

Biomedical Engineering



Seminar

Neural Plasticity in the Auditory Localization System of the Adult Barn Owl: Behavioral and Modeling Studies

By

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Chemistry Building, Room A203

10:00-11:00 am

Abstract:

Studies of the neural system mediating auditory localization in the barn owl provide insight as to how sensory information is processed across and within multiple brain structures. In particular, the midbrain auditory pathway of the barn owl provides a reliable, topological template for studying the neural correlates of sound localization behavior. The current study aims to investigate the ability of the adult barn owl to adapt its auditory orienting behavior in reaction to imposed displacement of its vision. The aim is to test the hypothesis that adulthood plasticity that compensates for the discordance between vision and audition is enhanced when the owl engages in active prey capture. Along with behavioral investigations into auditory and visual localization, a neural model was created that accurately captures the plastic adaptation that is undergone in the midbrain auditory pathway in the presence of an auditory-visual discordance. A model that incorporates long-term synaptic modification as well as an instructive signal from the visual system is used to interpret behavioral and physiological evidence of plasticity.

Note:

The work was performed with Dr. Duck Kim of the Biomedical Engineering program (UConn) and the Department of Neuroscience (UHC).