

Zackary I Johnson

Contact Information

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Education

Postdoctoral Fellow, Massachusetts Institute of Technology, 2000-2004, (Sallie W. Chisholm, advisor)
Ph.D. (Botany) Duke University, 2000 (Richard T. Barber, advisor)
Title: *Regulation of Marine Photosynthetic Efficiency by Photosystem II*
B.S. (Civil and Environmental Engineering) Massachusetts Institute of Technology, 1994

Professional History

2023- Juli Plant Grainger Associate Professor of Molecular Biology in Marine Science
2017- Associate Professor, Duke University
2012-2017 Arthur P. Kaupe Assistant Professor of Molecular Biology, Duke University
2009-2017 Assistant Professor, Duke University, Division of Marine Science & Conservation
2007-2011 Scientific Consultant, Phycosciences LLC
2005-2009 Assistant Professor, University of Hawaii Department of Oceanography
1997 Visiting Scientist, Fall Semester, Brookhaven National Labs (P. Falkowski Lab)

Awards / Honors

Algae Biomass Organization – Mid Career Excellence Award
Association for the Advancement of Limnology and Oceanography (ASLO) – Sustaining Fellow
Duke Science Communication Fellow
Alexander von Humboldt Research Fellow (Germany)
Arthur P. Kaupe Assistant Professor of Molecular Biology
German-American Kavli Fellow, National Academy of Sciences
NOAA Postdoctoral Fellowship in Climate and Global Change
Dissertations Initiative for the Advancement of Limnology and Oceanography
Harvey W. Smith Fellowship in Biological Oceanography

Professional Societies

American Geophysical Union (AGU), Association for the Sciences of Limnology and Oceanography (ASLO), Phycological Society of America (PSA), American Society of Microbiology (ASM), The Oceanography Society (TOS)

Research Interests

My group broadly studies the abundance, diversity and activity of marine microbes. We are biological (microbial) oceanographers, marine molecular ecologists, marine microbiologists, phycologists, and biogeochemists. Our environmental research, which is at the intersection of marine ecology and biogeochemistry, focuses on the marine cyanobacteria *Prochlorococcus* and *Synechococcus*, the most abundant phytoplankton in the open oceans and an excellent model marine microbe. Our applied phycology work focuses on developing marine microalgae for aquaculture towards the sustainable production of feed, food and fuel to accelerate carbon emission reductions or carbon negative technologies.

Select Publications (Orcid: <https://orcid.org/0000-0003-0793-8512>)

- Gray PC, Savelyev I, Cassar N, Lévy M, Boss E, Lehahn Y, Bourdin G, Thompson KA, Windle A, Gronniger J, Floge S, Hunt DE, Silsbe G, **Johnson ZI**, Johnston DW (2024). Evidence for Kilometer-Scale Biophysical Features at the Gulf Stream Front. *Journal of Geophysical Research: Oceans* 129: e2023JC020526. DOI: 10.1029/2023JC020526
- Doo SS, Kealoha A, Andersson A, Cohen AL, Hicks TL, **Johnson ZI**, Long MH, McElhany P, Mollica N, Shamberger KEF, Silbiger NJ, Takeshita Y, Busch DS (2020). The challenges of detecting and attributing ocean acidification impacts on marine ecosystems. *ICES Journal of Marine Science*. DOI: 10.1093/icesjms/fsaa094
- Second State of the Carbon Cycle Report (SOCCR2): A Sustained Assessment Report. [Cavallaro, N., G. Shrestha, R. Birdsey, M. A. Mayes, R. G. Najjar, S. C. Reed, P. Romero-Lankao, and Z. Zhu (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 878 pp. DOI: 10.7930/SOCCR2.2018
- Beal CB, Archibald I, Huntley ME, Greene CH, **Johnson ZI** (2018) Integrating Algae with Bioenergy Carbon Capture and Storage (ABECCS) Increases Sustainability. *Earth's Future*. DOI: 10.1002/2017EF000704
- Greene CH, Huntley ME, Archibald I, Gerber LN, Sills DL, Granados J, Tester JW, Beal CM, Walsh MJ, Bidigare RR, Brown SL, Cochlan WP, **Johnson ZI**, Lei XG, Machesky SC, Redalje DG, Richardson RE, Kiron V, and Corless V (2016). Marine microalgae: Climate, energy, and food security from the sea. *Oceanography* 29(4). DOI: 10.5670/oceanog.2016.91
- Yates K, Turley C, Hopkinson B, Todgham A, Cross J, Greening H, Van Hooidek R, Williamson P, Deheyn DD, **Johnson Z** (2015). Transdisciplinary science: a path to understanding the impacts of ocean acidification on ecosystems and society. *Oceanography* 28(2):212–225 DOI: 10.5670/oceanog.2015.43
- Johnson ZI**, Wheeler BJ, Blinberry SK, Carlson CM, Ward CS and Hunt DE. (2013) Dramatic variability of the carbonate system at a temperate coastal ocean site (Beaufort, North Carolina, USA) is regulated by physical and biogeochemical processes on multiple timescales. *PLoS ONE* 8: e85117. DOI: 10.1371/journal.pone.0085117
- Johnson Z**, Zinser ER, Coe A, McNulty NP, Woodward EMS, Chisholm SW. (2006) Niche partitioning among *Prochlorococcus* ecotypes along ocean-scale environmental gradients. *Science* 311, 1737-1740. DOI: 10.1126/science.1118052
- Lindell D, Jaffe JD, **Johnson ZI**, Church GM, Chisholm SW. Photosynthesis genes in marine viruses yield proteins during host infection. (2005) *Nature* 438, 86-89. DOI: 10.1038/nature04111
- Coale K, Johnson K, Chavez F, Buesseler K, Barber R, Brzezinski M, Cochlan W, Millero F, Falkowski P, Bauer J, Wanninkhof R, Kudela R, Altabet M, Hales B, Takahashi T, Landry M, Bidigare R, Chase Z, Strutton P, Friederich G, Gorbunov M, Lance V, Hilting A, Hiscock M, Demerest M, Hiscock W, Sullivan K, Tanner S, Gordon RM, Hunter C, Elrod V, Fitzwater S, Timothy D, Brown S, Selph K, Sheridan C, Twining B and **Johnson Z** (2004) Southern Ocean Iron Enrichment Experiment (SOFEX): Carbon Cycling in Antarctic Waters. *Science* 304, 408-414. DOI: 10.1126/science.1089778
- Rocap G, Larimer F, Lamerdin J, Malfatti S, Chain P, Ahlgren N, Arellano A, Coleman M, Hauser L, Hess W, **Johnson Z**, Land M, Lindell D, Post A, Regala W, Shah M, Shaw S, Steglich C, Sullivan M, Ting C, Tolonen A, Webb E, Zinser E, Chisholm S (2003). Genome divergence in two *Prochlorococcus* ecotypes reflects oceanic niche differentiation. *Nature* 424, 1042-1047. DOI: 10.1038/nature01947
- Barber RT, J Marra, RR Bidigare, LA Codispoti, D Halpern, **Z Johnson**, M Latasa, R Goericke, S Smith (2001) Primary productivity and its regulation in the Arabian Sea during 1995, *Deep-Sea Research II* 48, 1127-1172. DOI: 10.1016/S0967-0645(00)00134-X