BIOENGINEERING SEMINAR

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Neural dynamics underlying the coding of location and running speed in the medial entorhinal cortex

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Abstract

Neuronal representations of spatial location and movement speed in the medial entorhinal cortex during the 'active' theta state of the brain are important for memory-guided navigation and path integration—the integration of linear and angular speed signals to update self-location on a cognitive map. However, the exact nature of such a speed signal in the brain remains elusive. Moreover, little is known about the contribution of cholinergic modulation and the contribution of sensory cues to neural activity underlying memory-guided navigation.
Our lab uses multiple single unit recordings of neurons the medial entorhinal cortex of freely behaving mice to investigate temporal dynamics in the coding of location and running speed. We further use fiber photometry to measure the activity of cholinergic neurons in the medial septal complex to study temporal dynamics in cholinergic activity.

Biography

Dr. Holger Dannenberg recently joined the Department of Bioengineering and the Interdisciplinary Program in Neuroscience as Assistant Professor at George Mason University. He completed his Ph.D. summa cum laude in Neuroscience at the University of Bonn, Germany, in 2015. His postdoc was completed in the Center of Systems Neuroscience at Boston University in 2021. His postdoctoral work was supported by a 2-year fellowship award from the German Research Foundation and by an K99/R00 award by the NINDS of the NIH. His lab uses a combination of single unit recordings, optogenetics, and fiber photometry in freely behaving mice to investigate neural circuit mechanisms underlying episodic memory and spatial navigation.

Thursday, October 14
12:00-1:00 pm

Join Zoom Meeting
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Meeting ID: 910 0178 8853
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