

Emma C. Johnson

(443) 432-9620 | emma.johnson@duke.edu | Durham, NC

Education

PhD, Marine Science and Conservation August 2024 – Present
Duke University Nicholas School of the Environment, Durham, NC
Thesis: *In Prep* (Advisor: Dr. Juliet Wong)

BS, Biology with Honors; Minors: Chemistry and Marine Science August 2019 – May 2023
University of North Carolina at Chapel Hill, Chapel Hill, NC
Honors Thesis: DOC enrichment modulates symbiont density, calcification rates, and microbial diversity in the temperate coral, *Oculina arbuscula* (Advisor: Dr. Karl Castillo)

Research Experience

Research Assistant in the Morgan Lab June 2023 – July 2024
Marine Biological Laboratory, Woods Hole, MA
Advisor: Dr. Jennifer Morgan

- Utilize molecular techniques to deduce the mechanisms of neurodegenerative disorders
- Understand the functions of synapsin and α -synuclein in synaptic vesicle trafficking
- Assist in animal husbandry and care of the model organism, *Petromyzon marinus*

Laboratory Technician in the Castillo Lab August 2022 – May 2023
UNC Department of Earth, Marine, and Environmental Science, Chapel Hill, NC
Advisor: Dr. Karl Castillo

- Elucidated impacts of DOC enrichment on temperate coral (*in prep for publication*)
- Extracted DNA to determine algal and bacterial specificity and relative abundance
- Managed wet and molecular laboratory facilities (i.e. organization, ordering, planning)

REU Intern in the Sipler Lab May 2022 – July 2022
Bigelow Laboratory for Ocean Sciences, Boothbay, ME
Advisor: Dr. Rachel Sipler

- Conceptualized a ten-week research project on a marine science topic
- Deduced the effects of anthropogenic contaminants on carbon and nitrogen levels in marine ecosystems to understand variability in community-based water sampling

Laboratory Research Assistant at the MPIU January 2022 – May 2022
UNC Lineberger Comprehensive Cancer Center, Chapel Hill, NC
Advisor: Dr. Aadra Bhatt

- Developed and utilized genetically engineered murine models to test cancer therapeutics
- Performed PCRs and ran gel electrophoresis to detect inserted genes and monitor tumors
- Assisted in maintaining a clean and organized laboratory space

Awards and Fellowships

NSF Graduate Research Fellowship (\$140,000), 2024

Duke University Centennial Graduate and Professional (CGP) Fellowship (\$15,000), 2024

Sarah Steele Danhoff Undergraduate Research Award (\$500), 2023

Office of Undergraduate Research Travel Award (\$340), 2023

UNC Biology Honors Graduate, 2023

UNC Graduate with Distinction (Cumulative GPA >3.5), 2023

NSF Research Experience for Undergraduate (\$6,000 stipend), 2022
Johnston Blakeley University Scholar (\$8,400 tuition scholarship), 2021

Publications

Chhabra A., Hoffmann C., Korobeinikov A., Rentsch J., Kokwaro L., Gnidovec L., Roman-Vendrell C., **Johnson E.**, Wallace J., Rankovic B., Perego E., Köster S., Rizzoli S., Ewers H., Morgan J., Milovanovic D. “Condensates of synaptic vesicles and synapsin are molecular beacons for actin sequestering and polymerization.” <https://doi.org/10.1101/2024.07.19.604346>
In Review

Johnson E., Powell M., Dulskiy A., McCartney M., Castillo K.D. “DOC enrichment modulates symbiont density, calcification rates, and microbial diversity in the temperate coral, *Oculina arbuscula*.” *In Prep*

Skills & Certifications

Lab-Based: Microscopy, Western-Blots, PCR, DNA Extraction and Purification, Immunofluorescence, Cell Counting, Tissue Homogenization, UV-vis Spectrophotometry, Microdissections, Nutrient Analysis, Gel Electrophoresis, General Lab Safety and Procedures

Computer: Microsoft Office, RStudio, Adobe Creative Suite, GraphPad Prism, FIJI (ImageJ)

Certifications: U.S. Coast Guard 100 Ton Captain’s License, AAUS Scientific Diver, PADI Open Water Diver

