



## Grands Séminaires du Collège de France

Centre Interdisciplinaire de Recherche en Biologie du Collège de France

Le 2 octobre 2018

à 11h00

Salle 2

(accès public)

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### Modulation of Human Memory: From single neuron recordings to clinical translation

**Abstract** : Loss of memory is one of the most devastating afflictions of the human condition. Present in ever increasing numbers of neurological patients, it casts an ominous shadow on the social horizon. The medial temporal lobe, often affected in these disorders, is central to the transformation of percepts into lasting memories that can be consciously recollected in the future. Yet the neuronal code underlying this transformation in humans remains unclear. While animal models provide an important basis for the study of memory, there is no substitute for the study of human subjects who can declare their percepts and memories. Rare opportunities to study human perception and memory at the single neuron level demonstrate several striking properties of neurons in hippocampus and entorhinal cortex associated with spatial memory and encoding and recall stages of episodic memory. These studies suggest sparse coding at the interface of conscious perception and declarative memory, by small ensembles of “concept cells” involved in the encoding and reinstatement of abstract information. Furthermore, electrical stimulation applied at the entorhinal - hippocampal circuitry during encoding of information enhances future memory of this information. These findings may provide a basis for development of closed -loop cognitive neuroprosthetic devices to assist memory function in neurological patients.