Maxfield A. Palmer

Curriculum Vitae

(541)-817-5089
max.palmer54@gmail.com
LinkedIn

Summary

NSF Science & Technology Center for Chemical Currencies of a Microbial Planet (C-CoMP) Bridge-to-PhD Fellow in the Lamont-Doherty Earth Observatory (LDEO) Dyhrman Microbial Oceanography Group. B.S. Biology Degree from the University of North Carolina at Chapel Hill along with a minor in marine science. Background in biology, biogeochemistry, bioinformatics, environmental science, and marine science.

Education

University of North Carolina at Chapel Hill | Chapel Hill, NC | **Bachelor of Science in Biology, Minor in Marine Science |**
GPA 3.189 **|** Graduation Date: May 14, 2023
Academic Honors:
Dean's List: Spring 2022, Fall 2022, Spring 2023

Current Research Positions

C-CoMP Bridge-to-PhD Fellow | Lamont-Doherty Earth Observatory Dyhrman Microbial Oceanography Group | Palisades, NY | September 2023 - Present

- Conducts research related to microbial interspecific competition, community change, exometabolites, and bioinformatics.
- Attends weekly research meetings for topics related to bacterial carbon use efficiency, curated undergraduate research experiences (CUREs), phytoplankton exometabolites, and more.
- Works alongside a cohort of other Bridge-to-PhD fellows in professional development and on interdisciplinary research projects.

Previous Research Experience

Laboratory Research Technician | UNC-CH Institute of Marine Sciences Hall Aquatic Ecology and Biogeochemistry Lab| Morehead City, NC | May 2022 – August 2022 & May 2023 – August 2023

- Conducted field work, which includes water sampling, and making water quality measurements using a multi-parameter data sonde as well as processed samples through varying methods for multiple research projects within the lab.
- Operated and maintained laboratory equipment which included, but was not limited to, spectrophotometer, filtering systems, and field work vessels.

Undergraduate Researcher | UNC-CH Institute of Marine Sciences Hall Aquatic Ecology and Biogeochemistry Lab | Chapel Hill, NC | January 2023 – May 2023

- Analyzed nutrient composition data as well as HPLC pigment data to determine whether different phytoplankton taxa were limited by varying treatments during a bioassay conducted in the summer of 2022 in Albemarle Sound.
- Attended weekly meetings with Dr. Nathan Hall to present research updates.
- Presented findings at 2023 Undergraduate Research Symposium and summarized results in final paper for course credit.

Laboratory Research Assistant | UNC-CH Marchetti Phytoplankton Ecology Lab | Chapel Hill, NC | January 2022 – May 2023

- Assisted in research concerning *Chaetoceros decipiens* diatoms and limiting nutrients in simulated upwelling experiments.
- Created and maintained phytoplankton cultures as well as vitamin stocks and trace metal solutions.
- Operated and maintained laboratory equipment which includes, but is not limited to, fluorometers, microscopes, and trace metal cleaning tools.

Laboratory Research Assistant | UNC-CH Burmeister Neurobiology Lab | Chapel Hill, NC **|**
Sept 2020 - December 2021

- Assisted the Burmeister Neurobiology Laboratory in conducting research regarding spatial cognition in *Engystomops pustulosus* (Tungara) and *Dendrobates auratus* (Poison Dart) frogs. This position also included *Drosophila spp.* (fruit fly) culturing.

Academic Appointments

Office of Undergraduate Research Ambassador | UNC-CH | May 2022 – May 2023

- Served as a mentor to new undergraduates in their pursuit of conducting research and promoting a culture of research on UNC-CH's campus.
- Held weekly office hours during the semester as well as participating in committee meetings and events.
- Provided students with advice on how to get involved in research and other skills such as how to communicate with professors, how to balance research and a busy school schedule, etc.

Skills

Laboratory: Autoclave use, Centrifugation, Titration, Trace Metal Cleaning (TMC), Nucleic Acid Extraction, Microscopy, Turner and FIRe Fluorometry, Multi-parameter Sonde, Particulate Carbon Filtration, Sterilization Methods, Algal Culture, Spectrophotometry, Pipetting/Micro Pipetting, Nanodrop Analysis, Aquil Preparation, Cell Counting, Taxonomic Identification

Computer: Geographic Information Systems (QGIS), R, Python, Matlab, Vernier Graphical Analysis, Vernier Spectral Analysis, HTML, CSS

Field Skills: Field Sample Collection, Weather Station Assembly, Nutrient Collection, Truck Driving with Trailer, CTD Sampling, Mobile Acetylene Reduction

