Airianna McGuire

Hartford, CT • mcguire.399@buckeyemail.osu.edu • (440)-789-7141

EDUCATION

The Ohio State University

B.S Environment and Natural Resources August 2023

Summa Cum Laude with Honors Research Distinction

Honors thesis title: Mitotic Cell Cleavage Time (tau) Across Various Temperatures in Zebrafish (*Danio rerio*)

RESEARCH EXPERIENCE

NSF RaMP Scholar August 2024 to Present

Wegrzyn Lab - Department of Ecology and Evolutionary Biology, University of Connecticut

Independent Projects:

- Two are better than one: The first fully phased diploid genome for Arctic grayling (*Thymallus arcticus*)
    - Assembling a haplotype resolved genome for Arctic Grayling to compare with a sister species (European grayling) and to eventually assemble a pangenome to capture a wide range of genetic variation across populations inhabiting diverse environments and assess adaptive potential.
- Structural variation and assembly artifacts in two *Fagus grandifolia* genomes: investigating candidate genes for beech bark disease resistance
    - Using bioinformatic tools such as OrthoFinder and CAFE5 to conduct a gene family analysis/comparison for two species of beech and other related species.
    - Performing an enrichment analysis using Gene Ontology to determine enrichment of genes in the gene family containing the BBD resistance gene.
- Examining the interaction between American beech trees (*Fagus grandifolia*) and *Litylenchus crenatae* subsp. *Mccannii*
    - Using RNA-Seq to examine the interaction between a keystone forest species and a parasitic nematode that causes Beech Leaf Disease (BLD) to better understand host response and identify genetic resistance.

Cohort Project:

- A pangenome assembly for subspecies of the American mink (*Neogale vison*)
    - Assembling a pangenome to characterize subspecies (*Neogale vison evergladensis* and *Neogale vison vulgivaga)* and to explore population differentiation by identifying genetic variation between populations of these subspecies and the American mink existing reference genome.

Research Technician II September 2023 to July 2024

Park Lab - Department of Molecular Genetics, The Ohio State University

- Determine interactions between Cdc10, Cdc3 and Atg8 in budding yeast
    - Performed Bimolecular fluorescence complementation (BiFC) to determine interactions between Cdc3, Cdc10 and Atg8.
    - Analyzed changes in colocalization of Cdc10 and Cdc3 when they interacted with Atg8 mutations and analyzed changes when these interactions occurred under starvation conditions.
- Analyzed images from microfluidic experiments to determine yeast lifespan, budding frequency, and autophagy.

- Delegated lab tasks to 2-3 undergraduates and managed common lab stocks such as buffers, enzymes, media, and media plates, organize EHS pickups, and sterilize lab materials via autoclaving and baking.

Undergraduate Research Assistant November 2020 to August 2023

Dabrowski Lab – Department of Environment and Natural Resources, The Ohio State University

- Mitotic Cell Cleavage Time (tau) Across Various Temperatures in Zebrafish (*Danio rerio*)
    - Determined tau for the Red and Casper strain of Zebrafish across a wide range of temperatures, elucidated mechanisms for tau determination in a model species to apply to commercially valuable species.
- Percid Polyploidy Induction
    - Assisted with determining tau for Walleye and Saugeye, and performed several trials of polyploidy induction to determine which time and type of physical shock yielded the highest rate of triploidy.
- Maintained experimental fish stocks daily and independently for several species such as Zebrafish, Walleye, Saugeye, Rainbow Trout, Koi hybrids, and Atlantic salmon.
    - Maintained live food cultures such as rotifers and *artemia*.
- Trained 5 undergraduates in lab protocols.
- Managed and organized lab data such as water quality monitoring data, daily temperature logs, and chemical inventory, and prepared this data for IACUC and EHS inspections.

TEACHING EXPERIENCE

ENR 3700 Student Instructional Assistant August 2022 to December 2022

- Graded 60-70 GIS lab assignments per week, provided detailed feedback on each assignment, communicated with the instructor and graduate students frequently, and met tight deadlines.

