Nathan Harris, PhD

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Education

Ph.D. Neuroscience, University of California San Francisco 2018

B.A. Neuroscience, Oberlin College 2011

Research Career

Assistant Professor, Neuroscience Institute, Georgia State University 2024-present

Postdoctoral Fellow, Department of Biology, Brandeis University 2018-2024
Advisor: Dr. Piali Sengupta
Encoding of stimuli in the transcriptome of a single thermosensory neuron links experience to plasticity

Graduate Student, Neuroscience Program, University of California San Francisco 2011-2018
Advisor: Dr. Graeme Davis
Innate immune signaling in homeostatic plasticity

Grass Fellow, Woods Hole Marine Biological Laboratory 2017
Temperature compensation in motor neurons

Awards & Honors

Rosbash-Abovich Award for the most outstanding postdoc paper in Molecular and Cell Biology, Brandeis University 2024

Ruth L. Kirschstein National Research Service Award (F32), NS112453 2020-2022
Gene regulatory mechanisms underlying temperature-dependent neuronal plasticity

Institutional Research Training Grant (T32) NS007292 2018-2020

Grass Fellowship 2017
Temperature compensation in motor neurons

UCSF Graduate Research Mentorship Fellowship 2015

National Science Foundation Graduate Research Fellowship 2013-2015
Voltage mapping homeostasis

NSF Graduate Research Fellowship Honorable Mention 2012

Nancy Robell Prize in Neuroscience, Oberlin College 2011

National Merit Scholarship 2007

Publications (*Mentee co-authors in blue italics*)

Harris, N.*[a], Dutta, P.*, Krishnan, N., Nurrish, S., *Wilder, E.C.*, Sengupta, P[a]. (2026). Experience-dependent reconfiguration of thermoreceptors regulates neuronal response plasticity. ***Curr Biol*** *36*, 1-10.e4. 10.1016/j.cub.2025.12.054.
*Co-first authorship, [a]Co-corresponding

Chen, L., **Harris, N**., Sengupta, P. (2024). The AFD-expressed SRTX-1 GPCR does not contribute to AFD thermosensory functions. ***MicroPubl Biol*** 10.17912/micropub.biology.001382.

Harris, N., Bates, S.G., Zhuang, Z., Bernstein, M., Stonemetz, J.M., Hill, T.J., Yu, Y.V., Calarco, J.A., and Sengupta, P. (2023). Molecular encoding of stimulus features in a single sensory neuron type enables neuronal and behavioral plasticity. ***Curr Biol*** *33*, 1487-1501.e7. 10.1016/j.cub.2023.02.073.

Servello, F.A., Fernandes, R., Eder, M., **Harris, N**., Martin, O.M.F., Oswal, N., Lindberg, A., Derosiers, N., Sengupta, P., Stroustrup, N., et al. (2022). Neuronal temperature perception induces specific defenses that enable C. elegans to cope with the enhanced reactivity of hydrogen peroxide at high temperature. ***eLife*** *11*, e78941. 10.7554/eLife.78941.

Takeishi, A., Yeon, J., **Harris, N**., Yang, W., and Sengupta, P. (2020). Feeding state functionally reconfigures a sensory circuit to drive thermosensory behavioral plasticity. ***eLife*** *9*, e61167. 10.7554/eLife.61167.

Wang, T., Morency, D.T., **Harris, N**., and Davis, G.W. (2020). Epigenetic signaling in glia controls presynaptic homeostatic plasticity. ***Neuron*** *105*, 491-505.e3. 10.1016/j.neuron.2019.10.041.

Harris, N., Fetter, R.D., Brasier, D.J., Tong, A., and Davis, G.W. (2018). Molecular interface of neuronal innate immunity, synaptic vesicle stabilization, and presynaptic homeostatic plasticity. ***Neuron*** *100*, 1163-1179.e4. 10.1016/j.neuron.2018.09.048.

Harris, N., Braiser, D.J., Dickman, D.K., Fetter, R.D., Tong, A., and Davis, G.W. (2015). The innate immune receptor PGRP-LC controls presynaptic homeostatic plasticity. ***Neuron*** *88*, 1157–1164. 10.1016/j.neuron.2015.10.049.

Oral Presentations

July 2025 — Encoding of stimuli in the gene expression profile of a thermosensory neuron links experience to plasticity. *Worm Club, Emory University, Atlanta, GA.*

May 2025 — Encoding of stimuli in the gene expression profile of a thermosensory neuron links experience to plasticity. *Invited Seminar – University of Georgia.*

Sept. 2024 — How sensory experiences modulate neuronal gene expression profiles to drive plasticity. *Atlanta Chapter of the Society for Neuroscience, What's New in Atlanta Neuroscience.*

June 2024 — Encoding of stimuli in the gene expression profile of a thermosensory neuron links experience to plasticity. *Rosbash-Abovich Award invited seminar – Brandeis University.*

June 2023 — Temperature experience is encoded in the AFD gene expression profile to drive neuronal and behavioral plasticity. *International C. elegans Conference, Glasgow, UK.*

Feb. 2023 — Temperature experience is encoded in the AFD gene expression profile to drive neuronal and behavioral plasticity. *Brandeis University.*

