

Simon Bohn

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SUMMARY

Neuroscientist studying how populations of neurons generate cognitive states like seeing and remembering. 9+ years of research experience designing and implementing complex experiments, analyzing large datasets and communicating complicated findings.

EDUCATION

University of Pennsylvania

2020-present

- Ph.D. in neuroscience, expected Fall 2026
- Thesis (in preparation): A two-stage algorithm underlies the transformation from vision to familiarity in the primate brain
- Graduate certificate in computational neuroscience

Johns Hopkins University

2013-2017

- B.S. in neuroscience, second major in political science
- Graduated with honors, 3.81 GPA

RESEARCH EXPERIENCE

Doctoral Student

2020-present

Visual Memory Lab, University of Pennsylvania, Philadelphia PA

Advisor: Nicole C. Rust

- Developed computational analyses to investigate the population-level neural basis of visual recognition memory in NHP inferotemporal cortex and hippocampus.
- Established a new neural recording pipeline for precisely timed multi-unit electrophysiological recordings during a visual memory task.
- Identified a previously unknown computational process transforming neural representations of visual memory in the medial temporal lobe, leading to a first-authored preprint.

Post-baccalaureate Intramural Research Fellow

2017-2020

Unit on Neurons, Circuits and Behavior, Laboratory of Neuropsychology, National Institute of Mental Health, Bethesda MD

Advisor: Arash Afraz

- Designed experiments to causally test the role of inferotemporal cortex in visual perception.
- Led experimental implementation of a novel chronically implanted LED array for optogenetic stimulation in awake behaving NHPs.
- Demonstrated that the perceptual effects of optogenetic stimulation in inferotemporal cortex depend on what is being concurrently viewed, resulting in a co-first-authored publication.

Undergraduate Research Assistant

2016

Centre for the Study of Democratic Citizenship, McGill University, Montreal QC

Advisor: Elisabeth Gidengil

- Planned an fMRI study examining the neural basis of partisan identification with an interdisciplinary team of political scientists from McGill University and neuroscientists at the Montreal Neurological Institute.

Undergraduate Research Assistant

2014-2015

Gilbert Lab, Cornell University, Ithaca NY

Advisor: Cole Gilbert

- Built experimental apparatus and analyzed data to understand how jumping spiders navigate their environment and track prey.

SCIENTIFIC PREPRINTS

- [1] **Bohn, S.**, Hacker, C.M., Jannuzi, B.G.L., Meyer, T., Hay, M.L., Rust, N.C. (2026) A two-stage algorithm underlies the transformation from vision to familiarity in the primate brain.
- [2] Hacker, C.M., **Bohn, S.**, Foster, B.L., Rust, N.C. (2026) Neural representations of visual memory in inferotemporal cortex reveal a generalizable framework for translation between spikes and field potentials.

PEER REVIEWED PUBLICATIONS

- [1] Jannuzi, B.G.L., Hacker, C.M., **Bohn, S.**, Meyer, T., Hay, M.L., Rust, N.C. (2026) Sharpened visual memory representations are reflected in inferotemporal cortex. *Journal of Neuroscience*.
- [2] Azadi, R., **Bohn, S.**, Eldridge, M., Afraz, A. (2023). Surgical Procedure for Implantation of Opto-Array in Nonhuman Primates. *Current Protocols*.
- [3] Azadi, R.*, **Bohn, S.***, Lopez, E., Lafer-Sousa, R., Wang, K., Eldridge, M., Afraz, A. (2023). Image-dependence of the detectability of optogenetic stimulation in macaque inferotemporal cortex. *Current Biology*.
- [4] Lafer-Sousa, R., Wang, K., Azadi, R., Lopez, E., **Bohn, S.**, Afraz, A. (2023). Behavioral detectability of optogenetic stimulation of inferior temporal cortex varies with the size of concurrently viewed objects. *Current Research in Neurobiology*.
- [5] Rajalingham, R., Sorenson, M., Azadi, R., **Bohn, S.**, DiCarlo, J.J., Afraz, A. (2021). Chronically implantable LED arrays for behavioral optogenetics in primates. *Nature Methods*.

*Authors contributed equally.

POSTERS AND PRESENTATIONS

Talks

- [1] **Bohn, S.**, Hacker, C.M., Jannuzi, B.G.L., Meyer, T., Hay, M., Rust, N.C. A role for the hippocampus in disambiguating familiarity from visual modulation. Nanosymposium at *Society for Neuroscience (2023)*, Washington DC.

Posters

- [1] **Bohn, S.**, Hacker, C.M., Jannuzi, B.G.L., Meyer, T., Hay, M., Rust, N.C. Resolving a paradox about how vision is transformed into familiarity (2025). *Society for Neuroscience (2025)*, San Diego, CA.
- [2] **Bohn, S.**, Hacker, C.M., Jannuzi, B.G.L., Meyer, T., Hay, M., Rust, N.C. Resolving a paradox about how vision is transformed into familiarity (2025). *International Research Center for Neurointelligence (2025)*, Tokyo, JP.
- [3] **Bohn, S.**, Hacker, C.M., Jannuzi, B.G.L., Meyer, T., Hay, M., Rust, N.C. Disambiguating familiarity from visual modulation: a role for the hippocampus in recognition memory. *Society for Neuroscience (2022)*, San Diego, CA.
- [4] **Bohn, S.** & Afraz, A. Visual input influences behavioral detection of optogenetic stimulation in macaque inferior temporal cortex. (2020). *Vision Sciences Society*, online.
- [5] **Bohn, S.** & Afraz, A. Detection of an optogenetic stimulus in macaque inferior temporal cortex. *Society for Neuroscience (2019)*, Chicago, IL

TEACHING AND SERVICE

Teaching Assistant

2023

University of Pennsylvania

- Taught weekly recitation and lab session for 20+ students in introductory neuroscience course.

Seminar co-organizer	2021-2022
<i>Computational Neuroscience Initiative +/- Seminar</i>	
Organized logistics for internal weekly seminar on computational neuroscience.	

FELLOWSHIPS AND AWARDS

Neuro-Inspired Computation Workshop Travel Support	2025
<i>International Research Center for Neurointelligence, University of Tokyo</i>	
Biomedical Graduate Studies Travel Award	2022, 2023, 2025
<i>Perelman School of Medicine, University of Pennsylvania</i>	
Post-baccalaureate Intramural Research Training Fellowship Award	2017-2019
<i>National Institutes of Health</i>	
Intramural Research Program Trainee Travel Award	2019
<i>National Institutes of Health</i>	
Second Decade Society Research Grant	2016
<i>Johns Hopkins University</i>	
Political Science Undergraduate Research Grant	2016
<i>Johns Hopkins University</i>	
International Studies Leadership Seminar Travel Award	2016
<i>Johns Hopkins University</i>	

SKILLS

- **Programming:** MATLAB, Python/Pandas, Bash, LLM-assisted coding workflows
- **Statistical analysis:** Hypothesis testing, regression, bootstrap, machine learning
- **Neural data:** Multichannel recording, neural data preprocessing, spike sorting, Ripple Grapevine and Plexon Omniplex data acquisition systems
- **Experimental methods:** NHP behavior, electrophysiology, eye tracking and pupilometry, optogenetic stimulation, human psychophysics (in-lab and online)
- **Design and fabrication:** CAD, 3D printing, machine tools, soldering, digital electronics