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NEUROSCIENCE SPEAKER SERIES



Dr. Jeffrey Moore

**Department of Biological Sciences
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The whisking central pattern generator

Wednesday, September 25

Burns Lecture Hall (RM B31)

Department of Natural Sciences

Abstract: Whisking and sniffing are predominant aspects of exploratory behavior in rodents. Here we describe a series of investigations conducted over the past decade that demonstrate that these motor rhythms are orchestrated by the respiratory patterning circuitry in the brainstem. We define a new brain region, the vibrissa intermediate reticular formation (vIRt), that functions as an autonomous whisking neuronal oscillator. We show that input to the vIRt from the nearby pre-Bötzinger complex, which drives inhalation, resets the phasic spiking activity of vIRt neurons upon each breath. Next, we formulate a hierarchical neuronal network model of the whisking circuit, which provides a computational framework to understand these experimental observations. Based on similarities between this neuronal circuit architecture and that of other orofacial behaviors, we propose that the pre-Bötzinger complex may function as a master clock to coordinate multiple orofacial motor actions.