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NEUROSCIENCE SPEAKER SERIES



Dr. Eitan Schechtman

**Department of Neurobiology and Behavior
University of California, Irvine**

**Sleep-related Memory Consolidation: Beyond Single,
Isolated Memories**

**Thursday, November 16
4:30 PM**

**Hahn Hall (RM 101)
Pomona College**

Abstract: Sleep is critical for the stabilization of memories. This process is thought to be supported by the reactivation of memories, thereby strengthening the neural infrastructure supporting them. Theoretical accounts of this consolidation process focus on the process through which memories are independently strengthened, but in natural settings, individual memories never exist in a vacuum. In this talk, I will present a series of studies exploring the extent of memory reactivation during sleep in humans, how interactions between memories impact the consolidation process, and the role of encoding context in memory processing during sleep. The main technique used to explore memory reactivation in these studies is targeted memory reactivation, a behavioral manipulation that can selectively bias consolidation during sleep. The results demonstrate that multiple semantically related memories can be simultaneously consolidated during sleep. Additionally, they show that memory reactivation during sleep involves contextual reinstatement, thereby impacting multiple contextually linked memories. These data suggest that reactivation during sleep is not limited to single memory items, and can occur at the network or brain-state level. Finally, I will show preliminary results demonstrating that despite context's involvement in consolidation, reactivation during sleep may decontextualize memories and keep their neural representations separate. Taken together, these results inform our current understanding of memory consolidation processes in naturalistic settings.