

Neuroscience & Physiology Seminar Series

Wednesday, October 2nd
4:00 PM | LILY 1-117

The role of early sound processing in a mouse model of autism



Dr. Elizabeth McCullagh

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How are sounds located in the environment? Dr. McCullagh will talk about her past and current research on brainstem level sound processing in a genetic form of autism, FXS.

Sensory systems play an important role in integrating information from an animal's environment to drive appropriate behavioral responses. Sensory systems are early to develop, setting up critical hardware for basic neural processing of environmental inputs. The auditory system is one of the first sensory systems to fully develop in many animals and is critical for many types of interactions such as avoiding predators, finding mates, social communication, and basic survival. The process of locating a sound starts by integrating acoustic cues received by both ears which are then compared in the auditory brainstem of mammals. The auditory brainstem circuit has classically been treated as hardware that rarely gets updated or altered due to its essential task of locating sounds. However, work by Dr. McCullagh and others have shown that there is ongoing modulation of this circuit throughout life as well as variability in how the circuit has evolved based on an animal's social needs, environment, life stage, and genetic status among other things. Specifically, the auditory brainstem can be used as a model circuit to study different factors that alter basic neural computations in the brain that lead to neural plasticity.

Dr. McCullagh is an assistant professor in the Integrative Biology department at Oklahoma State University where her research is focused on auditory processing, specifically the sound localization circuit in the brain. She is funded by both the National Institutes of Health (NIH) and National Science Foundation which provide support for her research and her mentees.