Scott C. Harris, PhD

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EDUCATION

2018 – 2024 **Ph.D. Neuroscience**
University of California, San Francisco
San Francisco, CA

2014 – 2018 **B.S. Neuroscience, Philosophy,** *magna cum laude*
Duke University
Durham, NC

PROFESSIONAL POSITIONS

2023 – present **CO-FOUNDER**
Carousel Diagnostics, Inc.
Building proprietary diagnostic technologies for early, noninvasive detection of neurologic, ophthalmic, and psychiatric diseases.

2018 – 2024 **PhD CANDIDATE**
Neuroscience Graduate Program
University of California, San Francisco
Dissertation: A sensorimotor transformation for image-stabilizing eye movements and its implications for disease. Advisor: Dr. Felice Dunn.

2015 – 2018 **UNDERGRADUATE RESEARCHER**
Department of Neurobiology
Duke University School of Medicine
Thesis: Development of an optical tool for studying cerebellar dependent sensorimotor associations Advisor: Dr. Court Hull.

2016 **RESEARCH AND DEVELOPMENT INTERN**
Neuroscience Department
Genentech Inc., South San Francisco, CA
Characterized safety liabilities associated with Alzheimer's therapeutics in the company pipeline using single-cell assays. Advisor: Dr. Jasvinder Atwal.

2012 – present **CO-FOUNDER AND PRIVATE TUTOR**
San Francisco Tutors
Founded a freelance tutoring company specializing in math, science, English, and college preparation for middle school and high school students. Mentored 20+ students.

FELLOWSHIPS AND AWARDS

2024 – 2025	National Science Foundation Innovation Corps Grant. Entrepreneurial Lead. Award Number: 2437074
2024	David and Joyce Copenhagen Prize for Best Research in Vision Science, UCSF Department of Ophthalmology
2022	Knights Templar Eye Foundation Travel Grant to attend the Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting
2021 – 2024	Ruth L. Kirschstein Predoctoral Individual National Research Service Award (NIH/NEI F31 Fellowship). Award Number: F31 EY-033225
2021 – 2024	Kavli Institute for Neuroscience Graduate Student Fellowship
2021	Blackstone Charitable Foundation LaunchPad Ideas Competition National Grand Prize Winner – For the invention of a novel visual prosthetic
2020 – 2023	Moritz-Heyman Discovery Fellowship, University of California, San Francisco
2020	National Science Foundation Graduate Research Fellowship Program Honorable Mention
2017	Duke Institute for Brain Sciences, Summer Neuroscience Program Fellowship

TEACHING EXPERIENCE

2020 – present	Teaching Assistant, Introduction to Computer Programming, University of California, San Francisco
2020	Teaching Assistant, Organ Systems and Human Pathophysiology, University of California, San Francisco
2020	Guest Instructor, Lowell High School Science Club
2012 – present	Freelance Private Tutor for middle and high school students

PEER-REVIEWED PUBLICATIONS

Harris, S.C., Balraj, A.K., John, J., Wong, J., Wang, Y., Reyes, E.M., Rabiee, R., Roorda, A., Duncan, J., & Dunn, F. A. Identification of a neural pathway with heightened sensitivity to mild neurodegeneration in mice and humans. *In Preparation.*

Lee, J. Y., Kastner, D. B., **Harris, S. C.**, Santina, L. D., John, J. V., Stone, N. S., & Dunn, F. A. (2025). Partial input loss differentially modifies neural pathways. *bioRxiv*, 2025-02.

Creed, R. B., **Harris, S. C.**, Sridhar, S., du Lac, S., Zee, D. S., Dunn, F. A., ... & Nelson, A. B. (2024). Tau P301S Transgenic Mice Develop Gait and Eye Movement Impairments That Mimic Progressive Supranuclear Palsy. *bioRxiv*, 2024-09.

Kiraly, J. K., **Harris, S. C.**, Al-Khindi, T., Dunn, F. A., & Kolodkin, A. L. (2024). PyOKR: A Semi-Automated Method for Quantifying Optokinetic Reflex Tracking Ability. *Journal of Visualized Experiments.*

Harris, S.C., & Dunn, F.A. (2023) Asymmetric retinal direction tuning predicts optokinetic eye movements across stimulus conditions. *eLife*, 12:e81780

Della Santina, L., Alfred, K. Y., **Harris, S. C.**, Soliño, M., Ruiz, T. G., Most, J., ... & Ou, Y. (2021). Disassembly and rewiring of a mature converging excitatory circuit following injury. *Cell Reports*, *36*(5), 109463.

Newpher, T. M., **Harris, S.**, Pringle, J., Hamilton, C., & Soderling, S. (2018). Regulation of spine structural plasticity by Arc/Arg3.1. *Seminars in cell & developmental biology* (Vol. 77, pp. 25-32). Academic Press.

