



SFB 1315

Mechanisms and Disturbances in Memory Consolidation:
From synapses to systems

Tuesday

JUNE 15, 2021
4:00 pm CET

ZOOM ID: 7754910236

Register at:

SFB1315.ifb@hu-berlin.de

SFB 1315 LECTURE SERIES 2019-2022

NEUROBIOLOGICAL MECHANISMS UNDERLYING THE EMERGENCE OF EPISODIC MEMORY IN THE DEVELOPING BRAIN

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MECHANISMS UNDERLYING THE EMERGENCE OF EPISODIC MEMORY IN THE DEVELOPING BRAIN

Episodic memory—the ability to recall and re-experience specific events from one's past—depends critically on the hippocampus (e.g., Tulving & Markowitsch, 1998).

While children are able to form episodic memories, they tend to be less precise (or more generalized) than equivalent memories in adults. It is not until pre-adolescence (~10 years of age) that adult levels of memory precision emerge.

Currently, we have little understanding of how developmental changes in the hippocampus contribute to this shift from generalized to specific episodic memory. In my talk, I will outline how the maturation of hippocampal perineuronal nets—extracellular matrix structures that control excitatory/inhibitory balance in brain circuits—regulate the emergence of memory precision in rodents.

Combining molecular interventions to specifically manipulate perineuronal net function in the hippocampus, with several rodent species that differ with respect to brain development trajectory and detailed behavioral analysis, I will address three key questions: 1) Does degradation of perineuronal nets in adult rodents revert them to a juvenile-like state where they can only express generalized memories? 2) Does accelerating perineuronal net maturation in juvenile rodents allow them to precociously express adult-like, precise memories? 3) Do changes in memory precision induced by these perineuronal net interventions alter the distinctiveness of memory representations in the hippocampus?

Multiple human disorders are associated with inappropriate memory generalization, including generalized anxiety disorder, depression

and post-traumatic stress disorder. Therefore, identifying neural substrates in the hippocampus that underlie the maturation of episodic memory is important for informing the development of new treatment/prevention strategies for disorders characterized by inappropriate memory generalization.

Paul Frankland's talk is hosted by SFB1315 subproject Bo4 and moderated by Speaker Matthew Larkum.



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