

**Tkach, Colleen**

---

**From:** Inform  
**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***



Dr. Sandra Watson  
Assistant Professor of Neuroscience  
Department of Natural Sciences  
Pitzer and Scripps Colleges  
October 24, 2025 | 12:15-1:15 PM  
Nucleus E007 (Burns Lecture Hall)

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 cell-type 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.

For more information, contact Pete Chandrangsu (pchandrangsu@natsci.claremont.edu)

Best,  
Lauran Soto - Administrative Assistant (she/they)  
Department of Natural Sciences, Pitzer and Scripps Colleges  
925 N. Mills Ave, Claremont, CA 91711  
Office Phone: (909) 621-8489

---

This e-mail from [lsoto@natsci.claremont.edu](mailto:lsoto@natsci.claremont.edu) was generated by an EXTERNAL email server

mail-eastusazon11022126.outbound.protection.outlook.com (Lauran Soto  
<[lsoto@natsci.claremont.edu](mailto:lsoto@natsci.claremont.edu)>)