

134th WPI-IIIS Seminar

The circuit and synaptic basis of arousal and sleep

The focus of my laboratory's investigative activities has been the cellular and synaptic bases by which the brain regulates sleep, wakeful consciousness and circadian rhythms. In my seminar, I will discuss some of the experimental outcomes of these investigative activities, which includes our "top-down" reassessment of the structural basis of the brain's arousal network, a genetically-driven "dissection" of the cellular basal forebrain, the identification and characterization of a previously unrecognized brainstem circuit that is both necessary and sufficiency to produce slow-wave-sleep and cortical slow-wave-activity, the identification of a hitherto unknown inhibitory hypothalamic-preoptic circuit that promotes arousal, and our most recent work showing that the caudal hypothalamus contains a delimited node of glutamatergic, NOS1-expressing neurons that can conjointly drive cortical and hippocampal activation and behavioral arousal. Finally, I will describe on-going experimental work that seeks to understand how the cellular suprachiasmatic nucleus imparts temporal organization on the sleep-wake cycle. Together these studies, along with a large number of other findings by laboratories around the world, have provided key insights into the circuit and synaptic mechanisms by which the brain regulates behavioral state.



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Date: **Wednesday, June 27, 2018**

Time: **9:00 – 10:00**

Venue: **1F Auditorium, IIIS Building**



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