

# Charles R. Heller

charles.heller@tuebingen.mpg.de · +1 952-607-7152

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

## EDUCATION

---

<b>Oregon Health and Science University</b> , Portland, OR Neuroscience, Ph.D	<i>2016 to 2021</i>
<b>Saint Olaf College</b> , Northfield, MN Physics, B.A.	<i>2012 to 2016</i>

## RESEARCH EXPERIENCE

---

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

## AWARDS AND FELLOWSHIPS

---

Marie Curie Postdoctoral Fellowship, Seal of Excellence Recipient	<i>2022</i>
Paper of the month - OHSU School of Medicine	<i>2021</i>
Travel Award – Association for Research in Otolaryngology (ARO)	<i>2020</i>
Travel Award – Advances and Perspectives in Auditory Neuroscience (APAN)	<i>2018</i>
N.L. Tartar Trust Fellowship	<i>2018</i>
Neuroscience Graduate Program Student Achievement Award	<i>2018</i>
Graduate Research Fellowship, National Science Foundation (NSF GRFP)	<i>2018</i>
Achievement Rewards for College Scientists (ARCS) Foundation Scholar	<i>2017</i>
Matthew J Vogel Scholarship	<i>2014</i>
Hauge Family Endowed Scholarship	<i>2013</i>
St. Olaf Academic Scholarship	<i>2012</i>

## PROFESSIONAL DEVELOPMENT

---

Advanced Neural Data Analysis - G-Node	<i>2019</i>
Summer Workshop on the Dynamic Brain - Allen Institute	<i>2017</i>

## TEACHING EXPERIENCE

---

Python programming in experimental neuroscience, TA, OHSU	<i>2018</i>
Python programming bootcamp, co-organizer and TA, OHSU	<i>2018</i>
Cellular neurophysiology, TA, OHSU	<i>2017</i>
Cellular and molecular neuroscience, TA, St. Olaf College	<i>2016</i>
Academic Support Center, Physics tutor, St Olaf College	<i>2015 to 2016</i>
Introductory physics, TA, St. Olaf College	<i>2014 to 2016</i>

## COMMUNITY OUTREACH

---

Minds Matter Portland, High School Mentor	<i>2016 to 2019</i>
---	---------------------

## PROFESSIONAL MEMBERSHIP

---

## 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. *bioRxiv* doi: 10.1101/2023.06.29.547009
- 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 serpentina*. 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