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Title	Locating causal hubs of memory consolidation in spontaneous brain network
Abstract (max 300w)	<p>The capacity to form long-lasting memory is impaired in ageing and dementia. This memory process, called consolidation, involves spontaneous, brain-wide network reorganization during rest and sleep, but how this is achieved is still poorly understood. Current theory suggests that the hippocampus is pivotal for reshaping the connectivity. Here we identify that a different set of spontaneous networks and their hubs are instrumental in consolidating memory during post-learning rest. We found that two types of spatial memory training invoke distinct functional connections, but a network of the sensory cortex and subcortical areas is common for both tasks. Furthermore, learning increased brain-wide network integration, with the prefrontal, striatal and thalamic areas being influential for this network-level reconfiguration. Chemogenetic suppression of each hub identified after learning resulted in retrograde amnesia, confirming the behavioral significance. These results demonstrate the causal and functional roles of resting-state network hubs in memory consolidation and suggest a distributed network beyond the hippocampus subserving this process. The findings have potentials for diagnosing the dysfunction, and for guiding and monitoring treatments on memory consolidation.</p>

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