



SFB 1315

Mechanisms and Disturbances in Memory Consolidation:
From synapses to systems

Tuesday

SEPT 10, 2024
4:15 pm CET

BCCN Lecture Hall

Philippstr. 13, Berlin

ZOOM ID: 7754910236

SFB1315.ifb@hu-berlin.de

SFB 1315 LECTURE SERIES 2024

NEURAL BASIS OF LEARNING & MEMORY IN RESILIENCE TO SOCIAL STRESS

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Mainz



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When exposed to overwhelming stress, some individuals become chronically ill, while others show resilience and rapidly recover from adversity. This is particularly true for chronic social defeat (CSD) stress, where mice models serve to unravel the underlying mechanisms. In my published work, we have refined the current CSD model by showing that defeat-induced social avoidance involves conditioned learning. Specifically, some mice, when avoiding conspecifics, could still discriminate between individuals from the aggressors' strain (discriminating-avoiders DA). In contrast, others generalised fear, even avoiding mice of a safe strain (indiscriminate-avoiders, IA). Our social threat-safety test (STST) also showed that the two groups segregated with extinction learning (i.e., when facing the aggressors from a safe distance, only DAs showed extinction). The STST thus has enhanced face validity by quantifying discrimination and extinction, two critical features of human resilience. We have now collected preliminary data suggesting that dopamine in the mesolimbic system (the projection from ventral tegmental area, VTA, to the nucleus accumbens, NAc) pro-

notes discrimination and extinction in our model.

How one builds resilience is a crucial question in the field. Accordingly, we have shown that learning to cope with a mild stress and having sufficient time to consolidate the experience, a process termed stress inoculation, naturally builds resilience against future stressors in both sexes, most likely by boosting dopamine levels in the NAc.

We therefore posit that dopamine in the NAc underlies learning and memory mechanisms that promote resilience. We propose to test this hypothesis with rigorous research in both sexes.

About the Speaker. Sarah Ayash is Postdoctoral Research Fellow at the Leibniz Institute for Resilience Research, Mainz. She was awarded the Einstein Starting Researcher grant by the Einstein Foundation and will be starting her group at the Neuroscience Research Center at the Charité in January 2025.

This invited talk is hosted by PI of projects Ao4, A10 (co), Z and SFB1315 Speaker Matthew Larkum, who will also moderate Q&A.

Certificate of attendance:

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