

Melissa Drown

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EDUCATION

University of Miami, Florida 2018

Ph.D. in Evolutionary Genomics (*Entered program Fall 2018, advanced to candidacy Spring 2020, expected graduation Fall 2022*)

University of Minnesota, Twin Cities 2014-2018

B.S. in Ecology, Evolution, and Behavior (2018)

Minor in Marine Biology (2018)

AWARDS and HONORS

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| 2022 | National Science Foundation Postdoctoral Research Fellowship in Biology (\$138,000) |
| 2022 | Environmental Mutagenesis and Genomics Society Travel Award (\$875) |
| 2022 | Genetics Society of America DeLill Nasser Travel Award for Professional Development in Genetics (\$1000) |
| 2021 | Best Departmental Student Talk |
| 2021 | Graduate Student Excellence in Academics, Leadership, and Service (overall winner, \$1200) |
| 2020 | Runner-Up Best Departmental Student Talk |
| 2020 | Genetics Society of America Presidential Membership Initiative (\$150 equivalent) |
| 2020 | University of Washington Summer in Statistical Genetics Scholar (\$600) |
| 2020 | David Rowland Graduate Research Fellowship (\$3500) |
| 2020 | Graduate Student Professional Development Fund Recipient (\$2000) |
| 2019 | Environmental Mutagenesis and Genomics Society Travel Award (\$750) |
| 2019-21 | AQUA Foundation for LGBT+ Women Scholarship Recipient (\$13,500 total) |
| 2018 | Honorable Mention National Science Foundation Graduate Fellow |
| 2018-19 | Environmental Mutagenesis and Genomics Society Travel Award (\$750) |
| 2018 | U of MN President's Student Leadership and Service Award |
| 2017 | Outstanding Oral Presentation at NOAA Hollings Scholar Symposium |
| 2017 | Grace Klein-MacPhee Graduate Student Travel Grant (\$500) |
| 2017 | College of Biological Sciences Travel Award (\$500) |
| 2016 | NOAA Hollings Scholarship Program (\$30,000 equivalent) |
| 2016 | Undergraduate Research Opportunity Project Funding (\$3,000) |
| 2014-18 | David Larson Scholarship Recipient (\$5,000/year) |
| 2014-18 | College of Biological Sciences Dean's List (Fall 2014, Spring 2017, Fall 2017, Spring 2018) |

RELEVANT COURSEWORK

- University of Washington Summer in Statistical Genetics: Statistical Genetics (Module 13), GWAS and Association Mapping (Module 14)

- University of Miami Graduate Courses: Statistics for Marine Scientists (RSM 612), Methods for Marine and Atmospheric Education (RSM 647), Population Genetics and Genomics (MBE 629), Fish Physiology (MBE 686), Practical Computing for Biologists (MBE 635), Biochemical Adaptations (reading course)

RESEARCH EXPERIENCE

Graduate Researcher: University of Miami, Department of Marine Biology and Ecology, Miami, FL (Principal Investigators – Douglas Crawford and Margie Oleksiak)

- PhD Student – Investigating the genomics of rapid evolution in an estuarine fish using a combination of physiology, molecular biology, and bioinformatics. (2018-Present, advanced to candidacy June 2020)

Hollings Fellow: National Oceanic and Atmospheric Administration, Northwest Fisheries Science Center (Principal Investigator – Christopher Chambers)

- Hollings Intern – A New Approach to Ocean Acidification Research: Design and Testing of a High-frequency CO₂ System. (Sole recipient from UMN; 127 recipients nationwide). (2016-18)

Undergraduate Research Assistant: University of Minnesota, Department of Animal Science (Principal Investigator – Christopher Faulk)

- Writing Intensive Directed Research and Lab Assistant
 - 5'-Azacitidine as a Hypomethylating Agent in A^{vy} mice. Assisted in experimental design, compiling data and publishing. (2017-19)
 - DNA Methylation on Evolutionary Timespans: Conservation of Genomic Sequence and Epigenetic Marks. Assisted in compiling data and writing manuscript for publishing. (2016-17)
- Undergraduate Research Opportunities Project – Epigenetic profiling of selected and non-selected bovine populations. Isolated DNA from bovine liver samples, PCR, and pyrosequencing. (2015-16)

Undergraduate Research Assistant: University of Minnesota, Department of Diagnostics Biology (Principal Investigator – Mark Herzberg)

- Work Study Student – Assistance in lab maintenance, bacterial transformations, PCR, gel electrophoresis, and protein purification.

TEACHING EXPERIENCE

Graduate Teaching Assistant: Saltwater Semester Marine Genomics with Lab (Fall 2021)

- Teaching bioinformatics for evolutionary genomics analysis including processing of raw sequence files through variant calling and statistical analysis (e.g., STRUCTURE analysis, Fst calculation, and interpretation)

Graduate Teaching Assistant: Introduction to Marine Science Lab (Fall 2020)

- Maintenance of Blackboard site, weekly grading of lab reports, technology setup for synchronous in person and online teaching, weekly lab material setup and cleanup

Undergraduate Teaching Assistant: Zoology and Animal Diversity Lab (Fall 2016-Spring 2018)

- Weekly lesson planning and presentation of lectures and dissections, teaching of all material, writing quizzes, grading all quizzes, presentations, and lab reports, maintenance of Moodle site

ACADEMIC SERVICE

Departmental Student Representative: Diversity, Equity, and Inclusion Task Force (2021)

