

ACACIA L. ACKLES





SHE/HER | THEY/THEM

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EDUCATION

- Ph.D.:** Dual PhD in Integrative Biology & Ecology, Evolutionary Biology, and Behavior Aug 2018 - Present
Michigan State University, East Lansing, MI
Advisors: Emily Dolson (Computer Science & Engineering) & Elise Zipkin (Integrative Biology)
- Certificate in Teaching College Science and Mathematics** Jan 2019 - Present
Michigan State University, East Lansing, MI
- B.S., with honors:** Dual Degree in Biology & Applied Mathematics Aug 2014 - May 2018
The George Washington University, Washington, DC
Thesis: An Exploration of the Morphospace Occupation of Cypriniform Pharyngeal Jaws





PUBLICATIONS KEY

-  Conference Proceedings
-  Journal Article
-  Co-First Authors
-  Undergraduate Mentee




IN PREP

-  **Ackles, Acacia L.**, Austin Ferguson, and Charles Ofria. A rank-based model of genome connectivity. *In prep*, anticipated submission November 2021.
-  **Ackles, Acacia L.** and Emily Dolson. D3 in 3D: Using VR to explore evolutionary trajectories across 3D fitness landscapes. *In prep*, anticipated submission to 2022 Genetic and Evolutionary Computation Conference (GECCO'22), March 2022.

PEER-REVIEWED PUBLICATIONS

-  Cohen, Karly, **Acacia L. Ackles**, and L. Patricia Hernandez. The role of heterotopy and heterochrony during morphological diversification of otocephalan epibranchial organs. *In review*, Evolution and Development.
-  Albani, Sarah , **Acacia L. Ackles**, Charles Ofria, and Clifford Bohm. The comparative hybrid approach to investigate cognition across substrates. *ALIFE 2021: The 2021 Conference on Artificial Life*.
-  Bohm, Clifford, **Acacia L. Ackles**, Charles Ofria, & Arend Hintze (2019). On Sexual Selection in the Presence of Multiple Costly Displays. *ALIFE 2019: The 2019 Conference on Artificial Life*, 32: 247-254

PEER-REVIEWED EXTENDED ABSTRACTS (≈ 2 PAGES)

- Ackles, Acacia L.** , Austin Ferguson , Connor Grady , and Charles Ofria. Rank Epistasis: A new metric for analyzing epistatic interactions in the absence of quantifiable fitness interactions. Oral Presentation at the 2020 Conference on Artificial Life, July 13-18, Virtual.
- Ackles, Acacia L.**, Clifford Bohm, Vincent Ragusa, & Arend Hintze (2019). The Cascade Effect: Mutation fixation rates over evolutionary time. Poster at the 2019 Conference on Artificial Life, July 29-August 2, Newcastle, UK

PRESENTATIONS

To avoid multiple duplicate entries, presentations listed here are only those which do not have an associated conference proceeding. First author is presenting author.

Ackles, Acacia L. and Emily Dolson. New dimensions in data visualization: Viewing fitness landscapes in virtual reality. Oral Presentation at Society for Integrative and Comparative Biology Annual Meeting 2022, January 3-7, Phoenix, AZ. Submitted.

Rohan, Lanea 🎓🌟 and Killebrew Bruehl, Aria 🎓🌟, **Acacia L. Ackles**, and Austin Ferguson. Planning for the future of MABE2: A summer of documentation and testing. Oral Presentation at BEACON Congress 2021, August 18-20, Virtual.

Albani, Sarah 🎓, **Acacia L. Ackles**, and Charles Ofria. Associative learning across computational substrates. Oral Presentation at BEACON Congress 2020, August 12-14, Virtual.

Cohen, Karly E., **Acacia L. Ackles**, & L. Patricia Hernandez (2019). Origin, heterochrony, and diversification of otocephalan epibranchial organs. Poster at Society for Integrative and Comparative Biology Annual Meeting 2018, January 3-7, Tampa, FL.

