

Matthew D Johnson

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RESEARCH INTERESTS

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

PROFESSIONAL PREPARATION

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

APPOINTMENTS

Associate Scientist, WHOI, 2013-present
Assistant Scientist, WHOI, 2009-2013
Postdoctoral Fellow, Rutgers University (IMCS), 2006- 2009
Adjunct Professor, Rider University, 2007-2008
Postdoctoral Associate, UMCES, 2005
Visiting Lecturer, Washington College, 2001
Research Assistant, University of Oregon (OIMB), 1997-1998

PROFESSIONAL AFFILIATIONS

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

HONORS AND AWARDS

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

OTHER PROFESSIONAL ACTIVITIES

Invited Participant to the Leverhulme International Network meeting on “*Modeling mixotrophy*”, UMCES, Cambridge, MD, June 17-21, 2013
External Committee Member for the Ph.D. Defense of Lydia Garcia, University of Copenhagen, DK, September 30, 2011
Session Chair at ASLO/Aquatic Science Meetings (2011, 2015)
Journal Reviewer: *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*
NSF panelist (2015) and *ad hoc* reviewer
Invited lecturer in workshop on “*Mixotrophy in planktonic protists- methods to assess nutritional strategies*”, Tvärminne Zoological Station, Finland, Sept. 4-11, 2005.

PARTICIPATION IN WHOI-MIT JOINT PROGRAM

Committee Member of: Alexis Fischer (2013-present), Emily F Brownlee (2010-present)
Joint Program Admissions Committee, 2010-2013
Dissertation Defense Chair for JP Student Jamie Becker, April 8, 2013
Exam and Proposal Defense Chair for JP student Harriet Alexander, 2012

SUPERVISION AT WHOI

Holly V. Moeller, NSF Postdoctoral Fellow, 2015-present
Elina Peltomaa, Guest Investigator, 2015-present
Elizabeth Harvey, Postdoctoral Investigator, 2013-present
David Beaudoin, Research Assistant II, 2010-present
Miguel Frada, Guest Investigator, Fall 2011

UNDERGRADUATE AND HIGH SCHOOL RESEARCH MENTORING:

2015 Christopher Kirby, NEU Cooperative Program
2014 Elaine Luo, Summer Guest Student
2011 Maria Bangal, WHOI Summer Fellow
2010 Eleina Zaitsev, WHOI Summer Fellow
2007 Rong Deng, *Intel* Science Talent Search, White Plains High School, NY
2006-2008 Holly V. Moller, Henry Rutgers Fellow, Rutgers University (RU)
2006-2007 Jay Fisch, RU
2001 Carrie Fleming, REU, Horn Point Lab, UMCES
2000 Michelle Rome, REU, Horn Point Lab, UMCES

TEACHING EXPERIENCE

2008 Rider University, Lawrenceville, NJ
Department of Biology: *Life Science: eco-botanical emphasis*
2007 Rider University, Lawrenceville, NJ
Department of Geology and Marine Science: *Introduction to Oceanography*
2001 Washington College, MD, Department of Biology: *Genes, Nature and Society* laboratory section

PARTICIPATION ON CRUISES

"Dyeatom" Cruise, California Coast, USA, R/V Pt. Sur, June 27-July 6, 2013
Chesapeake Bay, USA, R/V Sharp, October 16-21, 2011; Chief Scientist
Chesapeake Bay, USA, R/V Sharp, May 4-9, 2011; organized scientific activities

PUBLICATIONS

1. **Johnson MD** (2014) Inducible mixotrophy in the dinoflagellate *Prorocentrum minimum*. J Euk Microbiol. doi: 10.1111/jeu.12198. [Epub ahead of print]
2. Keeling, PJ, et al. (2014) The marine microbial eukaryotic transcriptome sequencing project (MMETSP): illuminating the functional diversity of eukaryotic life in the oceans through transcriptome sequencing. PLOS Biology. 12(6): e1001889
3. Hansen PJ, Nielson LT, **Johnson MD***, Berge T, Flynn KR (2013) Acquired phototrophy in *Mesodinium* and *Dinophysis*- a review of cellular organization, prey selectivity, nutrient uptake and bioenergetics. Harmful Algae. 28: 126-139
4. **Johnson MD**, Stoecker DK, Marshall, HG (2013) Seasonal dynamics of *Mesodinium rubrum* in Chesapeake Bay. J Plank Res. 35: 877-893
5. **Johnson MD** (2011) Acquired phototrophy in ciliates: a review of cellular interactions and structural adaptations. J Euk Microb 58(3): 185-195

