



SFB 1315

Mechanisms and Disturbances in Memory Consolidation:
From synapses to systems

SFB1315 News

JAN 2024

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SFB 1315 EQUAL OPPORTUNITY AND DIVERSITY

BRENDA MILNER AWARD- WINNERS 2024

IRYNA SCHOMMARTZ ROSANNA SAMMONS

Images, courtesy Iryna Schommartz (l)
Goethe University Frankfurt & Rosanna
Sammons (r) Charité - Universitätsmedi-
zin, Berlin



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BRENDA MILNER AWARD 2024

Two outstanding scientists are awarded the Brenda Milner Award in 2024. Read all about both awardees: <https://www.sfb1315.de/equity-diversity-inclusion/>).

Dr. Iryna Schommartz is awarded the Brenda Milner Award 2024 for her excellent research output which includes three first-authored publications in flagship journals of (developmental) cognitive neuroscience: *Dev Cogn Neurosci*. 59: 101192 (2023); *eLife*. 12: RP89908 (2023); *Dev Psychol*, in press (2024).

Iryna's results showed that children retain learned associations less robustly over time compared to young adults. Short-delay retention (overnight) is related to structural integrity across brain regions including medial temporal lobe (all parts of hippocampal subfields and entorhinal cortex) and neocortical regions (across prefrontal, parietal, and occipital lobes). This pattern stands in contrast to long-delay retention (across weeks), which is more related to neocortical regions, and only specific regions in the medial temporal lobe (CA1-2 and subiculum of the hippocampus). Functionally, children show less differentiated event-specific mnemonic reinstatement compared to adults,

while at the same time rely more on gist-like reinstatement, where events belonging to the same semantic category are neurally represented more similarly. This set of results is novel to the literature, demonstrating for the first time how children differ from adults in memory consolidation, paralleled with structural and functional differences in the brain. Equally as impressive as her research is Dr. Schommartz's ability to collaborate collegially with her peers in the SFB and mentor junior colleagues. She has initiated collaborations with other projects (e.g., B03 and B05) by sharing her experimental paradigm. There is currently a manuscript under review in collaboration with B05 and more papers are expected in the pipeline.

Dr. Rosanna Sammons is awarded the Brenda Milner Award 2024 for significant contributions to research in the CRC1315's subproject A01. Specifically, Rosanna led a multi-centred collaboration that resulted in publication in the prestigious journal, *Proceedings of the National Academy of Sciences* (Sammons et al. PNAS).

This project brought together large-scale data from multiple research groups, requiring effective coordination and communication to ensure success. Together, the groups looked

at the local microcircuitry of CA3 pyramidal neurons using electrophysiology and electron microscopy. Rosanna performed demanding multi-patch electrophysiology experiments to determine a functional readout of the local network connectivity. In coordination with a group at the Max Planck Institute in Frankfurt, high-throughput electron microscopy provided the structural counterpart to the functional data. Both experimental methods showed high connectivity within the pyramidal CA3 population. In addition, computational modelling demonstrated how the experimental evidence supported a role for this circuitry in pattern completion. These results are an important contribution to our understanding of how sub-circuits within the hippocampus support memory processes. Moreover, the work is of particular significance since it validates decades-old assumptions that the CA3 network is richly interconnected, but which was recently put into doubt.

Read the full article here:

[https://www.sfb1315.de/
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