



SFB 1315

Mechanisms and Disturbances in Memory Consolidation:
From synapses to systems

Tuesday

JAN 12, 2021
4:00 pm CET

ZOOM ID: 7754910236

Contact:

SFB1315.ifb@hu-berlin.de

SFB 1315 LECTURE SERIES 2019-2022

IMAGING MEMORY TRACES OVER HALF A LIFETIME IN THE MEDIAL TEMPORAL LOBE: PROCESSING PRECISE AND GIST MEMORIES

MAGDALENA SAUVAGE

Professor, Leibniz Institute for Neurobiology
Functional Architecture of Memory Dept.
Otto von Guericke University
Magdeburg, Germany



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Major controversies in memory research concern the involvement of the hippocampus (HIP) in the retrieval of remote memories and the nature of this involvement in memory precision. Theories of memory consolidation have so far mostly focused on the role of the prefrontal cortex (PFC) in the retrieval of remote memories essentially because of its anatomical connection with the HIP.

Conversely, little is known about the involvement of other cortical areas such as the lateral (LEC) and medial entorhinal (MEC) cortices and the peri-(PER) and postrhinal (POR) cortices within this frame despite their tight connection to

the HIP and their role in retrieving recent memories.

In this talk, I will especially discuss recent evidence of a possible shift from the engagement of both the temporoammonic (EC layer III projections to CA1) and the trisynaptic (EC layer II –DG-CA3-CA1) pathways for the retrieval of recent memories to a preferential involvement of the temporoammonic pathway as the memory trace ages over half a life time (i.e. over 1 year for mice, comparable to 40 years in humans based on life expectancy; Lux et al, 2016).

In addition, I will report new findings from optogenetic and imme-

diately-early gene imaging studies revealing a selective role of CA1 in processing the gist of memories independently of the age of the memory trace and a crucial, but time-limited role of CA3 in enabling memory precision, indicating a functional segregation of CA1 and CA3 in the nature of the computations they support.

Lux et al. 2016. eLife 2016 5:e11862 doi: 10.7554/eLife.11862



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