

Nora Wolcott

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Education

PhD Candidate in Molecular, Cellular, and Developmental Biology

University of California, Santa Barbara

September 2019 – June 2025, expected

- GPA = 3.96

Bachelor of Science in Cell and Molecular Biology

Bachelor of Arts in Music Performance

The George Washington University

September 2015 – June 2019

Professional Experience

PhD Candidate; Goard Lab

09/01/2019-06/15/2025, expected

UC Santa Barbara, Santa Barbara, CA

- Engineered technologies to interrogate learning and memory circuits underlying spatial navigation.
- Used cutting edge multiphoton microscopy to investigate neurodegeneration *in vivo*.
- Helped pioneer a custom surgical implant for chronic imaging of the hippocampus and used this technology to investigate the role of steroid hormones in learning and memory.
- Developed a widely adopted GUI-based machine learning platform for classification of hormonal state from epithelial cell samples.

Laboratory Assistant; Krashes Lab

06/30/2018-07/15/2019

National Institutes of Health NIDDK, Bethesda, MD

- Worked to identify the molecular pathways that govern feeding behavior using *in vivo* microscopy, optogenetic, and fiber photometry approaches.
- Developed an optogenetic paradigm for identifying hypothalamic consummatory drivers.
- Managed a colony of more than one hundred animals, including breeding and genotyping.

Research Assistant; Martin Lab

01/13/2016-06/30/2019

The George Washington University, Washington, DC

- Studied how developmental pathways influence patterning using gene editing.
- Developed a CRISPR microinjection technique to manipulate epithelial patterning in butterflies.

Undergraduate Research Assistant; Snell Lab

01/15/2018-06/30/2018

University of Auckland, Auckland, NZ

- Used RNA seq to investigate the genetic basis of neurodegenerative disorders.
- Optimized a Nanopore seq method to identify Huntington's disease risk factors.

Honors and Awards

NIH NINDS F99/K00 Advancement in Neuroscience Award	06/01/2024
OSSD Elizabeth Young New Investigator Award	02/27/2023
Individual Professional Skills Grant awardee, UCSB	11/05/2022
Best Short Talk at MCDB Research Symposium, UCSB	10/07/2022
Society for Neuroscience Trainee Professional Development Award	10/14/2021
MCDB Graduate Merit Fellowship, UCSB	09/30/2019
Presidential Academic Scholar, GWU	08/28/2015
Harlan Undergraduate Research Fellow, GWU	01/14/2017, 05/15/2017
Knowledge in Action Career Internship Fund Awardee, GWU	05/15/2017, 08/28/2018
Presidential Scholar in the Arts, GWU	08/28/2015
Steiner Meyers Scholar, GWU	08/28/2017
National Merit Scholar	06/01/2015

Outreach and Mentorship

Undergraduate Research Assistant Mentor	<i>01/10/2021 - Present</i>
<ul style="list-style-type: none">Mentored a total of eight RAs in collaborative and independent lab projects, and led them in receiving fellowships (UC LEADs, SURF), internships (Stanford University, Northwestern University, CASPR Inc.), industry positions (Olympic Medical, Leidos), and graduate school acceptances (Harvard University, Carnegie Melon University, USC) across the country.	
Teaching Assistant	<i>01/20/2019 – 12/10/2023</i>
<ul style="list-style-type: none">GWU: Genetic Engineering Laboratory	<i>01/20/2019 – 06/15/2019</i>
<ul style="list-style-type: none">UCSB: Introduction to Biology Laboratory and Neurobiology	<i>09/29/2019-12/10/2023</i>
Women in Science and Engineering (WiSE) Mentor	<i>09/01/2020 - Present</i>
LGBTQ in STEM Mentor	<i>01/10/2021 – Present</i>
Graduate Representative, Resource Center for Sexual and Gender Diversity	<i>08/28/2023 - Present</i>

Science Communication

UCSB Donors of Graduate Division Speaker	10/19/2022
MCDB/BMSE 25 th Annual Symposium Invited Speaker	10/07/2022
<i>The Scientist</i> Featured Correspondent	10/01/2021
Lemelson Institute Biogen-MIT Summer Speaker	06/28/2021
UCSB Grad Slam Runner Up	03/11/2021
ScienceLine Correspondent	09/25/2019 - 06/01/2023

Skills

Technical: Fluent in MATLAB and Python, proficient in R, with a focus on machine learning. Mastery of object-oriented design and Git workflow.

