

How the human hippocampus orchestrates pattern completion: evidence from fMRI and intracranial EEG

Bernhard Staresina, University of Birmingham

Episodic memory, our ability to mentally relive past events and experiences, lies at the core of human cognition. Our episodic memories not only allow us to reminisce about the past, but they provide a coherent concept of the self and guide adaptive behaviour for future challenges. Conversely, the debilitating effects of memory loss are evident in healthy ageing and in patients suffering from neurodegenerative diseases such as Alzheimer's disease. In this talk, I will present data elucidating how the hippocampus dynamically coordinates memory reinstatement in cortical areas. Using fMRI, I will show that during cued recall, the hippocampus serves as a hub switching from cue to target representations. In the second part, I will zoom in and show single neuron data recorded from the human hippocampus and entorhinal cortex. Results show how single hippocampal neurons orchestrate pattern completion among entorhinal neuron populations.