Hilary Rose Katz, Ph.D.

Western Kentucky University
1906 College Heights Blvd.
Bowling Green, KY 42101

Academic Positions

2022-present Western Kentucky University,
Department of Biological Sciences

2021-2022 Visiting Lecturer, Wellesley College,
Department of Biological Sciences

Education

2018-2022 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

2024 KY INBRE Voucher: Impact of spinal cord injury on muscle physiology
2023 KY INBRE RPA: The role of Wnt signaling in spinal cord regeneration
2022 Quick Turn Around Grant, Western Kentucky University
2022 NSF Conference Award: The Role of Mechanosensation in Robust Movement Control (Award number: 2233350)
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

Western Kentucky University
2024-present BIOL-330 Animal Physiology Lecture (Undergraduates)
2023-present BIOL-331 Animal Physiology Laboratory (Undergraduates)
2022-present BIOL-120 Biological Concepts – Cells, Metabolism, and Genetics (Undergraduates)
Wellesley College
Spring 2022 BISC-302 Human Physiology Lecture (Undergraduates, 12 students)
Fall 2021 BISC-203 Comparative Physiology and Anatomy of Vertebrates Lecture (Undergraduates, 22 students)
BISC-111 Introductory Organismal Biology Lecture (Undergraduates, 10 students)
BISC-111L Introductory Organismal Biology Lab (Undergraduates, 16 students)
Teaching Assistant, Marine Biological Laboratory
2018- 2019 Frontiers in Stem Cells & Regeneration; Spinal Cord Regeneration Lab (Advanced research training course, 20 students)
Graduate Teaching Assistant, The University of Chicago
Winter 2017 Animal Behavior (Undergraduates, 90 students)
Spring 2014 Systems Neuroscience (Undergraduates, 40 students)
Spring 2013 Chordate Evolution and Comparative Anatomy with Lab (3 Undergraduates and 1 Graduate student)
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

Research Experience

2022-present Principal Investigator, Western Kentucky University, Bowling Green, KY
Identifying cellular and molecular drivers of successful neuronal regeneration in vertebrates; Characterizing physiological changes beyond the nervous system following spinal cord injury and during spinal cord regeneration.
2018-2022 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

- Guadarrama E, Heisse LW[+], Morgan JR, & **Katz HR** (2025). Dynamic microglia/macrophage infiltration during spinal cord regeneration in larval sea lamprey. *Annals of the New York Academy of Sciences*. doi: 10.1111/nyas.15396. ([+]Undergraduate student author)
- Stanchak KE, & **Katz HR** (2023). Introduction to The Symposium: "The Role of Mechanosensation in Robust Locomotion". *Integrative and Comparative Biology*, *63*(2), 444-449.
- **Katz HR**, Hamlet CL (2023) Mechanosensory feedback in lamprey swimming models and applications in the field of spinal cord regeneration. *Integrative and Comparative Biology*, 2023, icad079, https://doi.org/10.1093/icb/icad079
- **Katz HR**, Arcesi AA, Bloom O, Morgan JR. (2022) Activating Transcription Factor 3 (ATF3) is a Highly Conserved Pro-regenerative Transcription Factor in the Vertebrate Nervous System. *Frontiers in Cell and Developmental Biology*, 10:824036. doi: 10.3389/fcell.2022.824036
- **Katz HR**, Fouke KE, McCarthy NA[+], 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

Oral Presentations

- **Katz HR** (Jan 2023) Rohon-Beard Neurons and Perspectives on Sensorimotor Integration After Spinal Cord Regeneration. Oral Presentation. Austin, TX. **Invited Presentation**
- **Katz HR**, McCarthy NA[+], 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**

Poster Presentations

- New C, Ali SS, Meece K, **Katz HR** (Jan 2025) Changes in muscle physiology over the course of spinal cord regeneration in the larval sea lamprey. Society for Integrative and Comparative Biology. Poster Presentation: P2-179. Atlanta, GA.
- Rainwaters CAF, Heisse LW and Katz HR (March 2023) The larval sea lamprey as a model for successful spinal cord regeneration. KY INBRE Meeting. Poster Presentation.
- Mbanfu AP[+], **Katz HR** (Nov 2023). Jun protein expression in the regenerating lamprey spinal cord. Kentucky Academy of Science. Poster Presentation. Highland Heights, KY ([+]High School student author)
- Gonzalez-Kosasky DJ[+], Wegman ME, Chen R[+], 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

Invited Lectures

2025	University of Montana Western, Dillon, MT (Zoom) Spinal cord regeneration in the larval sea lamprey
2024	University of the Incarnate Word, San Antonio, TX (Zoom) “Spinal cord regeneration and locomotor recovery in the sea lamprey model”
2022	Western Kentucky University, Bowling Green, KY “Mechanisms for successful spinal cord regeneration in the sea lamprey model”
2021	Providence College, Providence, RI (Zoom) “Mechanisms for successful spinal cord regeneration in the sea lamprey model”
2018	Willamette University, Salem, OR “Exploring relationships between form and function through life history in fish and frogs”

Curriculum Vitae **Hilary R Katz**

Professional Development

2025	i-TREP Biomedical Entrepreneurship Summer Course, Louisiana State University
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

2024-2025	IdeaFest, Bowling Green, KY
2024-2025	Dueña de mi future, Bowling Green, KY
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/

Academic Memberships

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