Ackles, Acacia, Joshua D. Storch, & L. Patricia Hernandez (2018). An exploration of the morphospace occupation of cypriniform pharyngeal jaws. Oral Presentation at Society for Integrative and Comparative Biology Annual Meeting 2018, January 3-7, San Francisco, CA.

Ackles, Acacia & L. Patricia Hernandez (2017). Hypertrophy of the cypriniform pharyngeal jaw: Growth patterns of branchial arches within cypriniforms and their relatives. Poster at Society for Integrative and Comparative Biology Annual Meeting 2017, January 4-8, New Orleans, LA.

TEACHING

Guest Instructor: *Discrete Structures in Computer Science (MSU)* Su 2021

Guest instructor for one unit of Discrete Structures in Computer Science, a theoretical course designed to teach students the basics of discrete mathematics including proof techniques, sets, functions, counting, and grammars. Taught Unit 2: Introduction to Proofs, Sets, and Functions, consisting of four two-hour lectures including practice problems and feedback. Wrote and evaluated exams for the unit.

Instructor: *International Summer School (Kempten University of Applied Sciences)* Su 2019

Designed and taught eight modules on basics of the R language, including variables, data structures, object-oriented programming, and basic statistics in R at the Kempten University of Applied Sciences International Summer School. The two-week course was attended by 14 students from 8 countries.

Graduate Teaching Assistant: *Human Biology Capstone (MSU)* Fa 2019, Sp 2020

Facilitated discussion and gave extensive feedback on writing assignments for 50 students each semester in their senior capstone course. Writing topics for students included academic book reviews and mock grant proposals. Assisted in lesson design including suggestions for assigned readings and supplementary work.

TEACHING DEVELOPMENT

College Online Learning Academy – Fellows Program Su 2021

Fellowship and learning community for those interested in enhancing their skills in online/digital teaching. Attended workshops on the effective use of technology in the classroom, using multiple learning modalities, and developing a digital presence. Completed a project designing an online module for a potential future course (Discrete Structures in Computer Science), including lectures and syllabus design.

Teaching College Science – Coursework Sp 2019

Course offered at the graduate level covering the cognitive science of teaching and backwards lesson design. Covered topics such as developing and implementing learning objectives, formative vs. summative assessment, and techniques for student evaluation. Final course project was co-developing a sample lecture and syllabus for a course (Introductory Physics) applying the course concepts.

Pedagogy for Learning Assistants – Course Co-Developer Fa 2017, Sp 2018

Assisted lead instructor Dr. Tiffany-Rose Sikorski in developing course structure and final project design for class

to train all undergraduate learning assistants in STEM at GWU. Course covered active learning techniques, using engaging questioning strategies, focusing on student interaction, and equity in active learning.

GWU Teaching Days — Co-Organizer

2017

Title: *How to Improve In-class Activities with Undergraduate Learning Assistants*

Workshop presenting the results of the undergraduate Learning Assistant program and how faculty could get involved. Co-organizer and I were the only undergraduate presenters at this faculty-centered workshop.

MENTORSHIP

WAVES (Workshop for Avida-ED Software Development)

2020, 2021

Mentor for WAVES, a ten-week summer paid internship to develop educational tools and software. 2020: Provided one-on-one mentorship for undergraduate student Maria Berry on a pedagogical case study surrounding participant experiences with stress and societal turmoil during a virtual internship project. 2021: Provided co-mentorship with fellow graduate student Austin Ferguson of two undergraduate students, Lanea Rohan and Aria Bruehl, to create a new testing and documentation framework for in-development computational software.

BEACON Luminaries

2020

Mentor for BEACON Luminaries, a program which pays undergraduate students at the BEACON Center to conduct independent research. Provided one-on-one mentorship to undergraduate student Sarah Albani on a project relating to evolution of associative learning. Sarah was first and presenting author on a presentation at BEACON Congress, the annual conference on work completed at BEACON, and is first author on a full publication published in the 2021 Artificial Life conference proceedings.

