



# JOHNS HOPKINS

## BIOMEDICAL ENGINEERING



**Monday, November 10, 1:00PM, Ross G007**

Light lunch will be provided at 12:00



## **How the songbird keeps time: Localizing clocks in the brain**

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Host: Xiaoqin Wang

**Abstract:** Whether we are speaking, swimming, or playing the piano, we are crucially dependent on our brain's capacity to step through learned sequences of states with multiple levels of organization. Songbirds provide a marvelous animal model in which to study this phenomenon. Their stereotyped vocalizations have hierarchical temporal structure spanning two orders or magnitude in timescale - from individual vocal gestures lasting ten milliseconds, to song syllables, to song motifs. How is the behavior at these different scales organized by brain circuitry? Single-unit recordings in vocal premotor areas show firing patterns consistent with several different hypotheses. By manipulating these circuits with temperature change and observing the effect on song structure, we have been able to localize song time-keeping brain region in the premotor circuitry, and also rule out many earlier hypotheses.

### **Upcoming seminars:**

**\*\*Special Date\*\*** November 21: Dr. Ron Weiss, Princeton University

Nov 24: Giovanni Parmigiani, Johns Hopkins University

<http://www.hopkinsmedicine.org/ibbs/news/events.html>

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