

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

## Neural Mechanisms of Narcolepsy: What mouse models can teach us about cataplexy and orexin agonists

The underlying brain mechanisms of narcolepsy are still a mystery. Cataplexy mainly occurs in social circumstances, and we found that cataplexy is driven by oxytocin receptor-expressing neurons of the central amygdala, which inhibit neurons in the ventrolateral periaqueductal grey (vlPAG) that suppress muscle atonia. Next, we studied the brain pathways through which orexin 2 receptor (OX2R) agonists improve narcolepsy. We found that OX2R signaling in the tuberomammillary nucleus or basal forebrain improved sleepiness but did not suppress cataplexy. In contrast, OX2R signaling in the vlPAG suppressed cataplexy without improving sleepiness. These results shine light on the brain mechanisms that produce the symptoms of narcolepsy and how orexin agonists can improve these symptoms.



### Dr. Thomas E. Scammell

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Date: **Wednesday, September 13, 2023**

Time: **9:30 – 11:00**

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

**\* On-site participation only**



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