Charles R. Heller

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Laboratory of Brain Hearing and Behavior
Oregon Hearing Research Center
Oregon Health and Science University
3181 S.W. Sam Jackson Park Road, Portland, OR, 97239

Education

Oregon Health and Science University, Portland, OR *2016 to Present*

Neuroscience, Ph.D

Saint Olaf College, Northfield, MN *2012 to 2016*

Physics, B.A.

Selected Coursework

Graduate

Cellular neurophysiology	Speech Signal Processing
Cellular and molecular neurobiology	Auditory system topics
Systems neuroscience	Probability and Statistical Inference

Undergraduate

Partial differential equations	Software Design
Statistical modeling	Cellular and Molecular Neuroscience
Linear Algebra	Cell Biology
Electronics	Genetics

Scientific Skills

Laboratory proficiencies: In-vivo electrophysiology, *in-vitro* electrophysiology, spike sorting, multi-unit data analysis, multi-electrode array recording, patch clamp electrophysiology, confocal microscopy, basic electronics, basic metal working

Computer proficiencies: Python, MATLAB, R, IGOR, MySQL, C++

Research Experience

Doctoral Student – Dr. Stephen David, OHSU *2017 to Present*

Behavioral state dependence of population coding in auditory cortex.

Graduate Research Assistant – Dr. Henrique von Gersdorff, OHSU *2017*

Time-resolved capacitance measurements in type2 OFF-cone bipolar cells reveals capacity for high speed synaptic transmission in the mammalian retina.

Undergraduate Research Assistant – Dr. Jay Demas, St. Olaf College *2014 to 2017*

Identification and characterization of intrinsically photosensitive retinal ganglion cells in the common snapping turtle retina

Independent Research – Dr. Kevin Crisp, St. Olaf College *2015 to 2016*

A Hodgkin-Huxley model for conduction velocity in the median giant fiber of the earthworm

Awards and Fellowships

Travel Award – Association for Research in Otolaryngology (ARO) MidWinter Meeting *2020*

Travel Award – Advances and Perspectives in Auditory Neuroscience (APAN) *2018*

N.L. Tartar Trust Fellowship *2018*

Neuroscience Graduate Program Student Achievement Award *2018*

Graduate Research Fellowship, National Science Foundation (NSF GRFP) *2018*

Achievement Rewards for College Scientists (ARCS) Foundation Scholar *2017*

Matthew J Vogel Scholarship *2014*

Hauge Family Endowed Scholarship *2013*

St. Olaf Academic Scholarship *2012*

Professional Development

Advanced Neural Data Analysis - G-Node 2019

Summer Workshop on the Dynamic Brain - Allen Institute 2017

Teaching Experience

Python programming in experimental neuroscience, TA, OHSU *2018*

Python programming bootcamp, co-organizer and TA, OHSU *2018*

Cellular neurophysiology, TA, OHSU *2017*

Cellular and molecular neuroscience, TA, St. Olaf College *2016*

Academic Support Center, Physics tutor, St Olaf College *2015 to 2016*

Introductory physics, TA, St. Olaf College *2014 to 2016*

Professional Membership

Association for Research in Otolaryngology *2019 to Present*

Society for Neuroscience *2014 to Present*

Nu Rho Psi *2014 to Present*

Publications

Heller C.R., Crisp K. (2016). A Hodgkin-Huxley model for conduction velocity in the medial giant fiber of the earthworm, Lumbricus terrestris. *IMPULSE*,1:9

Tien N. W., Pearson J. T., **Heller C. R.**, Demas J., Kerschensteiner D. (2015). Genetically Identified Suppressed-by- Contrast Retinal Ganglion Cells Reliably Signal Self-Generated Visual Stimuli. *The Journal of Neuroscience*,35(30), 10815-10820.

Selected Abstracts

Heller C. R., Saderi D, López Espejo M., David, S. V. Task engagement selectively enhances population discrimination of behavior-relevant categories in primary auditory cortex. Denver, CO: Computational and Systems Neuroscience (COSYNE), 2020

Heller C. R., Saderi D, Schwartz Z. P., David, S. V. Effects of arousal on population coding of natural sounds in primary auditory cortex. San Jose, CA: Association for Research in Otolaryngology (ARO), 2020

Heller C. R., Saderi D, Schwartz Z. P., David, S. V. Effects of arousal on population coding of natural sounds in primary auditory cortex. Chicago, Il: Society for Neuroscience, 2019

Heller C. R., Saderi D, Schwartz Z. P., David, S. V. Arousal enhances reliability of population coding in primary auditory cortex. Lisbon, PT: Computational and Systems Neuroscience (COSYNE), 2019

Heller C. R., Saderi D, Schwartz Z. P., David, S. V. Arousal-dependent variability of correlated neural activity in primary auditory cortex. Baltimore, MD: Association for Research in Otolaryngology (ARO), 2019

Heller C. R., Saderi D, Schwartz Z. P., David, S. V. Behavior state-dependence of correlated neural population activity in ferret primary auditory cortex. San Diego, CA: Society for Neuroscience, 2018

Heller C. R., Saderi D, Schwartz Z. P., David, S. V. Behavior state-dependence of neural variability in ferret primary auditory cortex. San Diego, CA: Advances and Perspectives in Auditory Neuroscience, 2018

Heller C. R., Behling S, Sutter E, Ulanday, E, Demas, J. Identifying and characterizing intrinsically photosensitive retinal ganglion cells in the common snapping turtle, Chelydra serpentine. Chicago, Il: Society for Neuroscience, 2015

Tien N. W., Pearson J. T., **Heller C. R.**, Demas J., Kerschensteiner D. Genetically identified suppressed by contrast retinal ganglion cells in mice reliably signal self-generated visual stimuli. Chicago, Il: Society for Neuroscience, 2015

Heller C. R., Crisp, K. A Hodgkin-Huxley model for conduction velocity in the medial giant fiber of the earthworm, Lumbricus terrestris. Chicago, Il: Faculty for Undergraduate Neuroscience, 2015

Heller C. R., Behling S, Sutter E, Ulanday, E, Demas, J. Characterization of phototactic behavior in hatchling snapping turtles (Chelydra serpentina). Chicago, Il: Faculty for Undergraduate Neuroscience, 2015

Heller C. R., Behling S, Demas, J. Retinal circuitry underlying hatchling turtle navigation. Washington, D.C.: Faculty for Undergraduate Neuroscience, 2014