Harriet Alexander

Woods Hole Oceanographic Institution
266 Woods Hole Rd., MS# 33 • Woods Hole, MA 02543
(508) 289-3565 • halexand@mit.edu
harrietalexander.org

EDUCATION

2010-present **Massachusetts Institute of Technology-Woods Hole Oceanographic Institution Joint Program in Biological Oceanography,** Cambridge/Woods Hole, MA
Ph.D. (expected 2015) Biological Oceanography
Advisor: Dr. Sonya Dyhrman

2006-2010 **Wellesley College**, Wellesley, MA
B.A. in Biological Sciences with Honors (minor in Mathematics) *cum laude*
Thesis Title: Phylogenetic analysis of the diversity of photosynthetic picoeukaryotic phytoplankton in the Monterey Bay using rDNA clone libraries

RESEARCH EXPERIENCE

2010-present **Graduate Student** under the guidance of Dr. Sonya Dyhrman. Woods Hole Oceanographic Institution, Woods Hole, MA.

2008-2010 **Undergraduate Researcher** under the guidance of Dr. Alexandra Worden. Monterey Bay Aquarium Research Institute, Moss Landing, CA.

2009 **Intern Coordinator** for the MBARI internship program under Dr. George Matsumoto. Monterey Bay Aquarium Research Institute, Moss Landing, CA.

SELECTED AWARDS & FELLOWSHIPS

Ocean Life Institute Fellowship	2015
National Defense Science and Engineering Fellowship	2011-2014
National Science Foundation Graduate Research Fellowship (*declined*)	2011
MIT Presidential Fellowship	2010-2011
Lucy Allen Branch Prize in Natural History	2010
Jane Harris Schneider Prize in Sculpture	2010

PUBLICATIONS

Alexander, H., Jenkins, B.D., Rynearson, T.A., Dyhrman, S.T. (2015). Metatranscriptome analyses indicate resource partitioning between diatoms in the field. *Proceedings of the National Academy of Sciences*, 112(17), 201421993. doi:10.1073/pnas.1421993112

Fischer, A. D., Moberg, E. A., **Alexander, H.**, Brownlee, E. F., Hunter-Cevera, K. R., Pitz, K. J., Rosengard, S. Z., Sosik, H. M. (2014). Sixty years of Sverdrup: A retrospective of progress in the study of phytoplankton blooms. *Oceanography*, 27(1), 222.

Last updated February 2015

Alexander, H., Jenkins, B.D., Rynearson, T.A., Saito, M.A., Mercier, M.L., Dyhrman, S.T. (2012). Identifying reference genes with stable expression from high throughput sequence data. *Frontiers in Aquatic Microbiology*. **3:** 385. doi: 10.3389/fmicb.2012.00385

Dyhrman, S.T., Jenkins, B.D., Rynearson, T.A., Saito, M.A., Mercier, M.L., **Alexander, H.**, Whitney, L.P., Drzewianowski, A., Bulygin, V.V., Bertrand, E.M., et al. (2012). The transcriptome and proteome of the diatom *Thalassiosira pseudonana* reveal a diverse phosphorus stress response. *PLoS ONE 7, e33768*.

PENDING PUBLICATIONS

Alexander, H., Molina, M.R., Haley, S.T., Dyhrman, S.T. (In review, July 2015). Functional group specific traits drive ecosystem state shift in the oligotrophic ocean. *Proceedings of the National Academy of Sciences*

Kujawinski, E., Longnecker, K., Dyhrman, S.T., **Alexander, H.**, Fiore, C.L., Johnson, W.M. (In review, July 2015) Phosphorus availability modulates intracellular nucleotides in marine eukaryotic phytoplankton. *Nature Communications.*

Whitney, L.P., Rynearson, T.A., Dyhrman, S.T., Saito, M.A., Mercier, M.L., **Alexander, H.**, Bertrand, E.M., Moran, D.M., McIlvin, Jenkins, B.D. (In revision) Transcriptomic and Proteomic responses to iron limitation in the marine diatom *Thalassiosira pseudonana. Journal of Phycology*.

Caron, D.A., **Alexander, H.**, Allen, A., Archibald, J.M., Armbrust, E.V., Bharti, A., Bell, C.J., Dyhrman, S.T., Guida, S., Heidelberg, K.B., Kaye, J.Z., Metzner, J., Smith, S.R., Worden, A.Z. (In revision) Gene Discovery Across the Eukaryotic Tree of Life Enables New Insights into Ocean Ecosystems. *Nature Reviews Microbiology*.

INVITED PRESENTATIONS

Alexander, H. Sixty Years of Sverdrup. Wellesley College, Wellesley, MA. September 2014.

Alexander, H., S. T. Dyhrman. Assessing patterns in expression from transcriptome data, Town Hall: Marine Microbial Transcriptome Project, ASLO, New Orleans, LA. February 2013.

PRESENTATIONS AND POSTERS

Alexander, H., Jenkins, B.D., Rynearson, T.A., Dyhrman, S.T. Metatranscriptome analyses indicate resource partitioning between diatoms in the field. The Molecular Life of Diatoms, Seattle, WA. July 2015.

Alexander, H., S. T. Haley, M. Rouco-Molina, S. T. Dyhrman. Eukaryotic metatranscriptome profiling identifies the unique response of phytoplankton functional groups to deep water upwelling at Station ALOHA, ASLO, Granada, Spain. February 2015.

