Dominique Kelly

OBJECTIVE

Dedicated and driven researcher that utilizes experimental techniques to comprehend biogeochemical cycles in the environment, aiming to develop sustainable solutions and mitigate the impacts of climate change.

EDUCATION

Northwestern University, Evanston, IL Ph.D. May 2029

- **GPA:** 3.729
- **Major:** Earth, Environmental and Planetary Sciences

Smith College, Northampton, MA B.A. May 2022

- **GPA:** 3.71
- **Major:** Environmental Science & Policy | **Minor:** Biological Sciences

Queen Mary University of London, London, England Study Abroad Fall 2021

RESEARCH EXPERIENCE

Graduate Student, Northwestern University, Chicago, IL Sep. 2024 – Present

- Investigated nutrient limitation effects on *Pseudomonas* species cultivation and growth
- Analyzed metabolite data with MAVEN and R to investigate actinobacteria biofilm
- Evaluated metagenomic and metagenome assembled genomes using Quest
- Quantified cell growth using UV-Vis spectrophotometry
- Conducted statistical analysis to generate growth curves of *Pseudomonas* species using Excel and R

Intern, Lawrence Livermore National Laboratory, Livermore, CA Jun. 2024 – Sep. 2024

- Maintained co-cultures of strains of bacteria and algae from permanently stratified lakes and other freshwater sources from Antarctica
- Evaluated the ability of bacteria to extract biologically available phosphate from a phosphorus limited environment through co-culturing with algae and isotopic carbon labeling
- Analyzed cell density of microbes using an automated cell density/viability analyzer, flow cytometry, and fluorometry
- Processed prokaryotic organisms using nanoscale secondary ion mass spectrometry to evaluate the carbon and phosphorus composition of samples
- Extracted DNA for gel electrophoresis and sequencing through the sanger technique

Fellow, Woods Hole Oceanographic Institution, Woods Hole, MA Sep. 2022 – June 2024

- Investigated the biochemical role of alkaline phosphatase enzymes in cyanobacteria *Prochlorococcus* through incubation experiments
- Maintain *Prochlorococcus, Synechococcus,* and Antarctic eukaryote cultures by creating media and regularly performing culture transfers
- Perform protein extraction protocol using magnetic beads to prepare for proteomics analysis using mass spectrometry
- Design and modify protocols in Opentrons software for automated lab processes
- Determine chlorophyll measurements of *Prochlorococcus* using fluorometry
- Organize data using Google Sheets and Excel and analyze data using Python and R
- Present research on cobalt and iron limitations in *Prochlorococcus* to scientific conferences

FIELD EXPERIENCE

AT50-10 CLiOMZ Research Vessel Atlantis Cruise May – Jun. 2023

Golfito, Costa Rica to San Diego, CA, United States

- Collaborated with a postdoctoral researcher to grow marine microorganism cultures to observe cobalt, iron, zinc, and vitamin B-12 limitation among oligotrophic waters
- Assisted with construction and dissemble of an autonomous underwater vehicle for deployment and recovery
- Performed filter cutting and tube labeling to prepare for protein, DNA, and particulate metal

analysis
- Executed filtering large volumes of water on glass microfiber filters using vacuum pump
- Measured chlorophyll amount using fluorometry
- Delegated data organization, calculations, and data visualization into Google Sheets
- Gathered water samples for isotopic measurements

C-CoMP Bermuda Institute of Ocean Sciences Visit Apr. 2023
St. George's, Bermuda
- Collected water samples while aboard the Research Vessel Atlantic Explorer, contributing to the Bermuda Atlantic Time-series Study (BATS)
- Measured light visibility using secchi disk and gathered zooplankton samples using a Neuston net on the Research Vessel Stommel
- Utilized a zooplankton scanner to quantify plankton biodiversity through ImageJ
- Collaborated with a team to present experience and achievements

PUBLICATIONS & PRESENTATIONS

- Kelly, Dominique; Mcllvin, Matt; Steck, Viktoria; Saito, Mak. "Effects of Varying Cobalt, Zinc, & Iron on Alkaline Phosphatase Production in Proteomes of *Prochlorococcus marinus*." American Geophysical Union Ocean Sciences Meeting, Ernest N. Morial Convention Center, New Orleans, Louisiana, February 2024 (poster).
- Kelly, Dominique; Mcllvin, Matt; Saito, Mak. "The Impact of Iron and Cobalt on the Physiology and Enzyme Function of *Prochlorococcus marinus*." Chemical Oceanography Gordon Research Conference, Southern New Hampshire University, Manchester, New Hampshire, July 2023 (poster).
- Kelly, Dominique; Thomason, Rhegan; Goldberg, Hannah; Cobbs, Hope; Gibson IV, Carl; Garcia, Herman. "Discovering Bermuda: C-CoMP BIOS Research Week." National Science Foundation Site Visit, Woods Hole, Massachusetts, June 2023 (poster).
- Capozzi, Nicole; Ahmed, Eyananda; Curtis, Ezra; Grandbois, Olivia; Kelly, Dominique; Kristjansson, Kadin; Morgan, Natalie; Schlecker, Louis; and Wright, Rachel M., "Comparing physiological responses to hot and cold stress in a cnidarian–algal holobiont, Exaiptasia diaphana." Special Studies, Smith College, Northampton, Massachusetts, 2022.
- Kelly, Dominique; Kim, Albert Y.; Baumer, Ben. "Coding the MacLeish Field Station: The "macleish" R Package." Smith College Sigma Xi Chapter Talks, Northampton, Massachusetts, April 19, 2022 (lecture).

PUBLIC OUTREACH

Representative, Hampton University, Hampton, VA Apr. 12-14, 2023
- Executed outreach on marine science related opportunities for undergraduate and recent graduates at Hampton University's Research Symposium with a principal investigator and a Ph.D. graduate student
- Foster potential collaboration with a microbiologist professor for protein extraction on heterotrophic bacteria

Volunteer, Junior Achievement Inspire Career Fair, Boston, MA Dec. 9, 2022
- Collaborated with a team to design dynamic activities related to ocean science for students to learn about opportunities at WHOI
- Engaged with over 750 8th grade students from disenfranchised communities
- Shared facts, ongoing research, and resources regarding marine mammals and science

Volunteer, New Bedford Middle School, New Bedford, MA Nov. 17, 2022
- Cooperated with a Ph.D. graduate student to teach chemical processes using toys and present ocean science research to three classes of 8th grade students
- Facilitated curriculum design and planning, lecture presentations, hands-on learning activities and storytelling about personal research and experiences

SCHOLARSHIPS & AWARDS

National Gem Fellowship	June 2024-2029
Ocean Solutions Challenge Grant	May 2023
C-CoMP Bridge-to-PhD Fellowship	Sep. 2022 – Sep. 2024
Smith College Summer Undergraduate Research Fellowship	Summer 2021
Smith College McKinley Honors Fellowship	Spring 2021
Google Explore CSR Award	Spring 2021
National Oceanic and Atmospheric Administration Hollings Scholarship Program	Summer 2019