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Subject: EM: Dept of Natural Sciences Seminar Announcement 10/24

From: Lauran Soto

Department of Natural Sciences Seminar Announcement:

Breaking Down Dopamine Neurotransmission in Drosophila: Genetics Pathways Linking Behavior and Disease Vulnerability

Dr. Sandra Watson
Assistant Professor of Neuroscience
Department of Natural Sciences
Pitzer and Scripps Colleges

Friday, October 24, 2025
Burns Lecture Hall (Nucleus E007)
12:15pm-1:15pm

Dopamine (DA) signaling plays several critical roles in reward, learning, memory, and arousal with aberrant DA signaling linked to neuropsychiatric disorders like addiction, depression, Schizophrenia and Parkinson's disease (PD). Molecular diagnosis and effective treatments for these neurological disorders have been limited by an incomplete picture of the mechanism that govern DA homeostasis. Our lab uses *Drosophila melanogaster* to integrate genetic, imaging, and behavioral approaches to investigate mechanisms of dopamine (DA) metabolism that support neuronal and behavioral health. We have characterized a mutant in brain tumor (brat), a gene well studied in neural stem cell differentiation but linked to DA regulation, and found celltype specific alterations in DA-dependent arousal and DA neuron numbers. Ongoing work seeks to determine how brat intersects with DA metabolic enzymes to balance synthesis and breakdown. Additionally, using sophisticated genetic tools, we are determining how DA metabolism impacts vulnerability of neurons to degeneration in a fly model for PD. We found that specific neuronal circuits differentially impact sleep and that pharmacological elevation of DA via L-dopa has the potential to uncover circuit-specific vulnerabilities. Together these studies provide critical insight into how DA metabolism is coordinated across cell types to maintain neuronal and organismal homeostasis and will guide future work on uncovering how breakdown contributes to disease.

DNS and Chemistry Seminars can be found here: <https://natsci.claremont.edu/student-resources/seminars/>

Department of Natural Sciences
Seminar Series

***Breaking Down Dopamine
Neurotransmission in Drosophila:
Genetics Pathways Linking Behavior
and Disease Vulnerability***



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For more information, contact Pete Chandrangs (pchandrangs@natsci.claremont.edu))

Best,
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