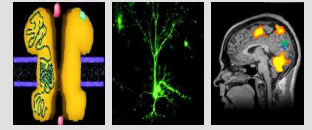


IGSN / SFB 1280 / BIOME
CONFERENCE**EXTINCTION LEARNING**

April, 23rd – 24th 2024

Session 1 Neural aspects of associative learning: Mechanisms and methods**FLORIAN FREUDENBERG**

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From cells to behavior: understanding the molecular mechanisms of glutamatergic synapses in mental disorder-related learning and memory deficits

Deficits in learning, memory, and cognition commonly manifest across a spectrum of mental disorders. Despite their distinct classifications, shared molecular patterns may explain commonalities in phenotypic representations. Central to our investigation in this context is the glutamatergic synapse, its components, and glutamatergic brain circuits, which are linked to the pathophysiology and treatment of mental disorders, including depression and schizophrenia.

This presentation delves into our ongoing research into the components of the glutamatergic synapse and its impact on glutamatergic signalling, from cellular models to behavioural phenotypes, particularly focusing on learning and memory deficits associated with mental disorders. I will present our findings on the role of AMPA receptors in depression-related learning and memory deficits. Moreover, I will highlight our investigations around the adaptor protein NOS1AP and its role in modulating glutamatergic signalling pathways, including its interactions with downstream effectors like p38 MAPK. Additionally, I will address how inflammatory mechanisms influence glutamatergic signalling, contributing to the observed learning and memory deficits in mental disorders.

With this synthesis of our work, I aim to emphasize the potential of the investigated molecules as targets for innovative treatments.

