141st WPI-IIIS Seminar

Arousal-Promoting Neurons of the Pedunculopontine Tegmental Nucleus

Wakefulness and behavioral arousal are driven by the coordinated activity of many types of neurons, but the specific nuclei and neurotransmitters are only partially understood. The pedunculopontine tegmental nucleus (PPT) contains a crucial population of cholinergic neurons and has long been considered an important brain region for the control of rapid eye movement (REM) sleep. However, the PPT also contains separate populations of glutamatergic and GABAergic neurons, and just how these three types of neurons regulate sleep/wake behavior is unknown. We find that chemogenetic activation of the cholinergic PPT neurons suppresses slow EEG activity during non-REM sleep. In contrast, chemogenetic or optogenetic activation of the glutamatergic PPT neurons strongly increases wakefulness while inhibition has the opposite effect. The PPT glutamatergic neurons innervate many wake-promoting forebrain regions, and the wake-promoting effects seem mainly driven via projections to the lateral hypothalamus and basal forebrain.

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Date: **Friday, December 21, 2018**
Time: **11:30 – 12:15**
Venue: **1F Auditorium, IIIS Building**

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