



**SFB 1315**

Mechanisms and Disturbances in Memory Consolidation:  
From synapses to systems

Tuesday

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

BCCN Lecture Hall

Philippstraße 13/Haus 6

10115 Berlin

Meeting-ID: 775 491 0236

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SFB 1315 LECTURE SERIES 2025

# SLEEP-DEPENDENT MECHANISMS OF SYNAPTIC PLASTICITY AND MEMORY CONSOLIDATION

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German Research Foundation



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# SLEEP-DEPENDENT MECHANISMS OF SYNAPTIC PLASTICITY AND MEMORY CONSOLIDATION

**Sleep plays a crucial role in regulating cortical circuits in ways that support synaptic plasticity and memory consolidation.**

This talk will highlight three central aspects of how sleep contributes to these processes:

- (I) Brain Oscillations: The characteristic rhythms of slow-wave and rapid eye movement (REM) sleep that coordinate information flow across distributed brain networks and modulate local synaptic plasticity.
- (II) Mechanisms Modulating Oscillations: I will explore potential mechanisms that shape these sleep-related oscillations and, in turn, influence memory consolidation.
- (III) Excitation-Inhibition Balance: Changes in the balance between excitation and inhibition during sleep help maintain network stability and prevent information overload.

**These topics will be addressed with data from rodent studies using behavioral paradigms, electrophysiological recordings, and in vivo imaging. Together, the findings underscore the critical role of sleep in promoting synaptic plasticity and supporting long-term memory storage.**

## About the speaker

Dr. rer. nat. Niels Niethard is Hertie Network of Excellence in Clinical Neuroscience Fellow, at the Institute of Medical Psychology and Behavioral Neurobiology, Universitätsklinikum Tübingen. He is recipient of several awards, most recently the Ernst and Berta Scharrer Prize by the German Society of Endocrinology (2025)

## Social

Insta, [uniklinikum.tuebingen](https://www.instagram.com/uniklinikum.tuebingen)  
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This invited talk is hosted by SFB1315 project Ao2.

## Certificate of attendance

Please contact team assistant  
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