Naomi Donovan

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EDUCATION

University of California, San Francisco — **San Francisco, CA**
Ph.D. Neuroscience (Advisor: Dr. Reza Abbasi-Asl) — Expected May 2028

Johns Hopkins University — **Baltimore, MD**
B.S. Neuroscience, Minor in Applied Math & Statistics — May 2023
Graduated with Honors, GPA: 3.97/4.00, Dean's List (5 semesters)

RESEARCH EXPERIENCE

Graduate Student Researcher – Abbasi Lab — **San Francisco, CA**
University of California, San Francisco — June 2024 – Present

- Developing deep learning-based models to characterize dynamic functional circuitry in mouse primary visual cortex
- Integrating large-scale calcium imaging and structural datasets to study depth-specific and stimulus-dependent representations in collaboration with the Allen Institute.
- Gaining expertise in Python deep-learning packages (PyTorch, TensorFlow, PyTorch Lightning, Keras) and Python statistical modeling packages (scikit-learn, statsmodels)

Research Assistant – Kanold Lab — **Baltimore, MD**
Johns Hopkins School of Medicine — May 2021 – May 2023

- Led project to map tonotopy in mouse primary auditory cortex via in-vivo two-photon and widefield calcium imaging.
- Gained expertise in cranial window surgery, in vivo imaging, data analysis (Python, MATLAB), and hardware engineering (Fusion360, Raspberry Pi, Arduino)

Excellence in Research Intern – Blue Brain Project & Petersen Lab — **Lausanne, Switzerland**
École Polytechnique Fédérale de Lausanne (EPFL) — May – August 2022

- Built a biologically accurate model of thalamic input to the rat barrel cortex to simulate oscillatory neural circuit activity.
- Gained expertise in Python-based modeling and analysis of cortical circuit dynamics.

Additional Training (Rotations, UCSF, 2023–2024)

- **Dunn Lab:** Cone loss and noise correlations in retinal ganglion cells (paired patch clamp, MEA, MATLAB analysis).
- **Kato Lab:** Neural manifolds in C. elegans (whole-brain calcium imaging, optogenetics, PCA in Python).

TEACHING EXPERIENCE

Computational and Coding Neuroscience Lecture — **San Francisco, CA**
University of California, San Francisco — September 2024, 2025

- Created and led a lecture on coding and computational neuroscience introductory concepts for first-year neuroscience Ph.D. students at UCSF.
- Topics covered include UNIX basics, GitHub, single-neuron spiking models, biophysical-based neural models, spike sorting methods, dimensionality reduction techniques (PCA, UMAP), neural decoding paradigms, artificial neural networks (CNNs, RNNs, transformers).
- Wrote Python scripts to demo key analyses with time-series data.

Neuroscience Teaching Assistant — **San Francisco, CA**
University of California, San Francisco — September 2024 – Present

- Teaching assistant for a neuroscience graduate-level course that covered basic cellular and molecular mechanisms in neuroscience.

- Led office hours once a week and graded problem sets.

Computational Neuroscience Teaching Assistant **Baltimore, MD**
Johns Hopkins University January 2023 – May 2023
- Class covered the basics of computational neuroscience, including spike train statistics and modeling, neural encoding / decoding, models of reinforcement learning, and connectomics. Modeling and code development using MATLAB.
- Held office hours, answered questions during in-class lectures, and graded tests and homework. Responsible for creating answer keys for homework and tests.

Introduction to Computing Teaching Assistant **Baltimore, MD**
Johns Hopkins University August 2020 – May 2021
- Class covered the basics of modern programming languages (UNIX, Python) and of a software package (MATLAB) for statistical analysis and simulation.
- Led Zoom breakout rooms, held office hours, and graded tests and homework.

MENTORSHIP EXPERIENCE

Undergraduate Research Apprentice Program Mentor **Berkeley, CA**
University of California, Berkeley September 2025 – Present
- Mentoring a UC Berkeley undergraduate student to perform research in the Abbasi Lab.

