Shaina M. Short, PhD

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- **Management and Mentoring:** I have mentored, co-authored, and collaborated with over twenty scientists, ranging from undergraduate to tenured faculty. My mentees have advanced to graduate programs, postdoctoral fellowships, and industry positions. These combined efforts resulted in many publications and secured independent funds for five consecutive years.
- **Neuroscience Expertise:** I have over a decade of hands-on expertise using genetically targeted optical probes to image neurotransmission and intracellular calcium dynamics, and voltage-sensitive dyes and electrophysiology to capture neuron activity across in vivo, in vitro brain slice, and cell culture neuron tissue substrates.
- **Data Analysis and Modeling:** I am an expert in generating iterative processes for neuroscience data collection and neural circuit modeling to thoroughly examine how the brain works in health and disease.
- **Technology Integration:** I have experience collaborating, designing, and building custom cutting-edge imaging, optical stimulation, and electrophysiology equipment, and data acquisition software (Python and MATLAB) to push the boundaries of how we record, analyze in real-time, and manipulate brain activity.

EXPERIENCE & EDUCATION

Senior Postdoctoral Associate, University of Utah, Dept. of Neurobiology. *Nov 2015 – present*
- Utilizing cutting-edge in vivo two-photon imaging, calcium indicators, dopamine, GABA, and glutamate sensors, optogenetics, and chemogenetics to study microcircuit function necessary for sensory processing

Researcher, Cold Spring Harbor Laboratory *Jul – Aug 2018*
- Imaging Structure & Function in the Nervous System: Intensive laboratory and lecture course that provided training to utilize fundamental and emerging imaging technologies

Collaborating Lab Associate, Cold Spring Harbor Laboratory *Jul – Aug 2016*
- Computational modeling of neural circuits

Postdoctoral Associate (Joint Appointment), The John B. Pierce Laboratory *Jun 2013 – Oct 2015*
- Integrated optogenetics with a custom built and programmed digital micromirror device and in vivo electrophysiology to map sensory receptive fields in olfaction

Postdoctoral Associate (Joint Appointment), Yale University**,** Dept. of Neuroscience
- Investigated inhibition in sensory processing using NEURON computational circuit modeling
- Developed a critical interface between physiological data collection and neural circuit modeling
- Utilized Python and MATLAB to create novel and custom optogenetic stimulation and data acquisition software

PhD, Biomedical Science, Research Assistant, University of Connecticut, Dept. of Neuroscience *Jul 2009 – May 2013*
- Studied neuromodulation and synaptic plasticity of prefrontal cortex
- Designed and implemented a combination of whole cell patch clamp recordings and optical imaging of intracellular calcium and voltage dyes in acute brain slices and neural stem cell cultures

BA, Biology, Psychology and Neuroscience Double Major, St. Olaf College *Sep 2005 – May 2009*

Undergraduate Researcher, National Science Foundation (REU-NSF), Weber State University *Jun 2008 – May 2009*
- Characterized the effects of melatonin supplementation on central executive function and physiological stress in law enforcement workers using cortisol assays and computerized cognitive tests

LEADERSHIP

Member, The Networking and Mentoring Committee, Association for Chemoreception Sciences *Jul 2019 – present*
- Promote diversity and gender equality among junior research members through developing strong mentorship and career opportunities for national and international communities

Cofounder, Utah Women in Neuroscience (UWIN) *Sep 2020 – present*
- Established a professional network that supports women in neuroscience careers
- Lead organizer of events specifically targeted to support mothers in neuroscience

Guest Associate Editor, Frontiers in Cellular Neuroscience *Oct 2019 – present*
- Designed a research topic article series, entitled ***"Bottom-up and Top-down: Molecules and Circuits that Underlie Chemosensory Behaviors,"*** with five-person international editorial team
- Inviting reviewers, overseeing the review of manuscripts, and writing an editorial for the article series

Review Editor, Frontiers in Integrative Neuroscience *Oct 2019 – present*
- Review manuscripts for publication and assist in developing the strategic direction of the journal

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LEADERSHIP continued

Organizer, Two-Photon Imaging Interest Group, University of Utah *Jul 2017 – Jul 2018*
- Organize a monthly meeting where researchers can present their work and facilitate active discussions about how to improve imaging techniques and analyses

President, Yale Neuroscience Postdoctoral Network, Yale School of Medicine *Jul 2013 – Jun 2014*
- Advised postdoctoral fellows on their research and how to effectively present it to the Yale research community
- Planned and hosted a monthly presentation series to the Interdepartmental Neuroscience Program