Jan. 2022 — Temperature-regulated gene expression changes driving plasticity in the AFD thermosensory neurons. *Boston Area Worm Meeting, Virtual.*

July 2020 Temperature-dependent gene expression changes in the AFD thermosensory neurons. *Brandeis University Postdoc Seminar Series.*

Oct. 2015 The innate immune receptor PGRP-LC controls presynaptic homeostatic plasticity. *Society for Neuroscience Meeting, Chicago, IL.*

Poster Presentations (*presentations by mentees in blue italics*)

Dec. 2025 *Pough, A., Wilder, E.,* Harris,N. Understanding temporal dynamics of gene expression: A reporter-based approach for measuring transient expression in the AFD thermosensory neurons of *C. elegans*. *Georgia State University Symposium for Undergraduate Neuroscience, Atlanta, GA.* ***3rd place poster award**.

Aug. 2025 *Pough, A., Wilder, E.,* Harris,N. Understanding temporal dynamics of gene expression: A reporter-based approach for measuring transient expression in the AFD thermosensory neurons of *C. elegans*. *Georgia State University Summer Undergraduate Research Symposium, Atlanta, GA.*

June 2024 The PYT-1 PY motif-containing transmembrane protein coordinates transcriptional and post-transcriptional responses to drive thermosensory adaptation. *CeNeuro2024, Madison, WI.*

July 2022 Temperature-regulated gene expression changes drive plasticity in the AFD thermosensory neurons. *CeNeuro2022, Vienna, Austria.*

June 2021 Temperature-regulated gene expression changes driving plasticity in the AFD thermosensory neurons. *International C. elegans Conference, Virtual.*

June 2019 Molecular regulators of *C. elegans* thermotaxis and thermosensory plasticity. *International C. elegans Conference, Los Angeles, CA.*

Nov. 2017 Coordination of short and long-term homeostatic plasticity by an innate immune signaling pathway. *Society for Neuroscience Meeting, Washington, DC.*

Aug. 2016 Innate immune signaling controls presynaptic homeostatic plasticity. *Gordon Research Conference on Synaptic Transmission, Waterville Valley, NH.*

Teaching

Cellular and Molecular Neuroscience (NEUR 4010 / NEUR6015 / BIOL4100 / BIOL6100)
Instructor of Record, Georgia State University January – December 2025

Guest Lecturer, NBIO147A: Neurogenetics, Brandeis University 2022-2024

Course Assistant, NBIO157A: Project Laboratory in Neurobiology and Behavior, Brandeis University 2022

Guest Lecturer, NBIO140B: Principles of Neuroscience, Brandeis University 2022

Mentorship

Dissertation Committee Member for Neuroscience Graduate Program

Georgia State University
Yousif Shams, December 2024-present
Dhanya Pyaram, December 2025-present

Mentor for Neuroscience Undergraduate Research
Georgia State University
Katherine Dimassi, September 2024-May 2024
Ashley Pough, October 2024-present (Maximizing Access to Research Careers Program)
***Selected for Brains & Behavior Summer Scholars Program, 2025**
Abraham Martinez, January 2025-present
Adetola Adesalu, August 2025-present (University Assistantship Program, Honors student)

Mentor for Neuroscience Graduate Research
Georgia State University
Emily Wilder, August 2025-present (PhD student)
*Awarded 2CI Neurogenomics Fellowship in 2025
Allison Lipstein, October-December 2025 (rotation)
Liaa Ferede, December 2025-February 2026 (rotation)

Mentor for Laboratory Technicians in Neuroscience Research
Georgia State University
Antanovia Ferrell, August 2024-present
Ananya Theneti, September 2025-present

Prior Mentorship – Brandeis University

Jamie Stonemetz, Ph.D. Student, Sengupta Lab. Coauthor on publication.	2022-2024
Samuel Bates, Ph.D. Student, Sengupta Lab. Coauthor on publication.	2020-2024
Matthew Bernstein, Undergraduate, Sengupta Lab. Coauthor on publication.	2019-2022
Zihao Richard Zhuang, Master's Student, Sengupta Lab. Coauthor on publication.	2020-2021

Institutional Service

Member of Undergraduate Program Committee, Neuroscience Institute, Georgia State University	2025-present
Georgia State University 2CI Neurogenomics Fellowship review committee	2024-present
Georgia State University Brains and Behavior Fellowship ranking committee	2024
Reviewer for ION program applications	April 2025
Representative for NI at Research Recruits Luncheon EXPO	April 2025
NEUR 8050 Mock F31 Study Section Reviewer	April 2025
Brandeis University Invited Postdoc Research Colloquium Co-organizer	2019-2021
UCSF Differences Matter – Focus Area: Increase the diversity of discovery topics, clinical research, and the scientific workforce	2016-2017
Member of UCSF Science Policy Group	2015-2017
Volunteer Teacher, UCSF Science Education Partnership	2012-2013

Professional Service

Journal Reviewer
eLife
Scientific Reports

Session Chair, Development, International Worm Meeting 2025

Poster Judge, International Worm Meeting 2025

Professional Development Activities

Peer teaching observation	April 2025
Ex-ITE teaching peer observer training	Sept. 2024
Ex-ITE inclusive teaching strategies workshop	Aug. 2024
EMBO Lab Leadership Course	June 2024