SFB 1315
Mechanisms and Disturbances in Memory Consolidation:
From synapses to systems

Tuesday

OCT 15, 2024
4:00 pm

BCCN Lecture Hall
Philippstraße 13/Haus 6
10115 Berlin
Meeting-ID: 775 491 0236
SFB1315.ifb@hu-berlin.de

SFB 1315 LECTURE SERIES 2024

UNDERSTANDING MEMORY THROUGH ENGRAMS: BRIDGING CELLULAR AND CIRCUIT MECHANISMS

MATTHIAS HABERL

Research Group Leader
Charité - Universitätsmedizin
Neuroscience Research Center (NWFZ)
Berlin, Germany

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To date the circuit mechanisms underlying memory formation and retrieval remain largely unknown. Engram cells are defined as the cells responsible for encoding a memory.

The expression of the immediate early gene (IEG) cfos has been most directly linked to the formation and maintenance of memories. Sharp wave ripples (SWRs) on the other hand are high-frequency oscillations which have also been shown to be critical for the consolidation of memories, and the abolishment of hippocampal SWRs interferes with learning. It is however unclear how these two mechanisms of memory formation are linked. Using genetic tagging of cfos-expressing neurons in freely behaving mice we characterize the link of engram cells and SWRs, to improve our understanding of how cellular and circuit mechanisms are connected.

Inhibitory interneurons have fundamental roles in shaping oscillations and controlling synchronous activities of principal cells within the hippocampus, a brain region critical for memory encoding and consolidation. However, the specific contribution of inhibitory interneurons to the formation and maintenance of engrams, the neural representations of memories, remains poorly understood.

We identify interneuron subpopulations, in different behavioral tasks, we characterize in opto-tagging experiments their in vivo activity profile, and reveal their specific neuroimmunologic identity, culminating in a detailed description of the composition of the interneuron engram and introducing the role they play in the formation of the memory engram.

This invited talk is hosted by SFB1315 subproject A04 (AG Larkum).

Certificate of attendance:
Please contact team assistant serenella.brinati.1(at)hu-berlin.de

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