

# Kerry Leigh McGowan

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**Graduation Date: November 2022**

## EDUCATION

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### Washington State University, School of Biological Sciences, Pullman, WA, 2017-present

Ph.D. in Biology with Graduate Certificate in Bioinformatics, GPA: 4.0

*Advisor:* Dr. Joanna Kelley

### Muhlenberg College, Allentown, PA, 2011-2015

B.S. in Biology, *summa cum laude*

*Advisor:* Dr. Erika Iyengar

## PUBLICATIONS

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### *Published*

5. Kelley JL, Desvignes T, **McGowan KL**, Perez M, Rodriguez LA, Brown AP, Culumber Z, Tobler M. 2020. microRNA expression variation as a potential molecular mechanism contributing to adaptation to hydrogen sulphide. Special issue, *Journal of Evolutionary Biology*. DOI: 10.1111/jeb.13727
4. Hotaling S\*, Shah AA\*, **McGowan KL**, Tronstad LM, Giersch JJ, Finn DS, Woods A, Dillon ME<sup>a</sup>, Kelley JL<sup>a</sup>. 2020. Mountain stoneflies may tolerate warming streams: evidence from organismal physiology and gene expression. *Global Change Biology*. 26(10). DOI: 10.1111/gcb.15294  
*\*Contributed equally<sup>a</sup>Co-supervised research*
3. **McGowan KL**, Passow CN, Arias-Rodriguez L, Tobler M, Kelley, JL. 2019. Expression analyses of cave mollies (*Poecilia mexicana*) reveal key genes involved in early-stage eye regression. *Biology Letters*. 15(10). DOI: 10.1098/rsbl.2019.0554
2. Brown AP, **McGowan KL**, Schwarzkopf EJ, Greenway RS, Rodriguez LA, Tobler M, Kelley JL. 2019. Local ancestry analysis reveals genomic convergence in extremophile fishes. *Philosophical Transactions of the Royal Society B*. 374(1777). DOI: 10.1098/rstb.2018.0240
1. **McGowan KL**, Iyengar EV. 2017. The difference between a rock and a biological hard place: epibionts in the rocky intertidal. *Marine Biology*. 164(109). DOI: 10.1007/s00227-017-3131-z

### *In Review*

Greenway R, Brown AP, Camarillo H, Delich C, **McGowan KL**, Nelson J, Arias-Rodriguez L, Kelley KL, Tobler M. 2021. Convergent adaptation and ecological speciation result from unique genomic mechanisms in sympatric extremophile fishes. *bioRxiv*. DOI: 10.1101/2021.06.28.450104

## AWARDS AND HONORS

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### *Grants and Fellowships, Total: \$30,375*

Graduate Student Research & Training Fellowship, School of Biological Sciences, Washington State University, 2022 (\$3,000)

Charles W. and William C. McNeil Memorial Graduate Fellowship, Washington State University, 2022 (\$3,000)

Washington NASA Space Grant Fellowship in Science and Engineering, 2019 and 2022 (\$5,000)

Richard R. and Constance M. Albrecht Scholarship, Washington State University Graduate School, 2021 (\$1,500)

Vern Parish Fund, American Livebearer Association, 2020 (\$2,000)

Carl H. Elling Award, Washington State University, 2018-2020 (\$4,100)

Abelson Fellowship, School of Biological Sciences, Washington State University, 2017-2019 (\$6,000)

Segal Education Award, AmeriCorps, 2017 (\$5,775)

### ***Honors***

Exceptional Service Award, The Graduate Program Committee, School of Biological Sciences, Washington State University, 2022

Exceptional Research Award, The Graduate Program Committee, School of Biological Sciences, Washington State University, 2020

Phi Beta Kappa Society, Pi Chapter, 2014-present

Muhlenberg College Dana Honors Scholar, 2011-2015

Dean's List, Muhlenberg College (every semester) 2011-2015

Presidential Merit Scholarship 2011-2015

Awarded Dean's Grant (Independent Research Stipend), Muhlenberg College 2014

Crist Fellowship (Independent Research Stipend), Muhlenberg College 2014

### **RESEARH EXPERIENCE**

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**Ph.D. Candidate, School of Biological Sciences, Washington State University, Mentor Dr. Joanna Kelley, Pullman, WA, 2017-present**

- Examining hydrogen sulfide detoxification and regressive evolution in extremophile fish.

**Intern, Departments of Entomology and Invertebrate Zoology, Smithsonian National Museum of Natural History, Mentors Dr. Stuart McKamey and Tim Coffey, Washington, D.C., 2016**

- Examined specimens of treehopper insects using several morphological characteristics to redefine our taxonomic knowledge of the tribe Darnini.
- Catalogued specimens of freshwater bivalves.

