

## Hilary Rose Katz, Ph.D.

Marine Biological Laboratory  
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### **Education and Academic Positions**

2021-present Visiting Lecturer, Wellesley College,  
Department of Biological Sciences

2018-present Postdoctoral Researcher, Marine Biological Laboratory (MBL),  
Eugene Bell Center for Regenerative Biology and Tissue Engineering  
PI: Dr. Jennifer Morgan  
Project Title: "Identifying molecular drivers of successful neuronal regeneration in vertebrates"

2018 Ph.D. in Integrative Biology, The University of Chicago,  
Department of Organismal Biology and Anatomy, Biological Sciences Division  
Advisor: Dr. Melina Hale  
Dissertation: "Exploring Ontogenetic Relationships Between Form and Function"

2014 Sc.M. in Integrative Biology, The University of Chicago  
Department of Organismal Biology and Anatomy

2012 B.A. in Neuroscience and Behavior, Mount Holyoke College  
Minor in Computer Science, *Magna Cum Laude*

### **Fellowships**

2020 Morton Cure Paralysis Fund,  
Project Title: "Determining the roles for ATF3 within the spinal motor circuit following spinal cord injury"

2015-2018 GAANN Training Grant, University of Chicago

2013-2014 NSF Moto-IGERT Training Grant, University of Chicago

2011 NSF Research Experience for Undergraduates (REU), University of Pittsburgh

### **Scholarships and Awards**

2018 O'Brien and Hasten Scholarship, University of Chicago – MBL

2016 Hinds Fund, University of Chicago

2015 NSF Moto-IGERT Research award

2015 NSF Moto-IGERT Research award

2014 Scholarship to attend Neural Systems and Behavior training course, MBL

2014 University of Chicago-MBL Graduate Student Research Award

2014 NSF Moto-IGERT Travel award

2014 NSF Graduate Research Award Fellowship, Honorable Mention

2013 NSF Graduate Research Award Fellowship, Honorable Mention

2011 Scholarship to Attend Summer School on Computational Linguistics and Speech Processing at Johns Hopkins University

2011 Psychology Department Academic Achievement Award, Mount Holyoke College

2008 Mount Holyoke Leadership Award

**Teaching Experience***Visiting Lecturer*

Spring 2022 BISC-302 Human Physiology Lecture (Undergraduates, 12 students)

- Currently teaching the lecture section of this seminar-style upper-level course

Fall 2021 BISC-203 Comparative Physiology and Anatomy of Vertebrates Lecture (Undergraduates, 22 students)

- Taught the lecture section of the course with a strong focus on comparative physiology.
- Class time spent on lectures, student presentations, and guided small and large group discussions on primary literature

BISC-111 Introductory Organismal Biology Lecture (Undergraduates, 10 students)

- Course is broken down into 4 modules: Evolution, Plants, Animals, and Ecology.
- Class time spent on lecture and group discussions on primary literature.

BISC-111L Introductory Organismal Biology Lab (Undergraduates, 16 students)

- Running one section of a well-established lab curriculum with exercises and experiments that correspond to lecture topics.

*Teaching Assistant, Marine Biological Laboratory*

2018- 2019 Frontiers in Stem Cells & Regeneration; Spinal Cord Regeneration Lab (Advanced research training course, 20 students)

- Set up animals and lab for functional recovery behavior scoring exercise and answered questions about the lamprey spinal cord injury model.

*Graduate Teaching Assistant, The University of Chicago*

Winter 2017 Animal Behavior (Undergraduates, 90 students)

- Presented in-class lecture on learning and memory, provided exam questions from my lecture, and co-ran exam review session with two other TAs.
- Responsible for overseeing 25 students on writing a mock NSF Graduate Research Fellowship Proposal, graded papers, provided feedback for revisions, and held regular office hours.

Spring 2014 Systems Neuroscience (Undergraduates, 40 students)

- Presented lecture on motor control and provided exam questions based on my lecture.
- Held regular office hours and, graded short-format writing assignments and exams.

Spring 2013 Chordate Evolution and Comparative Anatomy with Lab (3 Undergraduates and 1 Graduate student)

- Presented lecture on comparative neurobiology, wrote and graded exam questions based on my lecture.
- Prepared and supervised lab exercises, and independently wrote and graded two lab practical exams.
- Held regular office hours and exam review sessions

*Undergraduate Tutor, Mount Holyoke College*

2009-2010 How Organisms Develop

2010 Comparative Vertebrate Physiology

*Undergraduate Teaching Assistant, Mount Holyoke College*

2009 Integrated Introduction to Biology and Chemistry Lab

- Assisted lab instructor in setting up and running Biology and Chemistry lab exercises.

