

265th WPI-IIIS Seminar

Synapse homeostasis: the cellular basis of sleep need

Sleep is conserved across all animal species, suggesting that sleep emerged in the last common ancestor and serves a fundamental function. “Sleep-need”, which accumulates with time awake, can be inferred through subjective experience, or measurable changes in physiology and behavior. However, the nature of the conserved “need to sleep” remains mysterious. Broad conservation in biology exists at the cellular and molecular level, supporting a cellular basis of sleep-need. Accordingly, recent advances show that “sleep-need” is not a physiological abstract, but is biochemically encoded within the cells of the brain, specifically localized to the neuronal synapse. In this seminar, I will discuss advances in understanding the synaptic mechanisms that mediate the accumulation and discharge of sleep need, informed from the convergent discoveries of unbiased proteomics and genetics analysis. Our work supports a model in which neuronal synapses are at least one major cellular site for the cellular basis of sleep need.



Dr. Graham Diering

University of North Carolina

Date: **Thursday, October 1, 2026**

Time: **11:30 – 12:30**

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

*** On-site participation only**



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