WORKSHOPS

LocI of Control: Concepts of Genetic Complexity as a Means of Societal Oppression

2021

Led and organized sandbox session at the 2021 BEACON Congress on the history of eugenics and race science in genetics and genetic complexity research. Gave a presentation on the history of the field and moderated a group discussion on the topic. Led next steps for a collaborative project on highlighting contemporary scientists doing genetics research from an anti-oppressive lens.

SciWri: A Science Writing Workshop

2020

Led and organized an interactive science writing workshop at the 2020 BEACON Congress. Participants examined their own writing through the lens of "The Science of Scientific Writing" (Gopen & Swan, 1990) and worked together to apply the given writing techniques through editing and revision. Participants of all career stages (undergraduate, graduate, post-doc, and faculty) were in attendance.

ALIFE 2020: Emerging Researchers in Artificial Life

2020

Along with Alexander Lalejini, Austin Ferguson, and Daniel Junghans. Moderated and organized ALIFE 2020 workshop for Emerging Researchers in Artificial Life (ERA), the student and postdoc group for the International Society for Artificial Life. Workshop included lightning talks, roundtable discussion of equity issues in Artificial Life, and socializing.

SERVICE & OUTREACH

International Society for Artificial Life — Board Member

2021-2024

Elected member to the International Society of Artificial Life Board of Directors. The board shapes policies for ISAL, an international, professional society dedicated to promoting scientific research and education relating to artificial life.

International Society for Artificial Life — DEI Committee Vice Chair

2020-2022

Elected Vice-Chair of the inaugural Diversity, Equity, and Inclusion committee for the International Society for Artificial Life. Part of a team working on programming for building a more inclusive and anti-oppressive conference and society environment.

MSU Presidential Postdoctoral Fellowship in EEB — Search Committee

2020-2021

Graduate representative for the first search for the MSU Presidential Postdoctoral Fellowship in Ecology, Evolution, and Behavior. Reviewed applicants to select three recipients of a two-year, \$60,000/year postdoctoral fellowship.

Advocated for the possibility for fellowship funding to be used to offset relocation and moving costs, a change which was implemented that year and in future annual searches.

College of Natural Science — Graduate Leadership Fellow 2020-2021

One of two Graduate Leadership Fellows for the College of Natural Science at Michigan State University. Attended meetings with administration to give graduate input. Completed yearlong project focused on improving the experience of graduate students in the university. My focus was on making graduate admissions more equitable and accessible.

EEB Graduate Group — Symposium Co-Chair 2020-2021

Symposium co-chair for the Ecology, Evolutionary Biology, and Behavior Graduate Group (EGG). Along with co-organizer, recruited and organized EEB members to present their recent research in a virtual conference format.

Emerging Researchers in Artificial Life — General Chair 2019-2020

General chair for the International Society for Artificial Life student and postdocs group. Coordinated activities for the student group and facilitated student group work.

LGBTQ+ Inclusivity in ALife — Breakout Discussion Group Leader 2019

Proposed and moderated a breakout session at the 2019 Conference on Artificial Life regarding inclusivity of LGBTQ+ individuals in the field. Topics included visibility in science, how to build community amongst queer artificial life researchers, and how to make future conferences more inclusive and accessible.

EEBB Graduate Group — Social Media Manager 2019-2020

Social media manager for Ecology, Evolutionary Biology, and Behavior Graduate Group (EGG). Maintained twitter & web presence.

Graduate Employees Union — Vice President of Organizing and Outreach 2019-2020

Executive Board member for the Graduate Employees Union at Michigan State University representing over 1,200 graduate teaching assistants. Engaged in anti-oppression work to challenge institutions of white supremacy within both the university and the union.

Graduate Employees Union — Pedagogy Committee 2018-2019

Active member of the Pedagogy Committee for the Graduate Employee Union at Michigan State University. Lead negotiations to introduce a lab safety clause into the graduate employee contract.