6. Moeller, HV, **Johnson MD***, Falkowski, PG (2011) Photoacclimation in the phototrophic marine ciliate, *Mesodinium rubrum* (Ciliophora). *J Phycol* 47(2): 324-332
7. **Johnson MD** (2011) The acquisition of phototrophy: adaptive strategies of hosting endosymbionts and organelles. *Photosynth Res* 107: 117-132
8. Stoecker DK, **Johnson MD**, de Vargas C, Not, F (2009) Acquired phototrophy in aquatic protists. *Aquat Microb Ecol.* 57: 279-310
9. **Johnson MD**, Volker J, Moeller HV, Laws E, Breslauer KJ, Falkowski PG (2009) Universal constant for heat production in protists. *Proc Nat Acad Sci (USA)* 106: 6696-6699
10. **Johnson MD**, Oldach D, Delwiche CF, Stoecker DK, (2007) Retention of transcriptionally active cryptophyte nuclei by the ciliate *Myrionecta rubra*. *Nature* 445: 426-428; *Faculty of 1000, Biology*; "Must read paper"
11. **Johnson MD**, Stoecker DK, Tengs T, Oldach D (2006) Sequestration and performance of cryptophyte plastids in *Myrionecta rubra*. *J Phycol* 42: 1236-1246
12. **Johnson MD**, Stoecker DK (2005) The role of feeding in growth and the photophysiology of *Myrionecta rubra*. *Aquat Microb Ecol.* 39: 303-312
13. **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
14. **Johnson MD**, Rome M, Stoecker DK (2003) Microzooplankton grazing on *Prorocentrum minimum* and *Karlodinium micrum* in Chesapeake Bay. *Limnol Oceanogr* 48: 238-248
15. 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
16. MacDougal 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, WORKSHOPS, AND INVITED LECTURES*

1. **Johnson MD**, Edwards, BR, Beaudoi, DJ, Van Mooy, BA, Vardi, A (2015) Infochemical signaling mediates microzooplankton interactions with diatoms. ASLO. Oral. Granada, ES
2. Harvey E, Pulson-Ellestad K, Mincer, T, Van Mooy, BA, Bidle, KD, **Johnson MD** (2015) The combined influence of morphology and chemistry in mediating heterotrophic protist grazing interactions. ASLO, Granada, ES
3. Poulson-Ellestad K, Harvey E, Ranson H, **Johnson MD**, Mincer T (2015) Listening in on Coccolithophore-grazer interactions. ASLO, Granada, ES
4. **Johnson MD**, Lasek-Nesselquist E (2014) Cellular and metabolic integration of symbiotic organelles in the ciliate *Mesodinium rubrum*. International Society of Evolutionary Protistologists. Oral. Banff, AB CAN
5. Lasek-Nesselquist E and **Johnson MD** (2014) The molecular interplay between a ciliate and its stolen organelles. International Society of Evolutionary Protistologists. Banff, AB CAN
6. **Johnson MD**, Beaudoin D, Vardi A (2014) The role of infochemicals in mediating microzooplankton predation on diatoms. Gordon Research Conference, Marine Microbes. Poster. Waltham, MA
7. Harvey E and **Johnson MD** (2014) Untangling the complex: the impact of intra-specific prey variability on grazing interactions. Gordon Research Conference, Marine Microbes. Waltham, MA