Laboratory: Significant experience with multiphoton, confocal, and STED super-resolution microscopy, stereotactic microsurgery (cortical windows, microendoscopes, microprisms, and virus injection), fiber photometry, optogenetics, CRISPR-cas9, Nanopore sequencing, immunohistochemistry, cloning, PCR, cell culture, and assay design.

Publications

- Wolcott, N.,** Redman, W., Karpinska, M., Jacobs, E. & Goard, M. The estrous cycle modulates hippocampal spine dynamics, dendritic processing, and spatial coding. *In review, Nature Neuroscience* (2025).
- Wolcott, N.,** Sit, K., Raimandi, G., Hodges, T., Shansky, R., Galea, L., Ostroff, L. & Goard, M. Automated classification of estrous stage in rodents using deep learning. *Scientific Reports* (2022).
- Redman, W., **Wolcott, N.,** Montelisciani, L., Luna, G., Marks, T., Sit, K., Yu, CH., Smith, S. & Goard, M. Long-term transverse imaging of the hippocampus using implanted microperiscopes. *eLife* (2022).
- Wolcott, N.** Opinion: Neuroscientists Need to Think About Sex (Bias). *The Scientist* (2021).
- Mazzone, C., Lian-Guallpa, J., Li, C., **Wolcott, N.,** et al. High fat food biases hypothalamic and mesolimbic expression of consummatory drives. *Nature Neuroscience* (2020).
- Martin, A.. **Wolcott, N.** & O'Connell, L. Bringing immersive science to undergraduate laboratory courses using CRISPR gene knockouts in frogs and butterflies. *Journal of Experimental Biology* (2020).

Oral Presentations

- Wolcott, N.,** Jacobs, E. & Goard, M. (2023, May). *Chronic recording of hippocampus reveals sex differences in spatial navigation circuitry*. Organization for the Study of Sex Differences, Calgary, Alberta, CA.
- Wolcott, N.,** Redman, W., Sit, K., Goard, M. (2022, October). *Investigating the role of steroid hormones in hippocampal plasticity*. MCDB/BMSE 25th Annual Symposium, Santa Barbara, CA.
- Wolcott, N.** (2021, June). *Ways We Study Alzheimer's*. Lemelson Institute Biogen-MIT Biotech in Action Summer Series, Massachusetts Institute of Technology, Boston, MA.

Poster Presentations

- Wolcott, N.,** Redman, R., Jacobs, E. & Goard, M. (2024, October). *The estrous cycle modulates hippocampal spine dynamics and spatial coding*. Society for Neuroscience annual meeting, Chicago, IL.
- Wolcott, N.,** Redman, W. & Goard, M. (2024, March). *Hippocampal spatial representations are modulated by cyclic endocrine factors*. CoSyNe, Lisbon, Portugal.
- Wolcott, N.,** Jacobs, E. & Goard, M. (2023, May). *Chronic recording of hippocampus reveals sex differences in spatial navigation circuitry*. Organization for the Study of Sex Differences Annual Meeting, Calgary, Alberta, CA.
- Wolcott, N.,** Goard, M. (2023, March). *Dynamic endocrine factors shape hippocampal spatial representations*. CoSyNe, Montreal, Quebec, CA.
- Wolcott, N.,** Redman, W., Sit, K., Goard, M. (2021, November). *Structural plasticity of apical dendritic spines in hippocampal CA1 is modulated by sex-specific steroid hormones*. Society for Neuroscience annual meeting, Chicago, IL.
- Wolcott, N.,** Redman, W., Sit, K., Goard, M. (2021, September). *Chronic measurement of dendritic spine turnover in CA1 across the estrous cycle*. Pavlovian Society Annual Meeting, Ann Arbor, MI
- Wolcott, N.,** Martin, A., Day, C. (2017, August). *CRISPR-mediated Hox gene knockout in *Vanessa cardui*: the anteroposterior functions of *Ubx* and *Abd-a**. Wilbur V. Harlan Poster Session, The George Washington University, Washington, DC.