Cortical circuits underlying audition

In sensory cortical areas, neurons tuned to particular features of sensory stimuli play a critical role in information processing. However, the synaptic mechanisms by which interconnected excitatory and inhibitory cortical circuits generate pyramidal cell tuning properties are a matter of debate. We use in vivo two-photon calcium imaging and whole-cell recording to examine the factors regulating frequency tuning in primary auditory cortex of awake mice. This talk highlights results indicating that lateral inhibition, a fundamental circuit operation, shapes frequency tuning via an unconventional mechanism: the indirect regulation of recurrent excitation in the cortical network.