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Investigating the transition from recent to remote memory using advanced tools

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Highlights

- Systems consolidation is a dynamic process involving multiple connected brain regions
- Early studies of remote memory were limited to correlational experiments and lesions
- Genetically targeted manipulations provide better spatial and temporal resolution
- Calcium imaging enables investigation of engram dynamics over time across the brain
- Integrating new cell-type specific methods is crucial for studying remote memory

Abstract

Remote memories, weeks to decades long, are usually the ones most important to the organism, as the longevity of a memory is tightly connected to its significance. Retrograde amnesia studies in human patients as well as lesions and immediate early gene expression investigation in animal models, suggested that the hippocampus has a time dependent role in memory consolidation. Namely, that as a memory matures it becomes independent of the hippocampus and instead depends on extra-hippocampal areas. However, accumulating evidence implies that this temporal segregation is not as rigid as originally proposed. In this review we will focus on the integration

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