

Tiphani Lynn: Cell Biology & Neuroscience

Mentor: Charles Gray -- Cell Biology & Neuroscience

Characterization of Gamma Frequency Synchronized Oscillations in Macaque Visual Cortex

The ability to discriminate between objects based on visual features may depend on the synchronous firing of neurons in the visual cortex. In previous studies, synchronous activity in the gamma-frequency range (30-80 Hz) has been associated with attention, memory, and visual perception, but no studies have examined the role of gamma oscillations under conditions that closely approximate natural vision. The aim of this project is to develop a more robust method for the detection of these oscillatory events in signals recorded from the visual cortex of a macaque monkey during a free-viewing task. In light of the weaknesses of other methods, our approach to this problem involves a combination of signal processing tools and machine learning algorithms. Once detected, the events can be more accurately characterized in terms of their association with periods of eye movements and fixations and their likelihood of occurring in different visual areas.