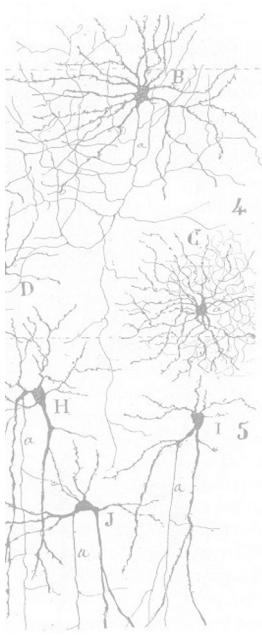# CUNY Neuroscience Collaborative Seminar Series SPRING 2024

Friday, May 10th, 3:00 - 4:30 PM
CUNY Advanced Science Research Center
Data Visualization Room, Fifth Floor

Kamran Diba, Ph.D.,
University of Michigan

To pre-register with the building:
https://forms.gle/8WUPU1Uk7HYGKs157

Hippocampal reactivation during waking and sleep

The hippocampus plays a crucial role not only in the formation of new memories but also in the maintenance, updating, and refinement of existing memories. Our research has focused on hippocampal neuron ensembles and their ability to regenerate activity patterns associated with past experiences, particularly during "sharp-wave ripples" observed during rest and sleep. Recently, we developed a novel Bayesian learning method to dynamically track the spatial tuning of neurons in ensemble recordings from freely-moving rats. This approach has allowed us to capture stable hippocampal representations encoded within sharp-wave ripples that persist for hours during sleep and are in alignment with place fields experienced during maze navigation. Moreover, these sleep-associated representations can predict future neuronal place fields upon re-exposure to the maze. The interplay of these representations, along with factors like pre-existing hippocampal structure and theta oscillation-induced ensembles on the maze, sheds light on how memory ensembles are formed and maintained. Our findings reveal a significant contribution of sleep and rest in the dynamic processing of spatial memory within the hippocampus, highlighting the importance of sleep in the reorganization and stability of memory representations.

In-person
Hosts: **Dr. Nesha Burghardt (nb844@hunter.cuny.edu) and Dr. Asohan Amarasingham (aamarasingham@ccny.cuny.edu)**
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