



NORTHWESTERN INSTITUTE
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Northwestern Institute on Complex Systems Seminar

Speaker: Gordon Shepherd, Department of Physiology, Northwestern University

Title: Connectivity Matrix Analysis of Excitatory Cortical Networks

When: Wednesday, October 10, 2007

Where: Chambers Hall, 600 Foster Street, Lower Classroom Level

Time: 12:00 – 1:00

Refreshments will be available and a NICO Coffee Hour will follow for questions, networking, and collaboration.

Abstract

Cortical layering is a hallmark of mammalian neocortex, and a major determinant of local synaptic circuit organization in sensory systems. In motor cortex, the functional organization of cortical circuits across layers has not been resolved. We developed a general approach for estimating layer-specific connectivity in cortical circuits. Applying this to mouse motor cortex, we obtained a laminar presynaptic-to-postsynaptic connectivity matrix. These data show the basic (stereotypic) intracortical pathways, allow us to model the flow of excitation within the cortex, and provide a quantitative 'wiring diagram' framework for understanding information processing in the local cortical networks involved in motor control.