Charles R. Heller

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Max Planck Institute for Biological Cybernetics
Max-Planck-Ring 8-14, 72076 Tuebingen

EDUCATION

Oregon Health and Science University, Portland, OR — *2016 to 2021*
Neuroscience, Ph.D

Saint Olaf College, Northfield, MN — *2012 to 2016*
Physics, B.A.

RESEARCH EXPERIENCE

Postdoctoral Researcher – Drs. Jennifer Li & Drew Robson, MPI — *2021 to Present*
Doctoral Student – Dr. Stephen David, OHSU — *2017 to 2021*
Graduate Research Assistant – Dr. Henrique von Gersdorff, OHSU — *2017*
Undergraduate Research Assistant – Dr. Jay Demas, St. Olaf College — *2014 to 2017*
Independent Research – Dr. Kevin Crisp, St. Olaf College — *2015 to 2016*

AWARDS AND FELLOWSHIPS

Marie Curie Postdoctoral Fellowship, Seal of Excellence Recipient — *2022*
Paper of the month - OHSU School of Medicine — *2021*
Travel Award – Association for Research in Otolaryngology (ARO) — *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*

COMMUNITY OUTREACH

Minds Matter Portland, High School Mentor — *2016* to *2019*

PROFESSIONAL MEMBERSHIP

Association for Research in Otolaryngology — *2019 to 2021*

Society for Neuroscience *2014 to Present*
Nu Rho Psi *2014 to Present*

PUBLICATIONS

Choudary V.*, **Heller C. R.***, Aimon S., de Sardenberg Schmid L., Robson D. N., & Li J. M., (2023). Neural and behavioral organization of rapid eye movement sleep in zebrafish. *bioRxiv* doi: 10.1101/2023.08.28.555077

Heller, C. R., Hamersky G. R., & David S. V. (2023). Task-specific invariant representation in auditory cortex. *eLife* doi: 10.7554/eLife.89936.1

Heller C. R. & David S. V. (2022). Targeted dimensionality reduction enables reliable estimation of neural population coding accuracy from trial-limited data. *PloS one* doi: 10.1371/journal.pone.0271136

Saderi D., Schwartz Z. P., **Heller C. R.**, Pennington J. R., & David S. V. (2021). Dissociation of task engagement and arousal effects in auditory cortex and midbrain. *eLife* doi: 10.7554/eLife.60153

Heller, C. R., Schwartz Z. P., Saderi, D., & David S. V. (2020). Selective effects of arousal on population coding of natural sounds in auditory cortex. *bioRxiv* doi: 10.1101/2020.08.31.276584

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.

* indicates equal author contribution

SELECTED ABSTRACTS

Heller C. R., Saderi D, David, S. V. Task-related suppression of correlated variability in A1 predicts behavior performance but not changes in neural discrimination. Virtual: Computational and Systems Neuroscience (COSYNE), 2021

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