**NSF Research Experience for Undergraduates Participant, Integrative Biology and Ecology of Marine Organisms, Friday Harbor Laboratories, University of Washington, Mentor Dr. Erika Iyengar, Friday Harbor, WA, 2014**

- Conducted a self-designed transect study examining epibiotic communities on molluscs in the rocky intertidal of the Pacific Northwest.

**Research Assistant, Friday Harbor Laboratories, University of Washington, Mentor Dr. Erika Iyengar, Friday Harbor, WA, 2014**

- Collected transect data on the distribution of terrestrial slugs (European black slug, *Arion ater*; banana slug, *Ariolimax columbianus*).

**Student Independent Researcher, Muhlenberg College, Biology Department, Mentor Dr. Erika Iyengar, Allentown, PA 2013-2015**

Conducted a self-designed research project investigating behavioral inducible defenses of a freshwater isopod (*Lirceus* sp.) in response to fish predation.

## **TEACHING EXPERIENCE**

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**Teaching Assistant, Washington State University, Pullman, WA**

Fall 2017-Fall 2021: Introductory Biology, Introduction to Nutrition, Biology of Humans

**Guest Lecturer, Washington State University, Pullman, WA**

Spring 2020: Contemporary Genetics, Biology of Fishes

Fall 2021: Introduction to Directed Research, Research Scholars

**Level 1 Certified (CRLA) Tutor, Muhlenberg College, Allentown, PA**

2012-2015: General Chemistry, Organic Chemistry, Principles Biology, Elementary/Intermediate Spanish

## **ORAL PRESENTATIONS**

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**McGowan KL**, Kelley JL. Identifying regulatory mechanisms affected by hydrogen sulfide in an extremophile poeciliid fish, *Evolution*, Virtual (COVID-19), 2021

**McGowan KL**, Landers J\*, Patel C\*, Duttke S, Greenway R, Passow CN, Arias-Rodriguez L, Tobler M, Kelley JL. Identifying regulatory mechanisms affected by hydrogen sulfide in an extremophile fish, *Poeciliid Fishes Virtual Forum*, Virtual (COVID-19), 2021

*\*Contributed equally*

**McGowan KL**, Duttke S, Landers J\*, Patel C\*, Tobler M, Kelley JL. Identifying regulatory mechanisms affected by hydrogen sulfide in an extremophile fish, *Genome Informatics*, Virtual (COVID-19), 2020

*\*Contributed equally*

**McGowan KL**. Evolutionary education in the inland northwest, *SciComm Conference*, Kansas State University, Manhattan, KS, 2019

**McGowan KL**. Hydrogen sulfide and caves: how habitats affect fish, *Palouse-Clearwater Environmental Institute Science After Hours*, Washington State University, Pullman, WA, 2017

**McGowan KL**. Community science and coho salmon: investigating pre-spawn mortality in an urban creek in Seattle, *Salmon Recovery Conference*, Wenatchee, WA, 2017

**McGowan KL**, Iyengar EV. Epibiosis on intertidal molluscan shells in the Pacific Northwest, *Lehigh Valley Ecology & Evolution Symposium (LVEES)*, Muhlenberg College, Allentown, PA, 2015

- Awarded runner-up, Best Undergraduate Talk.

## POSTER PRESENTATIONS

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**McGowan KL**, Schwarzkopf EJ, Duttke S, Passow CN, Greenway R, Arias-Rodriguez L, Tobler M, Kelley JL. Identifying regulatory mechanisms affected by hydrogen sulfide in an extremophile poeciliid fish, Society for Molecular Biology and Evolution (SMBE), Virtual (COVID-19), 2021

**McGowan KL**, Duttke S, Landers J\*, Patel C\*, Greenway R, Passow CN, Arias-Rodriguez L, Tobler M, Kelley JL. Identifying regulatory mechanisms affected by hydrogen sulfide in an extremophile fish. Graduate Research Symposium, School of Biological Sciences, Washington State University, Virtual (COVID-19), 2020

*\*Contributed equally*

– Awarded Best Student Poster

**McGowan KL**, Tobler M, Arias-Rodriguez L, Kelley JL. Genomic variation and signatures of selection in poeciliid fish in response to an extreme environment. Evolutionary Biology in the Pacific Northwest (EVO-WIBO), Port Townsend, WA, 2020

*\*Cancelled due to COVID-19*

**McGowan KL**, Tobler M, Arias-Rodriguez L, Kelley JL. Genomic variation and signatures of selection in poeciliid fish in response to an extreme environment. Graduate and Professional Student Association Academic Showcase, Washington State University, Pullman, WA, 2020

*\*Cancelled due to COVID-19*

**McGowan KL**, Tobler M, Arias-Rodriguez L, Kelley JL. Genomic variation and signatures of selection in poeciliid fish in response to an extreme environment. Graduate and Professional Student Association Academic Showcase, Washington State University, Pullman, WA, 2019

