

# 185<sup>th</sup> WPI-IIIS Seminar

## Regulation of arousal by the suprachiasmatic circadian clock

Circadian rhythms are generated by the suprachiasmatic (SCN) circadian clock. The SCN plays an important role in regulating the temporal architecture of the sleep-wake cycle. The SCN clock is also implicated in providing an arousal 'signal' towards the end of our biological day, i.e., the wake-maintenance zone (WMZ), that is necessary for maintaining arousal in the face of increasing homeostatic sleep pressure. In this talk, I will discuss how we have identified a role for SCN Neuromedin-S (NMS) neurons in regulating the level of arousal, including during the WMZ. We have further identified key pre- and post-synaptic targets of SCN NMS neurons as well as the transcriptional profile of these neurons (which can be annotated into 3 subsets) using single nuclei RNA-Seq. Lastly, I will describe how cells within the hypothalamic dorsomedial nucleus (DMH) appear to be key post-synaptic of SCN NMS neurons for driving arousal. Consistent with this notion, I will describe how using CRACM (performed in collaboration with Dr. Arrigoni) we have confirmed high amplitude post-synaptic inhibitory currents in DMH neurons following stimulation of NMS+ terminals within the DMH. Taken together, our results appear to be the first to link a molecularly defined set of SCN neurons with sleep-wake regulation, in particular arousal control.



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Date: **Tuesday, September 12, 2023**

Time: **12:00 – 13:00**

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

**\* On-site participation only**



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