Conférence

CRCHUM

Université de Montréal

AXE NEUROSCIENCES

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All-optical deconstruction of sleep structure & functions

The activity of multiple brain cells and circuits is strongly modulated across sleep states. Some are implicated in the temporal control of the sleep-wake cycle, while others generate circuit-specific oscillations, including slow waves, spindles, and theta rhythms nested within thalamocortical and hippocampal networks. A major challenge is to determine the neural mechanisms underlying these activities and their functional implications for higher brain functions. In this lecture, I will summarize our investigations of the cellular and circuit mechanisms shaping sleep architecture, oscillations, and local brain dynamics across sleep states using electrophysiological recordings combined with single-cell calcium imaging and optogenetics in behaving mice. The presentation will detail our discovery of 'somato-dendritic decoupling' in cortical pyramidal neurons during REM sleep, its role in bidirectional synaptic plasticity essential to the stabilization of emotional memory traces. I will discuss the implication of our work in the context of behavioural optimization and the maintenance of mental health.

Mardi 5 Août
15h à 16h30

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L'AUDACE DE CHERCHER PLUS LOIN

Séminaire organisé par Valérie Mongrain
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