Mechanisms of Auditory Signal Processing in Natural and Noisy Environments.
Natural acoustic stimuli drive continuous subthreshold activity but discrete spiking events.
Subthreshold activity has low trial-to-trial variability and is stimulus-specific even at short timescales.

Stimulation drives a membrane potential response with fine temporal resolution.

Stimulation evokes a generalized decrease in neural variability.

(membrane potential recorded in whole cell patch; n = 20)
Natural stimulus variation modulates spiking responses.

Are there corresponding changes in ongoing tuning?

How is this modulation exerted through synaptic input?

Excitatory: Inhibitory balance
Strength (conductance)
Dynamics (variability)