**McGowan KL**, Passow CN, Tobler M, Kelley JL. Genomic variation and signatures of selection in poeciliid fish in response to an extreme environment. Graduate Research Symposium, School of Biological Sciences, Washington State University, Pullman, WA, 2019

**McGowan KL**, Passow CN, Tobler M, Kelley JL. Differential gene expression in eye transcriptomes of cave and surface populations of the Atlantic molly, *Poecilia mexicana*. Center for Institutional Research Computing Open House and Research Computing Symposium, Washington State University, Pullman, WA, 2018

**McGowan KL**, Passow CN, Tobler M, Kelley JL. Differential gene expression in eye transcriptomes of cave and surface populations of the Atlantic molly, *Poecilia mexicana*. Evolutionary Biology in the Pacific Northwest (EVO-WIBO), Port Townsend, WA, 2018

**McGowan KL**, Passow CN, Tobler M, Kelley JL. Differential gene expression in eye transcriptomes of cave and surface populations of the Atlantic molly, *Poecilia mexicana*. Graduate and Professional Student Association Academic Showcase, Washington State University, Pullman, WA, 2018

**McGowan KL**, Passow CN, Tobler M, Kelley JL. Differential gene expression in eye transcriptomes of cave and surface populations of the Atlantic molly, *Poecilia mexicana*. Graduate Research Symposium, School of Biological Sciences, Washington State University, Pullman, WA, 2018

**McGowan KL**, Iyengar EV. Epibiosis on gastropod shells in the rocky intertidal: effects of zonation, shell rugosity, and migration, Society for Integrative and Comparative Biology (SICB), West Palm Beach, FL, 2015

**McGowan KL.** The cnidome of the Actinarian *Aiptasia pallida* (Family Aiptasiidae): a qualitative study of cnidocyst ultrastructures using SEM, Senior Capstone Presentation, Muhlenberg College, Allentown, PA, 2014

**McGowan KL\***, Gonsenhauser R\*, Iyengar EV. Inducible behavioral defenses of freshwater isopods in response to fish predation, Lehigh Valley Ecology & Evolution Symposium (LVEES), Lafayette College, Easton, PA, 2013

*\*Contributed equally*

## **VOLUNTEER WORK**

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### **Volunteer Coordinator, AmeriCorps, Puget Soundkeeper Alliance, Seattle, WA, 2016-2017**

Recruited for, trained, and assisted volunteers on stewardship programs, including marine debris cleanups, salmon pre-spawn mortality surveys, and on-the-water pollution patrols via kayak and boat.

### **Corps Member, AmeriCorps, American Conservation Experience, Flagstaff, AZ, 2015**

Performed habitat restoration, invasive species removal, trail maintenance, and botanical surveys in several national parks.

## **OUTREACH AND MENTORING**

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### **Graduate Student Peer Mentor, Washington State University, Pullman, WA, 2022**

- Mentored more junior graduate students in the School of Biological Sciences to promote community-building activities and to increase the success of students across diverse groups in the department.

### **STEM Education Volunteer, Neill Public Library, Pullman, WA, 2021-present**

- Organized and lead STEM-focused activities for K-12 students, including making bird feeders, solving a forensics mystery, and testing the anti-microbial properties of spices.

### **Research Mentor to Undergraduates, Washington State University, Pullman, WA, 2019-present**

- Guided three undergraduates through capped small RNA-sequencing data analysis using a high-performance computing cluster.

### **Graduate Student Committee Member, School of Biological Sciences Hiring Committee, Washington State University, Pullman, WA, 2021**

- Vetted candidates and conducted interviews to hire a tenure-track Plant Physiologist faculty member.
- Collected and implemented feedback from graduate students regarding candidate choice to the larger committee.

### **Co-founder, Evolutionary Education in the Inland Northwest (EvoEd-IN), Pullman, WA, 2018-2019**

- Taught evolutionary biology in rural and underserved high schools in WA.
- Traveled to classrooms to discuss graduate careers in STEM.

### **Volunteer, Fuel Your Future, Seattle, WA, 2017**

- Provided nutritional education to elementary school youth.

## **TECHNICAL SKILLS**

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- High-performance and cloud computing (including AWS)
- Bash, Python, R, SQL

- RNA-seq, including nascent technologies
- Complex analysis of NGS data
- Statistical modeling and inference
- Data cleaning and visualization
- Dimensionality reduction, feature selection
- Docker/Singularity containers
- ggplot2, tidyverse, matplotlib, Seaborn, sklearn
- Unsupervised and supervised learning
- Version control with Git and GitHub
- RNA/DNA extraction, quantification, library preparation
- Therapeutics development