

## EDUCATION

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**PhD Student, Ecology, University of North Carolina at Chapel Hill** Fall 2021 – Present

- National Science Foundation Graduate Research Fellow (NSF GRFP)
- Advised by Dr. Karl Castillo

**BA, Biology and Studio Art, Carleton College** Fall 2016 - Spring 2020

- Awarded Distinction in Biology Major
- Thesis: Branching Corals are Disproportionately Susceptible to Ocean Acidification Based on Diffusive Boundary Layer Variation (Advisor: Dr. Michael Nishizaki, *Awarded Distinction for Senior Thesis*)

## RESEARCH EXPERIENCE

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**Coral Microbial Ecophysiology PhD Student** 2021 - Present

*Advised by Dr. Karl Castillo, University of North Carolina at Chapel Hill, NC*

- Examine the effects of extreme vs favorable environments on algal symbiont and microbial community dynamics and acclimatization capacity utilizing a reciprocal transplant experiment, physiological analyses, and sequencing (Collaboration with Dr. Verena Schoepf of the University of Amsterdam)

**Research Associate** Summer 2020 – Summer 2021

*Advised by Dr. Ryan Baugh, Duke University, Durham, NC*

- Determined *C. elegans* physiological, genetic, and epigenetic adaptation to variable environmental conditions including nutrient availability
- Generated new *C. elegans* strains using CRISPR and determined the effects of mutations on nuclear localization of insulin signaling products using microscopy
- Mentored and trained undergraduate and graduate students
- Maintained and prepared lab reagents, media, and stocks

**Ecophysiology Lab Assistant** Winter 2019 – Spring 2020

*Advised by Dr. Michael Nishizaki, Carleton College, Northfield, MN*

- Evaluated heat shock and byssal thread protein expression and recovery in mussels (*M. edulis*) with qPCR
- Examined the effects of fluctuating temperature on mussel respiration rates with aquatic flow chambers and NeoFox probes and software

**Ecomechanics Lab & Field Assistant** Summer 2019

*Advised by Dr. Michael Nishizaki, Friday Harbor Labs, Friday Harbor, WA*

- Measured the effects of temperature and flow interactions on mussel (*M. trossulus*) respiration and feeding rates and analyzed data using R (R Studio)
- Conducted tidepool surveys to determine effects of biodiversity and other physical and chemical factors on mussel livelihood
- Used eddy correlation to measure oxygen flux over mussel beds

**Agroecosystem Lab Assistant** Fall 2018

*Advised by Dr. Carol Adair and Lindsay Barbieri, University of Vermont, Burlington, VT*

- Examined microbial nitrogen respiration and natural gas fluctuations in agricultural soils
- Constructed warming chambers to measure effects of increasing temperature on microbial communities
- Deployed frost tubes to measure effects of freeze-thaw cycles on microbial respiration

**Pacific Coral Reef Intern** Summer 2016

*Advised by Dr. Andrew Sim, Seattle Aquarium, Seattle, WA*

- Fed and maintained environments of Pacific Coral Reef fish, sharks, invertebrates, and corals
- Monitored coral growth and supported Coral Growth Lab by recording water quality measurements including pH, temperature, salinity, and oxygen levels

**Trophic Interactions Lab Assistant** Fall 2015 – Winter 2016

*Advised by Dr. Troy Buckley, National Oceanic and Atmospheric Administration, Seattle, WA*

- Examined feeding habits and preferences of Alaskan Pollock by identifying and counting the diversity of zooplankton in their diet using microscopy
- Input and analyzed data in the greater NOAA database using Excel

## SKILLS

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**Computer:** Fiji (Image J), Matlab, R, RStudio

**Lab:** Bacterial isolation and culturing, Biodiversity Surveys, *C. elegans* Maintenance, CRISPR, DNA Extraction and Purification, Field Sampling (soil, water, organisms), Gel Electrophoresis, Marine Animal Maintenance, Microinjections, Microscopy, NeoFox oxygen probe, PAM Fluorometry, PCR, qPCR, UV-vis Spectrophotometry

**Languages:** Spanish (intermediate speaking and writing)

**Diving Certifications:** PADI Open Water Diver (2021), DAN Emergency Oxygen, First AID, and CPR Provider (2022), AAUS Scientific Diver (2022)