8. Lasek-Nesselquist E and **Johnson MD** (2014) Molecular underpinnings of organelle retention in the ciliate *Mesodinium rubrum*. Gordon Research Conference, Marine Microbes. Waltham, MA
9. Poulson-Ellestad K, Harvey E, Rathjen K, **Johnson MD**, Mincer T (2014) Sound the Alarm: Listening in on predator-prey interactions among marine protists. American Society of Microbiologists (ASM), Boston, MA
10. Mincer TJ, **Johnson MD**, Sharma RS, Flynn-Carroll A, Wildschutte H, Polz M (2014) Indole as a mediator of protozoan grazing of bacteria: a new role for a multifaceted infochemical. ASM, Boston, MA
11. **Johnson MD**, Stoecker DK, Beaudoin D, Frada M. (2013) Seasonal dynamics of genetic diversity and trophic relationships between *Mesodinium rubrum* and cryptophyte algae. ICOP. Oral. Vancouver, BC CAN
12. **Johnson MD**, Stoecker, DK, Beaudoin D. (2013) An integrative view of a model mixotroph: cellular, ecological and evolutionary perspectives. Modeling Mixotrophy (Leverhulme Workshop). Oral. UMCES, Cambridge, MD
13. ***Johnson MD** (2011) Acquired phototrophy and the unique phytoplankter *Mesodinium rubrum*. UCONN Avery Point, CT
14. ***Johnson MD**, Moeller HV, Bangal M, Brown C (2011) Karyoklepty and the reduced endosymbiont of *Mesodinium rubrum*- a tertiary plastid in the making? European Congress of Protistology, Berlin, DE
15. **Johnson MD** and A Vardi (2011) Using functional genomics approaches to study the role of chemical signaling in microzooplankton-prey interactions. ASLO. Poster. San Juan, PR
16. Zaitsev, E and **MD Johnson** (2011) Investigating the role of nitric oxide, oxidative stress, and temperature in *Symbiodinium* spp. ASLO. Oral. San Juan, PR
17. ***Johnson MD** (2010) Genetic diversity and heat stress phenotypes in *Symbiodinium*. URI-GSO, Narragansett, RI
18. ***Johnson MD** (2010) Genetic diversity and heat stress phenotypes in *Symbiodinium*. MBL, Woods Hole, MA
19. ***Johnson MD** (2010) Acquired phototrophy in ciliates. International Society of Protistologists, Canterbury, UK
20. **Johnson MD**, JB Lee, PG Falkowski (2010) Genetic diversity and heat stress phenotypes in *Symbiodinium*. ASLO. Portland, OR
21. ***Johnson MD** (2008) Genetic diversity and heat stress in *Symbiodinium*. Lamont-Doherty Earth Observatory, Palisades, NY
22. ***Johnson MD** (2008) Physiological and molecular approaches to understanding protistan ecology and evolution. Boston University, Boston, MA
23. ***Johnson MD** (2008) Physiological and molecular approaches to understanding protistan ecology and evolution. University of New Brunswick, Fredericton, New Brunswick,
24. ***Johnson MD** (2007) Organelle-retention in the photosynthetic ciliate, *Myrionecta rubra*. Phycological Society of America, Providence, RI
25. ***Johnson MD** (2007) Robbery on the high seas: the story of the photosynthetic ciliate *Myrionecta rubra*. Rider University, Lawrenceville, NJ.
26. ***Johnson MD** (2007) Physiological and molecular aspects of organelle retention in the ciliate *Myrionecta rubra*. Roger Williams College, Bristol, RI, Biology Seminar Series.
27. **Johnson MD** and DK Stoecker (2006) Nuclear-retention by a marine phototrophic ciliate. Marine Microbes, Gordon Research Conference, ME, poster

28. **Johnson MD** (2006) Organelle retention by the phototrophic ciliate, *Myrionecta rubra*. Evolution of Aquatic Phototrophs, Rutgers U, New Brunswick, NJ, poster
29. **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
30. **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
31. **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
32. **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
33. **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
34. **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
35. **Johnson MD**, DK Stoecker (2001) Physiology and growth of the marine ciliate *Mesodinium rubrum*. American Society of Limnology and Oceanography Meeting (ASLO), Albuquerque, NM
36. M Rome, **Johnson MD**, Stoecker DK (2000) Grazing on *Gyrodinium galatheanum* and *Prorocentrum minimum* in Chesapeake Bay. ECOHAB Meeting, Woods Hole, MA, poster
37. **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
38. **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