



SAINTS-PÈRES
Paris Institute for
the Neurosciences

UMR-S 1124
Toxicology, Pharmacology and Cell Signaling

Saints Pères Neuroscience Seminar Series

Friday, October 22th, 2021 at 10:30

Salle des Conférences (R229)

Centre Universitaire des Saints-Pères

45 rue des Saints-Pères, 75006 Paris

Anita Lüthi

Université de Lausanne, Switzerland

When the locus coeruleus speaks up in sleep: advancing the neurobiology of sensory vigilance

There is no doubt that sleep is quite the opposite of wakefulness. Behaviorally, meaningful interactions with the environment are suppressed; neurobiologically, wake-promoting brain areas are silent. However, since decades we know that at least some wake-promoting areas continue to discharge action potentials during sleep – sparsely, but consistently. My talk will show that sleep-related activity in the locus coeruleus (LC), the major noradrenergic area of the brain known for its powerful wake-promoting actions, has so far been underestimated for sleep's behavioral, architectural and neurobiological assets. Using closed-loop optogenetic interrogation of LC activity during sleep, imaging of free noradrenaline levels in forebrain and heart rate monitoring in combination with global and local sleep recordings, we find that LC activity leads to pulsatile increases in the levels of noradrenaline on the infraslow (~50-sec) time scale during non-REM sleep, while its levels decline during REM sleep. On this same time scale, LC activity variations play a role in sleep architecture and regulation, spectral dynamics in the forebrain, and the coordination of autonomic output. Together, my talk will make the case for a renewal of the dichotomous view on sleep and wakefulness, emphasizing that wake-related activity intruding into sleep is inextricably linked to the physiology of mammalian sleep and will, most likely, turn out to be a culprit in its manifold disruptions in pathophysiological conditions.

Those interested in meeting with the speaker please contact

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