

Matthew D Johnson
Assistant Scientist

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Research Interests:

Marine protistan ecology and evolution: grazing, mixotrophy, acquired phototrophy, and the evolution of metabolic pathways in protists.

Education

Southampton College, University of Long Island, Marine Biology, B.S. 1996
University of Maryland, UMCES, Biological Oceanography, Ph.D. 2005

Appointments

Assistant Scientist, Biology Department, Woods Hole Oceanographic Institution, 2009-present
Postdoctoral Fellow, Rutgers University, IMCS, 2006- 2009
Postdoctoral Associate, University of Maryland, UMCES, 2005
Research Assistant, OIMB, University of Oregon, 1997-1998

Professional Affiliations:

American Society of Limnology and Oceanography
Phycological Society of America
Society of Protozoologists

Awards and recognition:

Faculty of 1000, Biology; “Must read paper” for Johnson et al. (2007) *Nature*. 445: 426-428
Phycological Society of America, Luigi Provasoli Award, 2007
Rutgers, Institute of Marine and Coastal Sciences Post-doctoral Fellow 2006-2009
Outstanding Poster Award, Society of Protozoologists (SOP), 2004
Travel Award for SOP symposium “Genome evolution in microbial eukaryotes”, 2004
UMCES Travel and Research Supplies Grants, 1998-2003
University of Maryland, Center for environmental Science (UMCES) Graduate Research Fellowship, 1998-2000

Professional Activities:

Invited lecturer in workshop on “Mixotrophy in planktonic protists- methods to assess nutritional strategies”, Tvärminne Zoological Station, Finland, Sept. 4-11, 2005.
Journal Reviewer. *Australian Journal of Botany*, *Aquatic Microbial Ecology*, *Bioessays*, *Environmental Microbiology*, *Journal of Eukaryotic Microbiology*, *Journal of Experimental Biology*, *Journal of Plankton Research*, *Journal of Phycology*, *Limnology and Oceanography*, *Marine Biology*, *Marine Biology Research*, *Marine Ecology Progress Series*, *Molecular Biology and Evolution*, *Photosynthesis Research*, *Plant Cell & Environment*, *Proceedings of the Royal Society B*, *Protist*

Participation in Educational Program:

Joint Program Admissions Committee, 2010- present
Committee Member of MIT/WHOI Joint Program student EF Brownlee. 2010-present

Supervision at WHOI:

David Beaudoin, Research Assistant II, 2010-present
Maria Bangal, WHOI Summer Fellow, 2011

Eleina Zaitsev, WHOI Summer Fellow, 2010

Publications:

1. Johnson MD (2011) Acquired phototrophy in ciliates: a review of cellular interactions and structural adaptations. JEM doi: 10.1111/j.1550-7408.2011.00545.x [Epub ahead of print]
2. Moeller, HV, Johnson, MD, Falkowski, PG (2011) Photoacclimation in the phototrophic marine ciliate, *Mesodinium rubrum* (Ciliophora). J Phycol 47(2): 324-332
3. Johnson MD (2011) The acquisition of phototrophy: adaptive strategies of hosting endosymbionts and organelles. Photosynth Res 107: 117-132
4. Stoecker DK, Johnson MD, de Vargas C, Not, F (2009) Acquired phototrophy in aquatic protists. Aquat Microb Ecol. 57: 279-310
5. Johnson MD, Volker J, Moeller HV, Laws E, Breslauer KJ, Falkowski PG (2009) Universal constant for heat production in protists. PNAS 106: 6696-6699
6. Johnson MD, Oldach D, Delwiche, CF, Stoecker DK, (2007) Retention of transcriptionally active cryptophyte nuclei by the ciliate *Myrionecta rubra*. Nature 445: 426-428
7. Johnson MD, Stoecker DK, Tengs T, Oldach D (2006) Sequestration and performance of cryptophyte plastids in *Myrionecta rubra*. J Phycol 42: 1236-1246
8. Johnson MD, Stoecker DK (2005) The role of feeding in growth and the photophysiology of *Myrionecta rubra*. Aquat Microb Ecol. 39: 303-312
9. Johnson MD, Tengs T, Oldach D, Stoecker DK (2004) Highly divergent SSU rRNA genes found in the marine ciliates *Myrionecta rubra* and *Mesodinium pulex*. Protist 155: 347-359
10. Johnson MD, Rome M, Stoecker DK (2003) Microzooplankton grazing on *Prorocentrum minimum* and *Karlodinium micrum* in Chesapeake Bay. Limnol Oceanogr 48: 238-248.
11. Gustafson Jr. DE, Stoecker DK, Johnson MD, Van Heukelem WF, Sneider K (2000) Cryptophyte algae are robbed of their organelles by the marine ciliate *Mesodinium rubrum*. Nature 405: 1049-1052
12. MacDougall KC, Johnson MD, Burnett KG (1996) Exposure to mercury alters early activation events in fish leukocytes. Environ Health Persp 104: 1102-1106