Oral & Poster Presentations

Johnson E., Wallace J., Morgan J.R. 2024 “Investigating the role of the intrinsically disordered region of synapsin on synaptic vesicle clustering and function at lamprey synapses.” *Marine Biological Laboratory Post-Doc Symposium*, Woods Hole, MA, Poster Presentation

Johnson E., Wallace J., Morgan J.R. 2024 “Investigating the role of the intrinsically disordered region of synapsin on synaptic vesicle clustering and function at lamprey synapses.” *New England Society for Microscopy Meeting*, Woods Hole, MA, Poster Presentation

Johnson E., Powell M., Dulskiy A., McCartney M., Castillo K.D. 2023. “DOC enrichment modulates symbiont density, calcification rates, and microbial diversity in the temperate coral, *Oculina arbuscula*.” *Benthic Ecology Meeting*, Miami, FL, Oral Presentation

Johnson E., Powell M., Dulskiy A., McCartney M., Castillo K.D. 2023. “DOC enrichment modulates symbiont density, calcification rates, and microbial diversity in the temperate coral, *Oculina arbuscula*.” *EMES PerkinElmer Student Research Symposium*, Chapel Hill, NC, Oral Presentation

Johnson E and Castillo K.D. 2023. “DOC enrichment modulates symbiont density, calcification rates, and microbial diversity in the temperate coral, *Oculina arbuscula*.” *UNC Department of Biology Senior Honors Thesis Defense*, Chapel Hill, NC, Oral Presentation

Johnson E and Sipler R. 2022. “Skin protection and compromised data: explaining variability in community-based water samples.” *Bigelow Laboratory Summer Research Symposium*, East Boothbay, ME, Poster Presentation

Mentoring

Johann Valera-Vega, ASU '25, REU student at the Marine Biological Laboratory

Caroline Casino-Rivera, UPR '23, Bio-ENGAGE student at the Marine Biological Laboratory

Ryan Breitenbach, FSC '24, REU student at the Marine Biological Laboratory

Max Buglisi, UNC-CH '24, Undergraduate volunteer in the Castillo Lab

Troye Curtain, UNC-CH '24, Undergraduate volunteer in the Castillo Lab

Tatum Cubrilovic, East Chapel Hill High School '23, High school volunteer in the Castillo Lab

Teaching Experience

MARSCI 202: Marine Biology and Ecology Teaching Assistant

Fall 2024

Duke University, Durham, NC

- Assist students with problem-solving and course-related questions at weekly office hours
- Organize a weekend field trip to the Duke University Marine Lab
- Create, edit, and grade student problem sets, papers, and exams

BIOL 201: Ecology and Evolution Peer Instructor

Spring 2023

UNC-CH, Chapel Hill, NC

- Led a one-hour review session each week for students to reinforce course material
- Created lecture slides and practice problems to provide students with additional resources
- Attended class three times per week to assist students with problem-solving and answer course-related questions

BIOL 201: Ecology and Evolution Peer Mentor

Fall 2022

UNC-CH, Chapel Hill, NC

- Provided one-hour Q&A sessions each week for students seeking additional support
- Attended class three times per week to assist students with problem-solving and answer course-related questions

Outreach

Sailing Instructor, UNC Sailing Club, Chapel Hill, NC

August 2019 – May 2023

- Ran clinics and taught sailing to UNC students to increase access to marine activities

Marine Science Counselor and Captain, Sail Caribbean, Tortola, BVI

Summer 2021

- Guided campers through service-learning activities including counting reef fish, recording incidents of Stony Coral Tissue Loss Disease, and turtle tagging with ARC supervisors

Intern, SeaLegacy, Bahamas

December 2020 – January 2021

- Assisted photographers Paul Nicklen and Cristina Mittermeier in raising awareness of the importance of mangrove preservation and shark conservation through social media

Co-Editor for Marine Science and Sailing Website, Sail to Sea, Global

2017 – 2019

- Created and shared posts to educate middle-school students about diverse marine ecosystems and traveling by sailboat (domain no longer accessible)

Volunteer, 5Gyres, Global

2017 – 2019

- Towed a 'Manta Trawl' behind a sailing vessel to collect micro-plastic in remote oceanic regions and shared data with the organization for large-scale analysis

Volunteer, NOAA Voluntary Observing Ship Program, Global

2017 – 2019

- Observed and shared daily weather metrics with national meteorological services to increase forecasting abilities in remote locations