



Seminar/Talk

Ancestral and Evolutionarily Flexible Mechanisms of Sensorimotor Circuit Development

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Host: Sweeney Group

The vertebrate spinal cord and peripheral nervous system contain remarkably diverse neuronal subtypes that coordinate essential functions, including locomotion, breathing, posture, and balance. Studies of spinal motor and sensory neuron specification have revealed fundamental mechanisms of neuronal diversification, many of which are shared across the central nervous system and conserved throughout vertebrate evolution. Comparative analyses across species have further illuminated how evolutionary modifications to these developmental programs contribute to the emergence of specialized motor behaviors and sensory functions. In this talk, I will discuss the developmental origins of neuronal subtypes essential for limb-based locomotion and the molecular mechanisms underlying their evolution. I will present recent work examining the genetic programs that establish sensory neuron diversity and the relative contributions of intrinsic transcriptional mechanisms and extrinsic target-derived signals to the assembly of somatosensory circuits. These findings reveal how conserved neuronal architectures can emerge through flexible molecular strategies. Finally, I will explore how early developmental programs establish the anatomical and functional properties of motor neuron subtypes across aquatic and terrestrial vertebrates, providing insights into both the ancestral origins and evolutionary diversification of sensorimotor circuits.

Tuesday, November 3, 2026 10:00am - 11:00am

Moonstone Bldg, Ground floor, Seminar Room G



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