons. It also regulates gene expression, protein functions and signalling properties of cells. However, it has been difficult to appreciate cell type specific metabolic contributions to brain functions in situ and in vivo due to the enormous complexity of cell types and the lack of cell type specific intervening strategies. In this project, we aim to analyse the impact of a shifted astroglial NAD⁺ / NADH-redox state on astrocytes and neighbouring neurons regarding gene expression, astroglial and synaptic signalling, and structural plasticity. This will be achieved by taking advantage of a transgenic mouse model based on a new strategy, that allows to precisely shift the NAD⁺ / NADH-redox state in an inducible and, importantly, a cell type-specific manner in vivo. These experiments will provide novel insights how (astroglial) metabolism contributes to synaptic function and plasticity by integrating metabolic states, gene expression and signalling.

Quelle:

<https://gepris.dfg.de/gepris/projekt/82286537>