

# SPECIAL RESEARCH SEMINAR

Presented by the Center for Human Neuroscience Research at the Fralin Biomedical Research Institute at VTC



FRALIN BIOMEDICAL RESEARCH INSTITUTE AT VTC  
CENTER FOR HUMAN  
NEUROSCIENCE RESEARCH  
VIRGINIA TECH.



**GRAHAM FINDLAY**

Doctoral Candidate  
Neuroscience Training Program  
University of Wisconsin-Madison

## *In Person Seminar: Hippocampal Sharp Wave Sleep: A Unifying View of Sleep in the Hippocampus*

It is likely that sleep serves some essential function; if not, it would be hard to understand why humans, and animals in general, spend a significant part of their life engaged in such a costly behavior that is subject to such strong homeostatic regulation. Cortical slow waves are the best understood indicator of sleep need, and their study has led to promising hypotheses about the essential function of sleep. However, comparatively little is known about signatures of sleep need or the impact of sleep loss on the hippocampus, despite the critical role of the hippocampus in many theories of sleep function. By performing continuous 48-hour sleep/wake recordings of cortex and hippocampus in freely moving rats implanted with Neuropixel probes, we characterize the impact of sleep loss on hippocampal circuits, identify hippocampal sharp waves as reliable indicators of hippocampal sleep need, and even find evidence that the hippocampus can sleep somewhat independently of the cortex, during cortical wake. Research by Dr. Findlay and his colleagues suggests that the presence of sharp waves defines a disconnected, homeostatically regulated, and unitary state of the hippocampus, which the researchers call hippocampal sharp wave sleep by analogy to cortical slow wave sleep. Dr. Findlay will discuss why both cortical slow waves and hippocampal sharp waves are such reliable indicators of sleep need, and what this can tell us about the fundamental purpose of sleep.

**WEDNESDAY, JAN. 31, 2024, at 10 a.m.**

Room G101 A/B, 4 Riverside Circle  
Or watch via Zoom at <https://virginiatech.zoom.us/j/87352592126>



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