

222nd WPI-IIIS Seminar

Behaviorally relevant astrocyte ensembles for stabilizing memory

Tiling the central nervous system, astrocytes respond to behaviorally relevant stimuli through neural activity within specific circuits. Recent advances in omics-based molecular profiling have uncovered significant intra- and inter-regional diversity in astrocytes during development, as well as heterogeneity in pathological conditions. However, the mechanisms by which experience induces functionally specific astrocyte subsets remain largely unknown. In this study, we sought to identify Behaviorally-activated Astrocyte Ensembles (BAEs) to elucidate their roles and induction mechanisms within neural circuits and behavior. To achieve this, we developed an innovative genetic tool for the selective tagging and manipulation of BAEs. Leveraging this tool alongside whole-brain block-face serial microscopy tomography, we conducted a brain-wide tagging of BAEs during memory encoding and retrieval. Our findings reveal that BAEs are both step- and context-dependent, and we provide further characterization of their causal roles and molecular signatures.



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Date: **Friday, March 14, 2025**

Time: **10:00 – 11:00**

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

*** On-site participation only**



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