## GRANTS & AWARDS

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| Phycological Society of America Grant in Aid of Research (\$1,960)                              | 2023         |
| Women Divers Hall of Fame Graduate Scholarship in Marine Conservation (\$2,000)                 | 2023         |
| Society for Integrative and Comparative Biology Grant in Aid of Research (\$1000)               | 2023         |
| National Science Foundation Graduate Research Fellowship Program (\$108,000 over 3 years)       | 2022-Present |
| Leonard Goodman Environmental Research Fund (\$750)   | 2022         |
| Kapp Leadership Fund (\$1,550)  | 2022         |
| Graduate and Professional Student Government Travel Award, University of North Carolina (\$600) | 2022         |
| Jean Schmidt Prize, Carleton College (\$1,000)  | 2020         |
| Distinction in Biology Major and in Senior Biology Thesis, Carleton College (Awards)            | 2020         |
| Towsley Endowment Undergraduate Research Funding, Carleton College (Summer REU stipend)         | 2019         |
| Jepson Award for Artistic Excellence, Carleton College (\$1,500)                                | 2019         |
| Hyslop Warnholtz Grant, Carleton College (\$800)  | 2019         |
| American Association of University Women Science Scholar, (Award)                               | 2016         |

## PUBLICATIONS ORCID ID: 0000-0003-4859-0567

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4. **Powell ME**, & McCoy SJ. (2023). Divide and Conquer: Temporal and Spatial Resource Partitioning Structures Benthic Cyanobacterial Mats. *Journal of Phycology*. *In review*
3. Bove CB, Castillo KD, Hughes AM, **Powell ME**, Ries JB, Davies SW. Gene expression plasticity facilitates acclimatization of a long-lived Caribbean coral across divergent reef environments. *Scientific reports*. *In review*.
2. Chen, J., Tang, LY., **Powell, ME.**, Jordan, JM., & Baugh, LR. (2022). Genetic analysis of daf-18/PTEN missense mutants for starvation resistance and developmental regulation during *Caenorhabditis elegans* L1 arrest. *G3 Genes|Genomes|Genetics*, 12(6), jkac092. <https://doi.org/10.1093/g3journal/jkac092>
1. Webster, AK., Chitrakar, R., **Powell, ME.**, Chen, J., Fisher, K., Tanny, R., Stevens, L., Evans, K., Antoshechkin, I., Andersen, EC., & Baugh, LR. (2021). Natural variation in the irdl gene family affects insulin/IGF signaling and starvation resistance (p. 2021.06.07.447366). <https://doi.org/10.1101/2021.06.07.447366>

## CONFERENCES & POSTERS

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**Powell M.**, Solomon S., Schoepf V., Castillo K.D. 2023. "Understanding the Role of the Coral Microbiome in Marginal Environments." *Society for Integrative and Comparative Biology Conference*, Austin TX

- Best Student Poster Competition Finalist

**Powell M.**, Solomon S., Lippens C., Dulskiy A., Schoepf V., Castillo K.D. 2022. "Understanding the Role of the Microbiome in Coral Resilience Across Strong Environmental Gradients." *International Coral Reef Symposium*, Bremen Germany & Virtual (Presented Virtually)

**Powell M.**, Whitis A., Nishizaki M.T. 2020. "The Effects of Flow and Temperature on Mussel Respiration and Feeding." *Scholars at the Capitol Conference*, St Paul MN

**Powell M.**, Whitis A., Nishizaki M.T. 2019. "The Effects of Flow and Temperature on Mussel Respiration and Feeding." *Carleton College Research Symposium*, Northfield, MN

**Powell M.**, Osha M., Nishizaki M.T. 2019. "Tissue Specific Heating Leads to Differential Gene Expression in Marine Mussels." 2019 *Carleton College Research Symposium*, Northfield, MN

## MENTORSHIP

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**Research Technicians Trained:** Emma Johnson (*University of North Carolina*, '23, 2022-2023), Seth Taylor (*Duke University*, 2021)

**Undergraduate Students Mentored:** Jamie Long (*University of North Carolina*, '25, 2023-Present), Max Buglisi (*University of North Carolina*, '24, 2022-Present), Emma Johnson (*University of North Carolina*, '23, 2022-2023, Honors thesis: Microbiome and Symbiodiniaceae community dynamics in *O. arbuscula*, a model for understanding coral symbiosis under DOC enrichment), Meg McCartney (*University of North Carolina*, '23, Summer Undergraduate Research Fellowship, 2022-2023, Noelle Keister (*University of North Carolina*, '24, 2022), Rebecca Liu (*Duke University*, '24, 2020-2021), Gabby Morales (*Duke University*, '22, 2020-2021)

