



**SFB 1315**

Mechanisms and Disturbances in Memory Consolidation:  
From synapses to systems

Tuesday

**JAN 14, 2025**  
**4:00 pm**

Meeting-ID: 775 491 0236  
SFB1315.ifb@hu-berlin.de

SFB 1315 LECTURE SERIES 2025

# LEARNING REPRESENTATIONS OF SPECIFICS AND GENERALITIES OVER TIME

**ANNA SCHAPIRO**

Assistant Professor  
Schapiro Lab  
Department of Psychology  
University of Pennsylvania  
Pennsylvania, USA



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There is a fundamental tension between storing discrete traces of individual experiences, which allows recall of particular moments in our past without interference, and extracting regularities across these experiences, which supports generalization and prediction in similar situations in the future.

One influential proposal for how the brain resolves this tension is that it separates the processes anatomically into Complementary Learning Systems, with the hippocampus rapidly encoding individual episodes and the neocortex slowly extracting regularities over days, months, and years. But this does not explain our ability to learn and generalize from new regularities in our environment quickly, often within minutes.

We have put forward a neural network model of the hippocampus that suggests that the hippocampus itself may contain complementary learning systems, with one pathway specializing in the rapid learning of regularities and a separate pathway handling the region's classic episodic memory functions.

This proposal has broad implications for how we learn and represent novel information of specific and generalized types, which we test across statistical learning, inference, and category learning paradigms. We also explore how this system interacts with slower-learning neocortical memory systems, with empirical and modeling investigations into how the hippocampus shapes neocortical representations during sleep. Together, the work helps us understand how structured information in our environment is initially encoded and how it then transforms over time.

## About the Speaker

Anna Schapiro is Assistant Professor in the Department of Psychology at the University of Pennsylvania. She has a B.S. from Stanford University in Symbolic Systems, and a PhD in Psychology and Neuroscience from Princeton University.

Anna Schapiro's talk is hosted by SFB1315 Speaker Matthew Larkum (Sub-projects Ao4, A10 and Z)

## Certificate of attendance:

Please contact team assistant serenella.brinati.1(at)hu-berlin.de



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