ENR 2100 Student Instructional Assistant January 2021 to December 2021

- Graded biweekly environmental science posters and related poster assignments, left detailed feedback to help students improve their posters, and assisted students frequently with assignments.

PUBLICATIONS

In preparation:

Airianna McGuire, Mackenzie Miller, and Konrad Dabrowski. Mitotic Cell Cleavage Time (tau) Across Various Temperatures in Zebrafish (*Danio rerio).* 2023.

PRESENTATIONS

Oral presentations

- "Who's That Mink? Investigating the Genome of a State-listed Threatened Subspecies of American Mink (*Neogale vison evergladensis*)." Plant and Animal Genomes Conference, *San Diego, CA*. 2025.

    Authors: Airianna McGuire, Aishatu Affini, Hailey Baranowski, Scott Forbes, Elena Foust, Kristyn Hatley, Ethan Ni, Kyle Paist, Mary Rutter, Robin Smith, Nataly Vargas, Harshita Akella, Kate Castellano, Nicole Pauloski, Teisha King, Elizabeth Jockusch, Jill Wegrzyn, Paul Hapeman

- "Mitotic Cell Cleavage Time (tau) Across Various Temperatures in Zebrafish (*Danio rerio*)." School of Environment and Natural Resources Symposium. *The Ohio State University*. 2023.
  Authors: Airianna McGuire, Mackenzie Miller, Konrad Dabrowski

Poster presentations

- "Two are better than one: The first fully phased diploid genome for Arctic grayling (*Thymallus arcticus).*" Plant and Animal Genomes Conference, *San Diego, CA*. 2025.
  Authors: Airianna McGuire, Brandon Lind, David Baukus, Mark Urban, Nicole Pauloski, Rachel O'Neill, Jill Wegrzyn

- "Mitotic Cell Cleavage Time (tau) Across Various Temperatures in Zebrafish (*Danio rerio).*" Denman Undergraduate Research Forum. *The Ohio State University*. 2023.
  Authors: Airianna McGuire, Mackenzie Miller, Konrad Dabrowski

- "Determination of the Mitotic Interval in Zebrafish Embryos". CFAES Poster Forum. *The Ohio State University.* 2022.
  Authors: Airianna McGuire, Mackenzie Miller, Konrad Dabrowski

FELLOWSHIPS, SCHOLARSHIPS, & AWARDS

NSF – UConn RaMP Research Training Fellowship 2024

- A one year, funded post-baccalaureate training fellowship in genomic novelty that includes conducting independent research, a cohort research project, and development of professional skills

CFAES Distinguished Senior Award 2023

- The most prestigious undergraduate award in CFAES, awarded to 25 seniors.

Undergraduate Research Apprenticeship Program ($5,928) 2022

- Wrote a proposal and budget to obtain summer funding for honors research.

Denman Undergraduate Research Forum Awardee 2023

Undergraduate Honors Fund Scholarship ($2,500) 2022

Long Scholarship ($1,000) 2021

LEADERSHIP & INVOLVEMENT

President 2022 to 2023
Treasurer 2021 to 2022
TerrAqua, The Ohio State University

- Fostered communication with environmental professionals, professors, and staff on behalf of the organization, and represented TerrAqua at the Water Management Association of Ohio's (WMAO) annual meetings.
- Organized and led fish and macroinvertebrate sampling events that over 30 students attended.
- Created presentations, flyers, buttons, and posters for club meetings and events.
- Directed the use of organization funds to fund events such as the CFAES Back to School Bash.

Second Year Transformational Experience Program (STEP)

- Developed a signature project by writing a proposal and creating a budget and received $2,000 to attend the World Aquaculture Society (WAS) conference in San Diego, CA in February of 2022.

SKILLS

Software

- JMP, Microsoft Suite, Google Workspace, NIS Elements, ImageJ, SnapGene, ApE, Inkspace, OpenRefine

Techniques

- Flow cytometry, confocal microscopy, brightfield microscopy, BiFC, DNA gel electrophoresis, library preparation, DNA extractions, plasmid construction, molecular cloning, PCR, Qubit, Nanodrop, fish husbandry, PIT tagging, fin clipping.

Bioinformatics

- Bash, RStudio.