Seminar/Talk

Synaptic basis of neural circuit computations

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Host:

The efficiency, precision and plasticity of communication at synapses is diverse throughout the brain, yet fundamental to processing and directing information that underlies behavior. In my laboratory we are in search of the fundamental biological rules by which the diversity of synaptic function contributes to the neural representation of the external and internal sensory world. Multi-sensory integration within single neurons is thought to ensure reliable detection of external events. The cerebellar cortex is responsible for integrating multiple sensory modalities in order to encode complex sensory features such as: unexpected motion, linear acceleration, and predictive errors of motor movements. Nevertheless, surprisingly little is known about how the cerebellar cortex builds upon its well-known synaptic and cellular properties in order to dynamically integrate and process sensory information. I will show how we combined input pathway-specific fluorescent labeling, two-photon imaging and biophysical analysis of synaptic transmission (in situ and in vivo), to examine how synaptic diversity contributes to the temporal coding of multisensory information in the cerebellar cortex. I will also show data supporting various cellular mechanisms that neurons employ to achieve a diversity of synaptic efficacy and dynamics.

Tuesday, January 31, 2017 09:45am - 10:45am
Mondi Seminar Room 2, Central Building

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