Presentations at meetings and invited lectures*

1. *Johnson MD, Moeller HV, Bangal M, Brown C (2011) Karyoklepty and the reduced endosymbiont of *Mesodinium rubrum*- a tertiary plastid in the making? ECOP, Berlin, DE
2. Johnson MD and A Vardi (2011) Using functional genomics approaches to study the role of chemical signaling in microzooplankton-prey interactions. ASLO, San Juan, PR
3. Zaitsev, E and MD Johnson (2011) Investigating the role of nitric oxide, oxidative stress, and temperature in *Symbiodinium* spp. ASLO, San Juan, PR
4. *Johnson MD (2010) Genetic diversity and heat stress phenotypes in *Symbiodinium*. URI-GSO, Narragansett, RI
5. *Johnson MD (2010) Genetic diversity and heat stress phenotypes in *Symbiodinium*. MBL, Woods Hole, MA
6. *Johnson MD (2010) Acquired phototrophy in ciliates. International Society of Protistologists, Canterbury, UK
7. Johnson MD, JB Lee, PG Falkowski (2010) Genetic diversity and heat stress phenotypes in *Symbiodinium*. ASLO. Portland, OR
8. *Johnson MD (2008) Genetic diversity and heat stress in *Symbiodinium*. Lamont-Doherty Earth Observatory, Palisades, NY
9. *Johnson MD (2008) Physiological and molecular approaches to understanding protistan ecology and evolution. Boston University, Boston, MA
10. *Johnson MD (2008) Physiological and molecular approaches to understanding protistan ecology and evolution. University of New Brunswick, Fredericton, New Brunswick,
11. *Johnson MD (2007) Organelle-retention in the photosynthetic ciliate, *Myrionecta rubra*. Phycological Society of America, Providence, RI
12. *Johnson MD (2007) Robbery on the high seas: the story of the photosynthetic ciliate *Myrionecta rubra*. Rider University, Lawrenceville, NJ.

13. *Johnson MD (2007) Physiological and molecular aspects of organelle retention in the ciliate *Myrionecta rubra*. Roger Williams College, Bristol, RI, Biology Seminar Series.
14. Johnson MD and DK Stoecker (2006) Nuclear-retention by a marine phototrophic ciliate. Marine Microbes, Gordon Research Conference, ME, poster
15. Johnson MD (2006) Organelle retention by the phototrophic ciliate, *Myrionecta rubra*. Evolution of Aquatic Phototrophs, Rutgers U, New Brunswick, NJ, poster
16. Johnson MD, Tengs T, Oldach D, Stoecker DK (2004) Highly divergent SSU rRNA genes found in the marine ciliates *Myrionecta rubra* and *Mesodinium pulex*. Society of Protozoologists Annual Meeting, Bryant College, Smithfield, RI, poster
17. Johnson MD and DK Stoecker (2003) MD Johnson and DK Stoecker (2006) The role of feeding in growth and the photosynthesis of *Myrionecta rubra*. Joint meeting of the Phycological Society of America and Society of Protozoologists, Gleneden beach, OR
18. Johnson MD and DK Stoecker (2003) Use of fluorescent in situ hybridization to document retention of cryptophyte nuclei by the phototrophic ciliate *Myrionecta rubra*. 11th East Coast Protozoology Conference, Catonsville, MD
19. Johnson MD, Oldach D, Stoecker DK (2002) Phylogenetic diversity of cryptophycean plastids within the photosynthetic ciliate *Myrionecta rubra*. New England Molecular and Evolutionary Biologists Meeting, Marine Biological Lab, Woods Hole, MA
20. Johnson MD, Rome M, Stoecker DK (2002) Microzooplankton grazing on *Prorocentrum minimum* and *Karlodinium micrum* in Chesapeake Bay. Xth International Conference on Harmful Algae. St. Petersburg, FL, poster
21. Johnson MD, Oldach D, Stoecker DK (2002) Phylogenetic diversity of cryptophycean plastids within the photosynthetic ciliate *Mesodinium rubrum* and ingestion of fluorescently labeled cryptophytes. ASLO meeting, Victoria, BC, CAN
22. Johnson MD, DK Stoecker (2001) Physiology and growth of the marine ciliate *Mesodinium rubrum*. American Society of Limnology and Oceanography Meeting (ASLO), Albuquerque, NM
23. M Rome, Johnson MD, Stoecker DK (2000) Grazing on *Gyrodinium galatheanum* and *Prorocentrum minimum* in Chesapeake Bay. ECOHAB Meeting, Woods Hole, MA, poster
24. Johnson MD, Bernardesco G, Shapiro, L (1998) The use of denaturing gradient gel electrophoresis (DGGE) to identify bacteria within the phycosphere of marine phytoplankton. American Society of Microbiology, Atlanta, GA poster
25. Johnson MD, St Aubin D (1995) Tissue distribution and serum levels of selected enzymes in five species of sharks: *Sphyrna lewini*, *Prionace glauca*, *Carcharhinus taurus*, *C. plumbeus*, and *Isurus oxyrinchus*. International Association of Aquatic Animal Medicine, Mystic, CT poster

Grants from non-WHOI funding sources:

- Johnson MD and DK Stoecker (09/01/10 to 9/31/13) Collaborative Research: Trophodynamics of *Myrionecta rubra* and cryptophyte algae. National Science Foundation.
- Johnson MD (04/01/2009 to 03/31/2012) Understanding how global warming will select for zooxanthellae phenotypes. National Science Foundation