Women in Science and Engineering Software Carpentry Boot Camp, Microsoft Headquarters *Jun 2013*
- Intense training in Python programming and networking with highly successful female programmers both in the private sector (predominantly J. P. Morgan) and academia

Instructor, Introduction to NEURON Modeling Class, University of Connecticut, School of Medicine *Nov 2012*
- Educated medical students on modeling neuronal activity and basic neuron physiology

Graduate Student Representative, Graduate Student Organization, University of Connecticut *Jun 2008 – Jun 2009*
- Planned and orchestrated outside speaker presentations, seminars, and social events for the graduate student community

AWARDS

R21 NIDCD Early Career Research (ECR) Award ($300,000) *Jun 2020 – Jun 2023*
- Principal investigator of research program studying dopaminergic mechanisms of odor information processing and experience-dependent plasticity in the olfactory bulb

NRSA F32 Postdoctoral Training Grant Award funded by NIDCD, NIH ($150,000) *Jul 2017 – Jul 2019*
- Principal investigator of research project investigating mechanisms of gain control in the olfactory bulb

Polak Young Investigator Award *Apr 2019*
- The Association of Chemoreception Science recognizes the top 5-6 young investigators within ten years of their doctoral degree based upon their scientific merit. Travel funds to present at the annual conference and monetary award provided.

Society for Neuroscience (SfN) Trainee Professional Development Award *Nov 2017*
- Competitively selected as one of the top 150 undergraduates, graduate students, or postdoctoral fellows internationally to demonstrate scientific merit and excellence in neuroscience research; travel funds provided

Polak Postdoctoral Travel Award *Apr 2016*
- Competitively selected by the Association of Chemoreception Science Committee for travel funds to attend conference

Yale Neuroscience Training Grant (T32 NIH NINDS, $55,000) *Jul 2013 – Jul 2014*
- Competitively selected by the department of Neuroscience at the Yale School of Medicine for an award covering salary for my initial year of postdoctoral training

Undergraduate Research for the National Science Foundation (REU-NSF) *Jun 2008 – Aug 2008*
- Competitively selected for a research award covered by the National Science Foundation and Department of Defense to co-direct an independent research project; competitive stipend provided.

SELECTED PUBLICATIONS

- **Short SM***, Wachowiak M. (2019) Temporal dynamics of inhalation-linked activity across defined subpopulations of mouse olfactory bulb neurons imaged in vivo. eNeuro. ***Corresponding author***
- **Short SM**, Oikonomou KD, Zhou WL, Acker CD, Popovic MA, Zecevic D and Antic SD. (2017) The stochastic nature of action potential backpropagation in apical tuft dendrites. Journal of Neurophysiology.
- **Short SM***, Morse TM, McTavish TS, Shepherd GM, Verhagen JV. (2016) Respiration gates sensory input responses in the mitral cell layer of the olfactory bulb. PLoS One. ***Corresponding author***
- Oikonomou KD*, **Short SM***, Rich MT, Antic SD. (2012) Extrasynaptic glutamate receptor activation as cellular bases for dynamic range compression in pyramidal neurons. Front Physiol. ***Authors contributed equally***
- Zhou WL, **Short SM**, Rich MT, Oikonomou KD, Singh MB, Sterjanaj EV, Antic SD. (2014) Branch specific and spike-order specific action potential invasion in basal, oblique and apical dendrites of cortical pyramidal neurons. *Neurophotonics*.
- Belinsky GS, Rich MT, Sirois CL, **Short SM**, Pedrosa E, Lachman HM, Antic SD. (2014) Patch-clamp recordings and calcium imaging followed by single-cell PCR reveal the developmental profile of 13 genes in iPSC-derived human neurons. Stem Cell Res.
- Belinsky GS, Sirois CL, Rich MT, **Short SM**, Moore AR, Gilbert SE, Antic SD. (2013) Dopamine receptors in human embryonic stem cell neurodifferentiation. Stem Cells Dev.
- Belinsky GS, Moore AR, **Short SM**, Rich MT, Antic SD. (2011) Physiological properties of neurons derived from human embryonic stem cells using a dibutyryl cyclic AMP-based protocol. Stem Cells Dev.

For all publications, please see my google scholar page: https://scholar.google.com/citations?hl=en&user=viheQ7UAAAAJ&view_op=list_works&sortby=pubdate

For full CV, please see the front page of my website: https://www.shainashort.org/