PATENTS

Harris, S.C., Dunn, F.A., John, J.V., *Methods for Assessing Optokinetic Reflex and Systems for Same* UCSF-822PRV, SF-2023-121-1-US, filed October 11, 2024. Provisional.

INVITED TALKS AND ORAL PRESENTATIONS

Harris S.C., & Dunn F.A. (2024) *Direction selectivity and central computation.* David & Joyce Copenhagen Award for Best Research in Vision Science, Invited talk at Resident's Research Day, UCSF Department of Ophthalmology. San Francisco, CA

Harris S.C., & Dunn F.A. (2022) *A neurobiological mechanism for image stabilization.* Invited speaker at the Michael Page, PhD, Research Symposium for the UCSF Discovery Fellows Program. San Francisco, CA.

Harris S.C., & Dunn F.A. (2022) *Retinal direction tuning predicts gaze stabilizing eye movements*. Invited speaker at UCSF Neuroscience Graduate Program Annual Retreat. Monterey, CA.

Harris S.C., & Dunn, F.A. (2022) *Asymmetries in the vertical optokinetic reflex result from disproportionate excitation to complementary ON direction-selective retinal ganglion cell types.* Oral presentation at the Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting. Funded. Denver, CO.

Harris, S.C., & Dunn, F.A. (2022) *Retinal direction tuning predicts gaze stabilizing eye movements.* Invited talk preceding the Annual Roy Steinberg Invited Lecture, UCSF Department of Ophthalmology. San Francisco, CA.

Harris, S.C., & Dunn, F.A. (2022) *A brainstem model for visual motion processing.* Research in progress talk for UCSF Neuroscience Graduate Program. San Francisco, CA.

Harris, S.C., Zahler, S., & Feinberg, E. (2019) *Anatomic constraints on orienting circuitry in the superior colliculus.* Oral presentation on rotation project findings to the UCSF neuroscience community. San Francisco, CA.

POSTER PRESENTATIONS

Harris, S.C., & Dunn, F.A. (2022) *Retinal direction tuning predicts optokinetic eye movements across stimulus conditions.* Poster at The Society for Neuroscience Annual Meeting. San Diego, CA.

Harris, S.C., & Dunn, F.A. (2021) *Disproportionate excitation generates asymmetric direction tuning in complementary retinal ganglion cell types.* Poster at UCSF Neuroscience Program Annual Retreat. San Francisco, CA.

Harris, S.C., & Hull, C. (2018) *Development of an optical tool for studying cerebellar-dependent sensorimotor associations*. Undergraduate thesis defended in front of a three-member faculty committee and poster presented to the general public and local neuroscience community. Durham, NC.

Harris, S.C., Wetzel-smith, M.K. & Atwal, J.K. (2016) *Exploring safety limitations of blood-brain barrier-crossing bispecific antibodies*. Poster at Genentech Inc. Intern Poster Day. South San Francisco, CA.

SOFTWARE AND PROGRAMMING PROJECTS

Project	Role	Description	Tools/Techniques
Bassoon	Inventor Full stack developer	No-code software for creating and deploying psychophysics and vision science experiments	Python (pyserial, opencv, psychopy, tkinter, numpy, scipy)
Electrophysiology Pipeline	Inventor Full stack developer	Web-integrated analysis pipeline for neuroscience data	Matlab, Python, JavaScript, timeseries, data visualization, database management
Calibrate Light	Full stack developer	Software and algorithms for measuring photoisomerization rates for vision science experiments	Matlab, optics, signal detection
Computer Vision Algorithms	Developer, Project Lead	Original computer vision algorithms and tools for eye tracking and microscopy	Computer vision, denoising, wavelets, TensorFlow, Keras, DeepLabCut
Custom website development	Full stack developer	Miscellaneous full-stack website development across several contexts	JavaScript, SQL, Flask, PHP, UI-development

SKILLS AND EXPERTISE

- **Scientific Expertise** Computational neuroscience, vision science, psychophysics, electrophysiology, biophysical modeling, human research, clinical studies, bioinformatics, ophthalmology, imaging
- **Quantitative** Statistics, linear algebra, simulation, experimental design, data science, data visualization, computer vision
- **Programming/Software** Full stack application/web development, python, MATLAB, JavaScript, SQL,
- **Product Development** Market discovery, needs-finding, qualitative analytics, strategic planning
- **Soft Skills** Scientific and technical writing, team leadership, public speaking, fundraising

RELEVANT COURSEWORK

Neurosciences (30+ course), statistical methods and modeling, computational methods, deep learning, information theory, linear algebra, organic chemistry, electricity and magnetism, computer science, philosophy of mind, philosophy of science, formal logic

PORTFOLIOS

- **Personal Website:** https://scottharris.xyz
- **GitHub:** https://github.com/scottharris17
- **LinkedIn:** https://www.linkedin.com/in/scott-harris-phd/