Alexander, H., B. D. Jenkins, T. A. Rynearson, S. T. Dyhrman. Eukaryotic metatranscriptomics reveals niche differentiation between two diatoms in Narragansett Bay, Marine Microbes Gordon Research Conference, Waltham, MA. June 2014.

Alexander, H., S. T. Haley, M. Rouco-Molina, S. T. Dyhrman. Eukaryotic metatranscriptomics illuminates physiological response of phytoplankton to nutrient pulses at Station ALOHA, Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole, MA. July 2013.

Alexander, H., B. D. Jenkins, T. A. Rynearson, M. A. Saito, M. L. Mercier, S. T. Dyhrman. Identifying reference genes with stable expression from high throughput sequence data, ASLO, New Orleans, LA. February 2013.

Alexander Skoning H., A. Monier, D. McRose, H. Wilcox, A. Z. Worden. Prasinophytae phylogenetic characterization along a transect from Monterey Bay to oligotrphic waters, Rhulman Conference, Wellesley College, Wellesley, MA. April 2010.

Alexander Skoning H., A. Monier, D. McRose, H. Wilcox, A. Z. Worden. Prasionphytae phylogenetic characterization along a transect from Monterey Bay to oligotrphic waters and application to 454-TAG sequence analysis, ASLO, Portland, OR. February 2010.

Alexander Skoning H., Wilcox H., Welsh R., Worden A. Z. Little Creature, Big impact: Exploring the cell cycle of picoeukaryotes, Tanner Conference, Wellesley College, Wellesley, MA. October 2008.

GRANTS AWARDED

2012-2015 *Access to the Sea*, Woods Hole Oceanographic Institution, (**Alexander** and Dyhrman, Co-Principal Investigators), "Molecular metabolic fingerprinting to identify drivers of phytoplankton bloom dynamics in the Southern Ocean." **Total Award: $56,917**

2012-2015 *Ocean Ventures Fund*, Woods Hole Oceanographic Institution, (**Alexander**, Principal Investigator), "Molecular metabolic fingerprinting to identify drivers of phytoplankton bloom dynamics in the Southern Ocean." **Total Award: $11,000**

TEACHING EXPERIENCE

2015-present **Certified Instructor** for Software Carpentry

2014 **Teaching Assistant** for graduate level Biological Oceanography course at WHOI. Conducted recitation sections, wrote and graded tests, problem sets, and daily assignments, advised professors on student performance.

2014 **Guest Lecturer** for Biological Oceanography course at WHOI. Designed and presented lecture on application of molecular techniques to biological oceanography.

2007-2010 **Writing Tutor** in the Pforzheimer Learning and Teaching Center, Wellesley College, Wellesley, MA

2009-2010 **Math Tutor and Grader** for Number Theory, Mathematics Department, Wellesley College, Wellesley, MA

2006-2009 **Night Assistant** for Introductory Astronomy, Astronomy Department, Wellesley College, Wellesley, MA

RESEARCH CRUISES

Seasonal Trophic Roles of *Euphasia superba* (STRES; NBP14-10), R/V *Nathaniel B. Palmer*
30 November – 29 December 2014, West Antarctic Peninsula
Chief Scientist: Edward Durbin

Deep Dissolved Organic Matter (DeepDOM; KN210-04), R/V *Knorr*
25 March – 9 May 2013, Montevideo, Uruguay to Bridgetown Barbados
Chief Scientist: Elizabeth Kujawinski

Hawaii Ocean Experiment- Dynamics of Light and Nutrients (HOE-DYLAN 9), R/V *Kilo Moana*
21 August – 11 September 2012, Station ALOHA
Chief Scientist: Sam Wilson

Hawaii Ocean Experiment- Dynamics of Light and Nutrients (HOE-DYLAN 7), R/V *Kilo Moana*
4 - 14 August 2012, Station ALOHA
Chief Scientist: Sonya Dyhrman

OUTREACH

2014 **Submerge!** New York City Marine Science Festival. Designed and manned booth of hands-on activities focused on the carbon cycle for WHOI. Estimated more than 4000 people in attendance.

2011-2014 **Falmouth Public School Science Fair.** Judged science fair projects for middle and high school aged children.

2011-2014 **Artistic Oceanographer Program**. Used a program that combines science and art to help communicate concepts

2014 **Women in Ocean Engineering.** Volunteered weekends to work with middle school age girls, introducing them to engineering concepts in a marine environment.

2012 **STEM for Girls at the New England Aquarium.** Mentored and volunteered for a program designed to encourage girls from underrepresented minorities to pursue math and science.

SKILLS

Operating System: Mac OS X, Linux/UNIX, Windows
Computation:
Proficient: Python (language of choice), Matlab, R, shell script
Familiar: Perl, HTML
Lab Techniques:

Molecular:	Nucleic acid extraction, PCR, qPCR, primer design, sequencing
Other:	Aseptic cell culturing, operation of Influx cell-sorting flow cytometer
Languages:	English, French

SYNERGISTIC ACTIVITIES

Membership:	*Member*, Sigma Xi; *Member*, ASLO; *Member*, Broader Impacts Group
Service:	*Graduate student representative*, Holgar Jannasch Visiting Scholar Award Committee; *Reviewer*, Journal of Phycology
Non-academic:	*Member*, MIT Women's Water Polo Team, *Member*, Beantown Women's Rugby Team; *President*, Wellesley College Rugby Team; *Treasurer*, Wellesley College Rugby Team