Reading Partners Mentor **San Francisco, CA**
Dolores Huerta Elementary School September 2024 – Present
- Trained to tutor elementary-age students in reading and literacy skills through a structured evidence-based curriculum.
- Working one-on-one with students multiple times per week to help them reach or exceed grade-level reading standards.

Alumni Mentor for Speed Networking Events **Virtual**
Johns Hopkins University September 2024 – November 2024
- Volunteered to mentor current undergraduates on their networking skills, elevator pitches, and practice interviews.

Alumni Mentor for Life Design Summer Experience Practicum Course **Virtual**
Johns Hopkins University June 2024
- Volunteered to serve as a mentor in a professional development virtual course for approximately 300 summer scholarship recipients in research / internship roles across the country.

Learning Den Peer Tutor **Baltimore, MD**
Johns Hopkins University February 2021 – December 2023
- Tutored students each semester in a range of courses including Calculus I, Calculus II, Chemistry I

PROFESSIONAL SERVICE & OUTREACH

AAAI 2026 NeuroAI Workshop Co-Organizer **Singapore**
- Co-organizing program logistics, invited speakers, and abstract review for an international workshop bridging AI, computational neuroscience, and neuromorphic engineering.

UCSF 2025 Neuroscience Retreat Co-Organizer **San Francisco, CA**
- Organized the annual program retreat for the UCSF Neuroscience Graduate Program that included student, postdoc, and faculty talks, poster sessions, and state of the program discussions over the course of three days.

POSTER PRESENTATIONS

Donovan, N., Sherafati, A., Farhoodi, R., Larkin, J., Takasaki, K., King, C., Wyrick, D., Zhang, J., Millman, D., Denman, D., Lecoq, J., Arkhipov, A., Gouwens, N. W., Waters, J., Reid, R. C., de Vries, S. E. J.,

Buice, M., & Abbasi-Asl, R. (2024, November). *Depth-dependent differences in visual stimulus decoding across layers of mouse primary visual cortex.* Poster presented at the Society for Neuroscience Annual Meeting, San Diego, CA.

- UCSF Graduate Education and Postdoctoral Affairs (GEPA) Travel Award

Donovan, N., Babola, T. A., Darcy, S., & Kanold, P. O. (2023, April). *Preventing progressive hearing loss in common transgenic mouse lines*. Poster presented at Day of Undergraduate Research in Engineering, the Arts & Humanities, Medicine, and the Sciences (DREAMS), Johns Hopkins University, Baltimore, MD.

PUBLICATIONS

Babola, T. A.*, **Donovan, N.***, Darcy, S. S.*, Spjut, C. D., & Kanold, P. O. (2025). Limiting hearing loss in transgenic mouse models. *eNeuro*. https://doi.org/10.1523/ENEURO.0465-24.2025 (* *shared first author*)

Donovan, N.*, Sherafati*, *A.*, Farhoodi, R., Larkin, J., Takasaki, K., King, C., Wyrick, D., Zhang, J., Millman, D., Denman, D., Lecoq, J., Arkhipov, A., Gouwens, N. W., Waters, J., Reid, R. C., de Vries, S. E. J., Buice, M., & Abbasi-Asl, R. (in preparation). Depth-specific visual representations in mouse primary visual cortex reveal parallel processing streams. (* *shared first author*)

EXTRACURRICULAR ACTIVITIES

UCSF Triathlon Club August 2025 – Present
Vice President

- Organizing and leading weekly run, swim, and bike workouts.

UCSF Graduate and Postdoc Queer Alliance August 2025 – Present
Member Officer

- Arranging events including bi-weekly lunches, movie nights, and activities within San Francisco.
- Collaborating with other universities' queer groups including Cal QueerGrads and Stanford oSTEM to promote events between universities.

Johns Hopkins University Track & Field / Cross Country August 2019 – May 2023

- Dedicated 20+ hours per week to a regular, yearly schedule of practice, conditioning, and meets.
- Led a junior leadership council in Fall 2021 to organize team events, lead team workouts, and arrange communication between coaches and team members.

Johns Hopkins Student Athlete Advisory Committee (SAAC) August 2019 – May 2021

- Directed communication between the track / cross country team and SAAC to organize spirit events.