Cerebellar-Parietal Dynamics Underlying Predictive Motor Timing

Farzaneh Najafi

Assistant Professor
School of Biological Sciences
College of Sciences
Georgia Institute of Technology

Tuesday, January 7, 2025
12:00 – 1:00 PM
BMI Classroom 4004
Woodruff Memorial Research Building

or

Join us on Zoom link:
https://zoom.us/j/93016228711

EMORY UNIVERSITY | **Department of Biomedical Informatics**
Emory University School of Medicine

Abstract: Precise **motor timing** underlies essential human behaviors such as speech, and motor coordination, with deficits profoundly impacting quality of life in conditions like ataxia. Two brain regions, **cerebellum and parietal cortex**, are both involved in motor behavior; however, their interaction for generating precisely timed movements remains poorly understood. My talk shows preliminary results from our lab addressing this question. We trained mice on **visually and self-timed movements**, while measuring and manipulating neural activity in the cerebellar and parietal cortex. We found temporal information in the parietal cortex, which requires intact cerebellar activity, hence suggesting potential causal interaction between these brain regions leading to temporally precise movements.

Bio: Farzaneh studied Biotechnology (integrated BSc/MSc/PhD program) at the **University of Tehran**. After her master's degree, she moved to the US to pursue her PhD in Biology at the **University of Pennsylvania**. She studied cerebellar mechanisms underlying motor adaptation in *Javier Medina*'s lab and collaborated with *Sam Wang*'s lab at **Princeton University**. In 2014, She joined **Cold Spring Harbor Laboratory** as a postdoctoral researcher to study parietal cortex circuits underlying cognitive behavior in *Anne Churchland*'s lab. In 2019, she joined the **Allen Institute for Brain Science** to investigate the neural circuits of visually guided behavior with a team of scientists.

Since January 2023, Farzaneh has been an Assistant Professor at the **Georgia Institute of Technology**, the School of Biological Sciences. Her lab focuses on understanding the circuits and computations that underlie predictive processing in the brain. Farzaneh's research accomplishments have been recognized through **awards** from the Chan Zuckerberg Initiative, the Whitehall Foundation, and Scialog Molecular Basis of Cognition. She is also selected as a finalist for the HHMI Freeman Hrabowski Early Career Scholar Award.