**Research Experience**

- 2018-present Postdoctoral Researcher, Eugene Bell Center for Regenerative Biology and Tissue Engineering, Marine Biological Laboratory, Woods Hole, MA (Advisor: Dr. Jennifer Morgan, Ph.D.)  
*Identifying cellular and molecular drivers of successful neuronal regeneration in vertebrates*
- 2015-2018 Visiting Researcher, Collaboration with Dr. Jennifer Morgan, Marine Biological Laboratory, Woods Hole, MA  
*Identifying a conserved molecular identity of the Mauthner neuron across anamniotes.*
- 2013-2018 Research Assistant, Dissertation Research, Department of Organismal Biology and Anatomy, University of Chicago (Dr. Melina Hale)  
*Exploring Ontogenetic Relationships Between Form and Function.*
- 2010-2012 Undergraduate Researcher, Neuroscience, Mount Holyoke College (Dr. Gary Gillis)  
*Do bullfrogs exhibit differences anticipatory muscle activation when landing in a terrestrial versus aquatic environment?*
- 2010 Undergraduate Researcher, Computer Science, Mount Holyoke College (Dr. Audrey Lee-St. John and Dr. Daniel Barry)
- 2010 REU Fellow, NSF Research Experience for Undergraduates, Department of Computational and Systems Biology, University of Pittsburgh School of Medicine (Dr. Chakra Chennubhotla)

**Publications**

- **Katz HR**, Fouke KE, McCarthy NA<sup>+</sup>, Morgan JR (2020) Recovery of Burrowing Behavior after Spinal Cord Injury in the Larval Sea Lamprey. *Biological Bulletin*, 239(3), 174-182. doi: 10.1086/711365 (\*Undergraduate student author)
- **Katz HR\***, Menelaou E\*, Hale ME. (2020) Morphological and Physiological properties of Rohon-Beard Neurons Along the Zebrafish Spinal Cord. *Journal of Comparative Neurology*, 1-17. doi: 10.1002/cne.25033 (\*co-first authors)
- **Katz HR**, Hale ME (2016) A Large-Scale Pattern of Ontogenetic Shape Change in Ray-Finned Fishes. *PLoS ONE*; 11(3): e0150841. doi:10.1371/journal.pone.0150841
- Hale ME, **Katz, HR**, Peek MY, Fremont, RT (2016) Neural Circuits that Drive Startle Behavior, With a Focus on the Mauthner Cells and Spiral Fiber Neurons of Fishes. *Journal of Neurogenetics*, 30(2): 89-100. doi:10.1080/01677063.2016.1182526

**Manuscripts in Progress**

- **Katz HR**, Bloom O, Morgan JR. Activating transcription factor 3 as a highly conserved pro-regenerative transcription factor in the vertebrate nervous system. *Frontiers in Cell and Developmental Biology*, In Revision
- **Katz HR**, Hale ME. Startle Performance is Maintained Through the Metamorphic Transition from Axial- to Limb-Based locomotion in *Xenopus laevis*. Anticipated Submission: Spring 2022

**Poster Presentations**

- Gonzalez-Kosasky DJ<sup>+</sup>, Wegman ME, Chen R<sup>+</sup>, Tytell E, Morgan JR, **Katz HR** (Jan 2022). Acute behavioral responses to partial spinal cord transections in the larval sea lamprey. Society for Integrative and Comparative Biology. Poster Presentation: P1-96. Phoenix, AZ (\*Undergraduate student author)
- **Katz HR**, Arcese AA, Bloom O, Morgan JR (Oct 2019) Cross-Species Comparison of Gene Expression Following Spinal Cord Injury Supports a Role for ATF3 in Central Nervous System Regeneration. Society for Neuroscience. Poster Presentation: 363.23. Chicago, IL

