
Computing logical mnemonic links in the human and mouse hippocampi

David Dupret*¹

¹Medical Research Council Brain Network Dynamics Unit at the University of Oxford, United Kingdom
– United Kingdom

Abstract

Many decisions in everyday life are not based on the information directly gathered during a single past experience. Instead, individuals rely on inference, a process whereby unobserved but logical relationships are drawn from multiple, temporally discrete events. In this talk, I will present ongoing work leveraging from a parallel cross-species approach to investigate the neural computations that underlie inferential reasoning in humans and mice. This work shows that the hippocampus, a brain region critical for memory, prospectively represents learned associations necessary for inference at the time of choice. Our findings further reveal that hippocampal neurons representing discrete but logically related events co-fire during post-inference sharp-wave ripples. Together, these results indicate how the hippocampus flexibly combines memories for distinct life experiences to serve adaptive behaviour.

*Speaker