

CARNEGIE MELLON UNIVERSITY

BME 2022 FALL SEMINAR SERIES

“Advances in optical imaging technology for mapping functional brain organization and neurovascular coupling in mice”



PRESENTED BY

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SCHEDULE

Porter Hall (PH) 100

**Thursday,
December 15, 2022
(10:15AM-11:15AM)**

Determining how changes in local neural activity relate to corresponding changes in blood flow (i.e., neurovascular coupling, NVC) is essential for interpreting blood-based, brain imaging methods. This goal is not only important for understanding functional brain organization in healthy individuals, but is especially critical in the context of diseases affecting the central nervous system (e.g. stroke, Alzheimer's disease) where NVC is often altered. My lab works on developing novel functional optical neuroimaging hardware and custom software analysis algorithms for these and other translational neuroscience applications in mice. More recently, we have incorporated machine learning to track mouse behavior in conjunction with our neuroimaging methods, with the goal of determining the diagnostic and prognostic value of AI-based approaches in predicting recovery after stroke. To help us answer our questions, we utilize genetic engineering approaches in mice in conjunction with the latest advances in optogenetics and viral vector targeting. This talk will review our lab's technology and its applications in mapping systems-level brain organization and NVC in mice.