- **Katz HR**, Menelaou E, Hale ME (Nov 2018) Zebrafish Mechanosensory Afferents Exhibit Morphological and Physiological Regionalization Along the Body Axis. Society for Neuroscience. Poster Presentation: 668.03. San Diego, CA
- **Katz HR**, Goolsbee A, Hale ME (Jan 2018) Performance of axial and limb-based startle behaviors through metamorphosis in *Xenopus laevis*. Society for Integrative and Comparative Biology. Best Student Poster Competition: P1-14. San Francisco, CA. **Invited Presentation**
- **Katz HR**, Lu J, Hale ME (Nov 2016) Pectoral Fin Function and Sensory Innervation Throughout Zebrafish Ontogeny. Society for Neuroscience. Poster Presentation: 810.12. San Diego, CA
- **Katz HR**, Liu YC, Hale ME (Oct 2015) The Neural Basis for Regional Body Bending in Zebrafish Startle Behavior. Society for Neuroscience. Poster Presentation: 798.10. Chicago, IL
- **Katz HR**, Hale ME (Jan 2015) Decrease in Axial Elongation Through Post-Embryonic Development is Conserved Across Teleost Fishes. Society for Integrative and Comparative Biology. Poster Presentation: P1.193. West Palm Beach, FL
- **Katz HR**, Levin E., Macesic LJ, Gillis GB (Jan 2013) Making a Splash: The Effect of Environment on Landing Preparation in *Rana catesbeiana*. Society for Integrative and Comparative Biology. Poster Presentation: P3.165. San Francisco, CA

### Oral Presentations

- **Katz HR**, McCarthy NA<sup>+</sup>, Fouke KE, Morgan JR (Jan 2020) Functional Recovery of Burrowing Behavior in Sea Lampreys. Society for Integrative and Comparative Biology. Oral Presentation: 60-3. Austin, TX (\*Undergraduate student author)
- **Katz HR**, Guadarrama E (April 2019) Spinal Cord Regeneration in Lampreys. Society for Neuroscience; From Behavior to Brain: The Neuroethological Way to Neuroscience. Data Blitz Video Presentation. Virtual Conference. **Invited Presentation**
- **Katz HR**, Hale ME (Jan 2017) Characterizing the Transition from Axial to Limb-Based Startle Through Metamorphosis the Frog *Xenopus laevis*. Society for Integrative and Comparative Biology. Oral Presentation: 48.7. New Orleans, LA
- **Katz HR**, Liu YC, Hale ME (Jan 2016) What Can Tails Tell Fish? How Caudal Touch Mediates Startle Behavior. Society for Integrative and Comparative Biology. Oral Presentation: 112-5. Portland, OR
- **Katz HR**, Chennubhotla C (July 2010) A Model to Generate Synthetic Neural Images for Testing Digital Reconstruction Tools. Oral Presentation, Duquesne Summer Undergraduate Research Symposium. Pittsburgh, PA. **Invited Presentation**

### Invited Lectures

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| 2021 | Providence College, Providence, RI (Zoom)<br>"Mechanisms for successful spinal cord regeneration in the sea lamprey model"     |
| 2018 | Willamette University, Salem, OR<br>"Exploring relationships between form and function through life history in fish and frogs" |

### Professional Development

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| 2022 | Adult Mental Health First Aid Certification (valid for 3 years)                             |
| 2017 | ANGUS: Analyzing High Throughput Sequencing Data Workshop, University of California, Davis  |
| 2017 | Individual Teaching Consultation, Chicago Center for Teaching                               |
| 2015 | MyChoice Leadership Effectiveness and Development (LEAD) mini-course, University of Chicago |
| 2014 | Neural Systems and Behavior course, Marine Biological Laboratory, Woods Hole, MA            |
| 2015 | Scientific Illustration Course, University of Chicago                                       |

2011 Summer School on Computational Linguistics and Speech Processing, Johns Hopkins University, Baltimore, MD

**Community Outreach**

2019 "Lunch and Learn" Falmouth STEM Boosters, Morse Pond School, Falmouth, MA  
2018 Ocean Guardian Dive Club Pilot Program, Learn Scuba Chicago, Chicago, IL  
2017-2020 "What is a Scientist?" Society for Integrative and Comparative Biology Annual Meeting  
2014-2015 Teaching Assistant, Bret Harte Math and Science Magnet School, Chicago, IL  
2015 NBC Learn Video with the Hale Lab (<https://nbclearn.com/brain/cuecard/102497>)  
2015 Scientific Illustration, Poster illustration for the Graduate Council Student Science Art Show, University of Chicago  
2012-2014 "Brains!" Workshop in the Palmer Lab, University of Chicago  
2011 Volunteer with BioBus, Agawam, MA, [www.biobus.org/](http://www.biobus.org/)

**Academic Memberships**

Society for Integrative and Comparative Biology  
Society for Neuroscience  
Psi Chi  
Sigma Xi