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BLAIR T. BLAKENEY

Education

The University of North Carolina at Chapel Hill May 2024
B.S. Biology, Minors in Data Science and Environmental Science and Studies

- Graduated with Highest Honors
- GPA: 4.0

Honors and Awards

- Dean's List, 4 semesters, Fall 2021-Spring 2023
- Phi Beta Kappa Society, Fall 2022-Present
- Summer Undergraduate Research Fellowship, May 2023
    - Awarded by the University of North Carolina at Chapel Hill Office of Undergraduate Research as part of a competitive University-wide application process to support 180+ hours of research over the summer
- Travel Award, June 2023
    - Awarded by the University of North Carolina at Chapel Hill Office of Undergraduate Research to support travel to the Evolution Conference in Albuquerque, New Mexico
- Coker Award, April 2024
    - Awarded by the University of North Carolina at Chapel Hill to a senior biology major for excellence in research in organismal biology and ecology

Research Interests

Evolutionary Biology • Computational Biology • Evolutionary Genetics • Recombination • Evolution of Sex • Gene Regulatory Networks

Relevant Coursework

Ecology & Evolution • Evolutionary Mechanisms • Molecular Biology & Genetics • Evolutionary Genetics • Mathematics of Evolutionary Processes • Behavioral Ecology • Introduction to Programming • Data Structures & Analysis • Foundations of Statistics & Data Science • Statistics for Environmental Scientists

Summary of Research Skills

Proficiency in Python, R, & Linux • Grant Writing • Oral Presentations • Research Methodology & Experimental Design • Development of Computational Algorithms • Data Management & Organization • Data Analysis & Visualization

Research Experience

Burch Lab, Department of Biology June 2022-Present
The University of North Carolina at Chapel Hill
Principal Investigator: Dr. Christina Burch, Professor & Associate Chair of UNC Department of Biology
Research Technician (June 2024-Present)
Project synopsis: We studied independently evolved lineages of the bacteriophage T7, analyzing accumulated genetic changes over time with the aim of creating hybrids between lineages and identifying genetic incompatibilities in the progeny.

- Analyzed Oxford Nanopore sequence data for bacteriophage T7, enhancing the sequence analysis pipeline's efficiency
- Characterized SNPs and deletions in independent lineages of T7, highlighting convergent and divergent evolution
- Performed statistical analysis to track the frequency of SNPs and deletions over time in evolution experiments
- Collaborated in a team, maintaining a code repository on GitHub and regularly presenting progress to the group

Undergraduate Research Assistant (June 2022-May 2024)
Project synopsis: We investigated how different mechanisms of uniparental reproduction influence the ability to colonize new environments in order to better understand evolutionary transitions from biparental to uniparental reproduction.

- Programmed in Python to simulate the evolution of uniparental reproduction using a gene regulatory network model
- Managed evolution experiment data via Linux on a high-throughput computing cluster
- Compiled and visualized results using R, presenting figures to lab members and incorporating feedback
- Evaluated relevant literature and designed experiments in collaboration with graduate students and principal investigator
- Engaged in complex discussions of theory and code debugging within a group, driving project advancement

Research Presentations

- Blair Blakeney*, Adriana Coke-Schlachter, Christina Burch. *The road less traveled: modeling transitions from biparental to uniparental reproduction.* Evolution Conference. Albuquerque, New Mexico. June 22, 2023. [Poster Session]
- Blair Blakeney*, Adriana Coke-Schlachter, Christina Burch. *Modeling transitions from biparental to uniparental reproduction in tardigrades.* BIOL 395 Research Poster Symposium. Chapel Hill, North Carolina. November 14, 2023. [Poster Session]
- Blair Blakeney. *Investigating transitions from biparental to uniparental reproduction during colonization.* John K. Koeppe Biology Undergraduate Honors Research Symposium. Chapel Hill, North Carolina. March 25, 2024. [Talk]
- Blair Blakeney*, Adriana Coke-Schlachter, Christina Burch. *Modeling transitions from biparental to uniparental reproduction in tardigrades.* Celebration of Undergraduate Research. Chapel Hill, North Carolina. April 29, 2024. [Poster Session]

Research Projects

- Blair Blakeney. *Investigating the evolutionary consequences of different reproductive modes.* Research paper completed for BIOL 395: Undergraduate Research in Biology. April 28, 2023.
- Blair Blakeney. *Investigating transitions from biparental to uniparental reproduction during colonization*. Manuscript completed for a senior honors thesis. March 22, 2024.

Tutoring and Student Engagement

BIOL 101: Principles of Biology, Department of Biology August 2021-May 2022
The University of North Carolina at Chapel Hill
Supplemental Instructor

- Answered student questions during 300+ person lectures twice a week
- Led office hours for ~15 students per week, providing content review and assistance to students seeking additional support
- Designed and distributed practice problems that extended student understanding beyond lectures
- Worked with a team of ~8 supplemental instructors to facilitate 4 exam review sessions per semester, contributing to content creation and gaining insights from peer-led instructional approaches
- Advised students on improving learning techniques, drawing on knowledge from a UNC course entitled "The Science of Learning"

Leadership and Community Involvement

The Chapel Hill Alt. Protein Project May 2022-May 2024
The University of North Carolina at Chapel Hill
Director of Course Development (May 2022-May 2024)

- Enriched content and led planning for UNC's first student-developed cellular agriculture course over two semesters
- Built relationships with 10+ guest speakers from innovative startups and academic research institutions
- Assembled comprehensive learning materials for course modules centered around alternative protein
- Delegated responsibilities and fostered collaboration among ~6 committee members involved in course development

Course Development Committee Member (February 2022-May 2022)

- Generated a database identifying 20+ courses suitable for the integration of alternative protein content
- Engaged with UNC professors to incorporate alternative protein content into relevant courses
- Coordinated and executed events aimed at educating the UNC community about alternative protein

UNC ScienceDays January 2022-May 2022
The University of North Carolina at Chapel Hill
Lesson Planning Committee Member

- Collaborated with a team of 7 to create engaging lesson plans for elementary and middle school students
- Adapted lesson plans based on constructive feedback from a testing committee
- Promoted inclusivity by highlighting profiles of underrepresented minorities in STEM within lesson plans