Current and Previous Research Projects

- Evaluating metabolite uptake and growth by Bermuda Atlantic Time-series Study (BATS) station microbial communities through the use of analytical tools including benzyl chloride derivatization and 16s genomic sequencing. | **NSF-Science and Technology Center for Chemical Currencies of a Microbial Planet / Lamont Doherty Earth Observatory Dyhrman Microbial Oceanography Group** | 2024 - Present
- Modeling metabolite secretion of metabolites from a *Thalassiosira pseudonana* (CCMP1335) genome model using flux balance analysis modeling. | **NSF-Science and Technology Center for Chemical Currencies of a Microbial Planet / Lamont Doherty Earth Observatory Dyhrman Microbial Oceanography Group** | 2023 – Present
- Transcriptomic and proteomic approaches to evaluating phosphate limitation of a novel *Chaetoceros* species (P8E6) from the Sargasso Sea. | **NSF-Science and Technology Center for Chemical Currencies of a Microbial Planet / Lamont Doherty Earth Observatory Dyhrman Microbial Oceanography Group** | 2023 - Present
- Determining competitive dominance between *Chaetoceros spp.* (P8E6) and *Thalassiosira pseudonana* (CCMP1335) in low phosphate environments. | **NSF-Science and Technology Center for Chemical Currencies of a Microbial Planet / Lamont Doherty Earth Observatory Dyhrman Microbial Oceanography Group** | 2023 - Present
- Assisted with the deployment and monitoring of multiparameter sondes in Lake Mattamuskeet, NC to monitor water clarity, temperature, nutrients, and other parameters for determination of water quality. | **UNC-CH Institute of Marine Sciences Hall Aquatic Ecology and Biogeochemistry Lab** | 2023
- Evaluation of community composition and treatment statistical analysis of bioassay data collected from the Albemarle Sound and its Estuaries to determine limiting nutrients for growth. **UNC-CH Institute of Marine Sciences Hall Aquatic Ecology and Biogeochemistry Lab** | 2023
- Assisted in research investigating the effects of iron limitation with respect to silica starvation in *Chaetoceros decipiens* diatoms gathered from the California current system. | **UNC-CH Department of Earth, Marine and Environmental Sciences Marchetti Phytoplankton Ecology Lab|** 2022-2023
- Evaluation of temporary shellfish harvest closures in NC harvesting zones to determine closure rate trends over the past decade. GIS software and proclamations from the NC Department of Marine Fisheries are utilized to create maps to determine subareas within previously defined zones. | **UNC-CH Institute of Marine Sciences Hall Aquatic Ecology and Biogeochemistry Lab** | 2022
- Evaluating water clarity metrics for protection of submerged aquatic vegetation in the Albemarle-Pamlico Sound Estuarine system. Water samples are collected and then measured for suspended particles to determine water clarity. | **UNC-CH Institute of Marine Sciences Hall Aquatic Ecology and Biogeochemistry Lab** | 2022
- Flow regulation to prevent harmful cyanobacteria blooms on the Cape Fear River, NC. Routine water sampling along with monitoring the temperature of stratified layers of the river help predict and prevent harmful cyanobacteria blooms. | **UNC-CH Institute of Marine Sciences Hall Aquatic Ecology and Biogeochemistry Lab** | 2022
- Determination of nutrient controls on phytoplankton production and harmful algal blooms in Albemarle Sound. Routine monitoring/sampling was conducted of the sound to measure nutrients using filtration, spectrophotometry, gas chromatography, and more. | **UNC-CH Institute of Marine Sciences Hall Aquatic Ecology and Biogeochemistry Lab** | 2022

- Investigation into the effects of raphidophytes, a potentially harmful flagellate, on the production and development of oyster larvae in the New River Estuary. In vitro experiments were conducted using varying concentrations of raphidophytes, with *Isochrysis galbana* being utilized as a control, to determine the effects of raphidophyte presence on larval production/development. | **UNC-CH Institute of Marine Sciences Hall Aquatic Ecology and Biogeochemistry Lab** | 2022
- Investigated the effects on thermal and hypoxic stress of Bodega Bay (38.3332° N, 123.0481° W) *T. californicus* copepods exposed to chitin-synthase inhibitor and pesticide, Dimilin. Groups of adult male copepods and nauplii were isolated and tested for stress with increasing chemical concentration exposure to simulate runoff of the pesticide from surrounding fisheries that utilize the chemical. | **UNC-CH Department of Biology** | 2022
- Assisted in research investigating the spatial awareness of *Engystomops pustulosus* (Tungara) and *Dendrobates auratus* (Poison Dart) frogs by conducting geometry mazes both with and without visual features on the maze walls. Genetic expression was measured following experimental trials to determine if the frogs were utilizing their hippocampus to make decisions. | **UNC-CH Department of Biology Burmeister Neurobiology Lab** | 2020-2021

Presentations

- Palmer, M., Haley, S., Dyhrman, S., (2025) *Phosphorus Competition Among Diatoms from Contrasting Nutrient Regimes*. Presented at: ASLO Aquatic Sciences Meeting. Charlotte, North Carolina. [Poster]
- Palmer, M., Haley, S., Dyhrman, S., (**2024**) *Evaluating Phosphate Physiology in Diatoms: A Coastal and Oligotrophic Comparison*. Presented at: Center for Chemical Currencies of a Microbial Planet Annual Meeting. Dedham, Massachusetts. [Poster]
- Palmer, M., Graham, N., Paulino Jr., L., Schlesener, J., (**2024**) *A preliminary look into metabolite uptake and the marine microbes responsible.* Presented at: Center for Chemical Currencies of a Microbial Planet Phytoplankton Exometabolite Meeting. Online. [Presentation]
- Palmer, M., Graham, N., Paulino Jr., L., Schlesener, J., (**2024**) *BIOS Metabolite Experiment and Modeling Thalassiosira pseudonana.* Presented at: Center for Chemical Currencies of a Microbial Planet Annual Site Review. Woods Hole, Massachusetts. [Poster]
- Palmer, M., Hall, N. **(2023)** *Seasonal Variability of Nutrient Limitation and Impacts on Phytoplankton Community Composition in the Albemarle Sound.* Presented at: University of North Carolina at Chapel Hill Undergraduate Research Symposium. [Poster]
- Palmer, M. Campbell, A., Barnett, E., Tran, V., **(2022)** *Effects of Chitin-Synthase Inhibitors on Acute Stress in Copepods*. Presented at: University of North Carolina at Chapel Hill Undergraduate Research Symposium. [Poster]

Certifications

- PADI Open Water Scuba Certification (2019)

Extracurriculars

- Plankton Journal Club, Co-President (Aug 2024 - Present)