**Activation of ERG potassium channels disrupts gamma oscillations in the auditory cortex.**

(names)

Oscillations in the gamma band frequency have been observed in the hippocampus and the neocortex during active behavior; they are believed to coordinate sensory processing and contribute to cognitive function. It has been shown that patients with schizophrenia have disturbed gamma oscillations. Even though gamma oscillations are widely observed, the synaptic mechanisms contributing to their rise are still not fully understood, but a number of neurotransmission pathways have been implicated.

Release of GABAhas been shown to be necessary for the generation of gamma oscillations (Bartos et al. 2007). Hippocampal interneurons express metabotropic glutamate and ionotropic kainate receptors. Anti-psychotics block specific potassium channels that alter the release of dopamine. A recent study showed that ether-a-go-go (ERG) potassium channels are expressed in fast spiking (FS) interneurons in the cortex (Saganich et al. 2001). This study will focus on finding a parallel between the findings in the hippocampus and the auditory cortex. We will be using kainate to chemically induce gamma oscillations in the auditory cortex and apply a K+ channel modulator/agonist to silence the FS interneurons. By activating the FS interneurons, we will be able to determine if we can successfully interfere with the gamma oscillation.