SARAH M. PUGLIESE

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EDUCATION

University of Washington, Ph.D. Candidate in Neuroscience — 2022 - *present*
Brown University, Sc.B. in Applied Mathematics-Biology — 2016 - 2020

RESEARCH EXPERIENCE

Tuthill Lab and **Brunton Lab**, Graduate Student — 2022 - *present*
University of Washington · Seattle, WA
> Studying the circuit basis of leg motor control in the *Drosophila melanogaster* ventral nerve cord using connectome datasets and data-driven network modeling.

Flavell Lab, Research Support Associate — 2020 - 2022
Massachusetts Institute of Technology · Cambridge, MA
> Investigated neural circuit mechanisms of persistent behavioral changes in *C. elegans* using optogenetics, calcium imaging, and behavioral data analysis.

Jones Lab, Undergraduate Researcher — 2017 - 2020
Brown University · Providence, RI
> Adapted the lab's computational model of neocortex to study the simulated effect of dendritic calcium events in pyramidal cells on canonical EEG/MEG waveforms.

Engineering Design Research Laboratory, REU in Mathematics
Indiana University-Purdue University Indianapolis · Indianapolis, IN — 2018
> Applied phase field models to topology optimization problems during a NSF-funded research opportunity focused on mathematical applications to medical sciences and bioengineering.

PUBLICATIONS

Published articles

U. Dag, I. Nwabudike, D. Kang, M. A. Gomes, J. Kim, A. A. Atanas, E. Bueno, C. Estrem, **S. Pugliese**, Z. Wang, E. Towlson, S. W. Flavell, Dissecting the functional organization of the C. elegans serotonergic system at whole-brain scale. *Cell* **186**, 2574-2592.e20. — 2023

R. G. Law, **S. Pugliese**, H. Shin, D. D. Sliva, S. Lee, S. Neymotin, C. Moore, S. R. Jones, Thalamocortical Mechanisms Regulating the Relationship between Transient Beta Events and Human Tactile Perception. *Cerebral Cortex* **32**, 668–688. — 2022

Preprints

S. M. Pugliese, G. M. Chou, E. T. T. Abe, D. Turcu, J. K. Lancaster, J. C. Tuthill, B. W. Brunton, Connectome simulations identify a central pattern generator circuit for fly walking. *bioRxiv*. — 2025

T. S. Kramer, F. K. Wan, **S. M. Pugliese**, A. A. Atanas, A. W. Hiser, J. Luo, E. Bueno, S. W. Flavell, Neural Sequences Underlying Directed Turning in C. elegans. *bioRxiv.* — 2024

AWARDS AND GRANTS

Honorable Mention, NSF Graduate Research Fellowship Program — 2024
Jerome L. Stein Memorial Award for Undergraduate Excellence, Brown University Division of Applied Mathematics — 2020
Katherine T. Romer Undergraduate Teaching and Research Award, Brown University — 2019

OTHER NOTABLE TRAINING

Connectomics from micro- to meso- and macro-scales, CAJAL Advanced Neuroscience Training Programme, Bordeaux School of Neuroscience — 2023

PRESENTATIONS

S. M. Pugliese, J. Lancaster, G. M. Chou, E. T. T. Abe, J. C. Tuthill, & B. W. Brunton. Connectome simulations reveal a central pattern generator (CPG) circuit for fly walking. *Analysis and Modeling of Connectomes Janelia Conference.* [Poster]   2025

S. Pugliese. Connectome simulations reveal a core central pattern generator (CPG) circuit for fly walking. *UW CoNectome Symposium.* [Talk]   2025

S. M. Pugliese, J. Lancaster, G. M. Chou, E. T. T. Abe, J. C. Tuthill, & B. W. Brunton. Connectome simulations reveal a central pattern generator (CPG) circuit for fly walking. *COSYNE.* [Poster]   2025

S. Pugliese. Bridging connectomics and kinematics to model *Drosophila* locomotion. *NISC MURI Telecon.* [Talk]   2024

S. Pugliese. Dynamical models of neurons and networks. *UW Computational Neuroscience Center Tea-Time Tutorial.* [Tutorial]   2023

S. Pugliese, B. W. Brunton, & J. C. Tuthill. Constructing a connectome-based neuronal network model of fly locomotion. *CAJAL Connectomics from micro- to meso- and macro-scales.* [Poster]   2023

S. Pugliese & S. Jones. Mathematical model of neocortex predicts that dendritic calcium spikes are visible in human EEG signals, *Brown University Summer Research Symposium.* [Poster]   2019

S. Pugliese & A. Tovar. Investigation of Phase Field Methods in Topology Optimization, *IUPUI Center for Research and Learning Student Summer Poster Symposium.* [Poster]   2018

TEACHING AND MENTORSHIP

Teaching Intern, BIOL 461: Neurobiology, University of Washington	2024, 2025
Mentor, Neuroscience Mentorship Program, University of Washington	2024
Mentor, Graduate Program in Neuroscience First Year Mentorship, University of Washington	2024
Peer Advisor, Applied Math Peer Advising Program, Brown University	2018 - 2020
Undergraduate Teaching Assistant, APMA 1710: Information Theory, Brown University	2019
Undergraduate Teaching Assistant, NEUR 0680: Introduction to Computational Neuroscience, Brown University	2018
Undergraduate Teaching Assistant, APMA 0330: Methods of Applied Mathematics I, Brown University	2017

COMMUNITY AND OUTREACH ACTIVITIES

Graduate Student Editor, Grey Matters Journal	2023 - *present*
PacSci BrainFest volunteer, Pacific Science Center	2024, 2025
"Record Electricity from Your Muscles!" workshop co-presenter, Expanding Your Horizons (EYH) Conference at Edmonds College	2024, 2025
DIY Science Zone volunteer, GeekGirlCon	2024
Volunteer with Neurosci Community Outreach Group (NCOG), STEM Pals STEM Expo	2024
Co-organizer and contributor, UW Brain Awareness Open House	2024
Volunteer with NCOG, STEAM Night at Woodside Elementary School	2023
Panelist, CoNECT Open House	2023
Neuroanatomy station volunteer, Doctor for a Day Neurosurgery/Neurology Workshop	2023
Head coordinator, Brown Brain Bee	2018 - 2020
Publicity coordinator, Brown Brain Bee	2017 - 2018
Mentor, Brown Elementary Afterschool Mentoring (BEAM) Program	2016

SERVICE

Graduate Student Representative, UW Department of Neurobiology and Biophysics (NBIO)	2024 - *present*
Seminar Committee, UW Graduate Program in Neuroscience	2022 - 2025