- Examples of our recent initiatives:
 - Removal of GRE requirements for the department
 - Monthly newsletter highlighting relevant events and opportunities
 - Workshops and training for faculty on mentoring under-represented minority students
 - Bi-annual campus climate survey and student town hall discussions

Mentor: Graduate/Undergraduate Mentorship Program (2020-2022)

- Mentor responsibilities:
 - Provide professional development and scientific training support to 2 undergraduate mentees per year

Subcommittee Member: Genetics Society of America Early Career Leadership Program Career Development (2021)

- Subcommittee responsibilities:
 - Interviewing and writing for *Decoding Life* series blog
 - Preparing content for weekly *GSA Early Career newsletter*
 - Monthly *Workshop Wednesday* panel discussions
 - GSA conference professional development event planning

PUBLICATIONS and PRESENTATIONS

DeLiberto A.N., **Drown, M.K.**, Ehrlich, M.A., Oleksiak, M.F., & Crawford, D.L. *To rise to temperature: Variation in temperature effects within and among populations.* In Review 2022.

Drown, M.K., DeLiberto, A.N., Wanner, N.M., Proefroeck, J., Westover, A., Doyle, M., Heilshorn, S., D'Alessandro, E., Crawford, D.L., Faulk, C., & Oleksiak, M.F. *Sequencing bait: Nuclear and mitogenome assembly of an abundant coastal subtropical fish, *Atherinomorus stipes*.* In Prep 2022.

Drown, M.K., Crawford, D.L., & Oleksiak, M.F. *mRNA expression explains metabolic and thermal tolerance trait variation.* Preprint: bioRxiv 2022.
<https://doi.org/10.1101/2022.01.19.477029> . In Review 2022.

Drown, M.K., DeLiberto, A.N., Ehrlich, M.A., Crawford, D.L., & Oleksiak, M.F. (2021). *Interindividual variation in metabolic and thermal tolerance traits from populations subjected to recent anthropogenic heating.* Royal Society Open Science. Published 2021.
<https://royalsocietypublishing.org/doi/10.1098/rsos.210440>

Traylor-Knowles, N., Connelly, M.T., Young, B.D., Eaton, K., Muller, E.M., Paul, V.J., Ushijima, B., DeMerlis, A., **Drown, M.K.**, Goncalves, A. and Kron, N. (2021). *Gene Expression*

Response to Stony Coral Tissue Loss Disease Transmission in M. cavernosa and O. faveolata From Florida. *Frontiers in Marine Science.* Published 2021. (Press release below).
<https://www.frontiersin.org/articles/10.3389/fmars.2021.681563/full>

Drown M.K., DeLiberto A.N., Crawford D.L., & Oleksiak, M.F. *An innovative setup for high-throughput respirometry of small aquatic animals.* *Frontiers in Marine Science.* Published 2020. <https://www.frontiersin.org/articles/10.3389/fmars.2020.581104/full>

Colwell M, Wanner N, **Drown M.K.**, Drown C, Borchers A, Faulk C. *Paradoxical whole genome DNA methylation dynamics of 5'aza-deoxycytidine in chronic low-dose exposure in mice.* *Epigenetics.* Published 2020.
<https://www.tandfonline.com/doi/full/10.1080/15592294.2020.1790951>

Drown M.K., DeLiberto A.N., Ehrlich M.A., Dayan D, Oleksiak M.F., Crawford D.L.. *Hot populations: Acclimation and Adaptation in Fundulus heteroclitus.* Oral Presentation. Gordon Conference on Ecological and Evolutionary Genomics. 2019.

Drown M.K., DeLiberto A.N., Ehrlich M.A., Dayan D, Oleksiak M.F., Crawford D.L.. *Adaptation to Rapidly Changing Environmental Temperature.* Poster. Gordon Seminar on Ecological and Evolutionary Genomics. 2019.

Colwell M, **Drown M.K.**, Showel K, Drown C, Borchers A, Faulk C. *Evolutionary Conservation of Methylation in CpG Sites within Ultraconserved Non-Coding Elements.* Published 2018. <https://www.tandfonline.com/doi/full/10.1080/15592294.2017.1411447>

Drown M.K., Colwell M, Drown C, Faulk C. *Epigenetic Changes in Avy Mice in Response to Chronic Decitabine Exposure.* Poster and Oral Presentation. Environmental Mutagenesis and Genomics Society Meeting. 2018.

Drown M.K., Boyce D, Habeck E, Chambers RC. *A New Approach to Ocean Acidification Research: Design and Testing of a High-frequency CO₂ System .* Poster. Ocean Sciences Meeting. 2018.

Drown M.K., Boyce D, Habeck E, Chambers RC. *A New Approach to Ocean Acidification Research: Design and Testing of a High-frequency CO₂ System .* Oral Presentation. NOAA Hollings Scholar Symposium. 2017.

Drown M.K., Boyce D, Habeck E, Chambers RC. *A New Apparatus for Response Plasticity to Ocean Acidification.* Poster. Larval Fish Conference. 2017.

POPULAR PRESS

[**Mentoring LGBTQ+ Students in STEM.**](#) American Society for Cell Biology LGBTQ+ Committee blog series. Invited perspective. August 2021.

[**News at the U:**](#) Study finds gene role in immune response of Florida corals to rapidly spreading disease. Co-author on featured publication. July 2021.

Life Her Way Podcast: Women in STEM. Featured interview. April 2021.

University of Miami LGBTQ+ Student Spotlight. Featured interview. October 2020.

Our Changing Ocean: The Chemistry, the Questions, and the Students Answering Them. *In Chemistry.* Featured interview. April 2018.