**High School Students Mentored:** Tatum Cubrilovic (*East Chapel Hill High School* '23, 2023), Aaliyah Lewinson (*Graham High School*, '22, UNC WinSPIRE program, 2022)

## TEACHING EXPERIENCE

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**ENEC 203: Environmental Problem Solving Teaching Assistant** Spring 2022

*University of North Carolina, Chapel Hill, NC*

- Instructed undergraduate environmental science students in weekly group and individual tutoring sessions
- Gave three guest lectures incorporating my research into class content
- Created and graded weekly homework and two exams

**ENEC 202: Environmental Science Lab Teaching Assistant** Fall 2021

*University of North Carolina, Chapel Hill, NC*

- Independently taught two lab sections of 25 students each
- Created and graded quizzes, and worksheets to distribute each week, graded exams

**BIOL 126: Energy Flow in Biological Systems and Lab Teaching Assistant** Spring 2020

*Carleton College, Northfield, MN*

- Instructed undergraduate biology students in group and individual tutoring sessions
- Created worksheets, quizzes, and class material to distribute
- Answered questions and facilitated in-class learning

## OUTREACH

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**E3P Diversity, Equity, and Inclusion Committee – Graduate Student Representative** 2023-Present

*University of North Carolina at Chapel Hill, Chapel Hill, NC*

- Organized and facilitated town halls to assess DEI in the department
- Coordinating the first E3P graduate student recruitment weekend

**STEM Pride of the Triangle – Secretary & Board Member** 2022-Present

*University of North Carolina at Chapel Hill, Chapel Hill, NC*

- Help coordinate a Queer Prospective Seminar Series
- Facilitate peer small groups to discuss issues around being LGBTQ+ in STEM
- Organize meetings and maintain all materials
- Send out announcements and information to all members

**Climate Crisis Committee – Leader (2023-Present), Member (2022)** 2022-Present

*University of North Carolina at Chapel Hill, Chapel Hill, NC*

- Complete many small sustainability focused projects on campus (e.g., sourced funding to install new bike racks on campus, working to transition libraries and labs to automatic lighting systems)
- Organize a yearly Energy Transition Town Hall to discuss the UNC energy transition with stakeholders
- Organize a yearly Climate Action Day on campus, bringing together UNC and community organizations to share their work on sustainability

**Scientists in the Classroom** 2021-Present

*Frank Porter Graham Bilingüe Elementary & Smith Middle School, Chapel Hill, NC*

- Created and implemented a lesson plan on organismal adaptation in coral reef ecosystems for 4<sup>th</sup> grade and middle school classrooms (100 students)
- Incorporated NC education standards and bilingual (Spanish-English) interactive activities

**Scientific Research & Education Network (SciREN) Triangle Outreach Events** 2022

*North Carolina Museum of Natural Sciences, Raleigh, NC*

- Engaged and networked with local educators to bring hands on science into their classrooms
- Created interactive lesson plans on symbiosis for middle schoolers (resources available on personal website) according to NC education standards

**WinSPIRE Research Mentor**

Summer 2022

*University of North Carolina, Chapel Hill, NC*

- Mentored a female-identifying high school student on a month-long research project studying coral calcification and symbiotic state, culminating in a poster presentation
- Focused on demystifying research and academia, and connecting my student with future opportunities

**Volunteer, Leadership Member, & Camp Counselor**

Summer 2015 – Summer 2016

*Seattle Aquarium, Seattle, WA*

- Educated visitors about sea life by giving public talks and engaging in one-on-one conversations on ocean conservation and climate change
- Worked as a camp counselor for 30 elementary students, teaching them about marine ecosystems

**MEMBERSHIPS**

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| American Academy of Underwater Sciences        | 2022 - Present |
| International Coral Reef Society               | 2022 - Present |
| Phycological Society of America                | 2022 - Present |
| Society of Integrative and Comparative Biology | 2022 - Present |

**TRAININGS & WORKSHOPS**

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**Implicit Bias Training, Bystander Training, and Code of Conduct Training, ADVANCEGeo** 2022

*University of North Carolina, Chapel Hill, NC*