Colleen Durkin

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Education

PhD Oceanography, University of Washington August 2012
Advisor: E. Virginia Armbrust
Dissertation Title: Environmentally induced changes to the diatom cell wall and the implications of these changes on biogeochemical cycles

M.S. Oceanography, University of Washington June 2008
Advisor: E.Virginia Armbrust
Presentation and Paper Title: Chitin in diatoms and its association with the cell wall.

B.S Biology and Oceanography, University of Washington June 2004
Magna cum laudae
Thesis title: Predator avoidance as a possible driver of diel vertical migration.

Research Experience

Present **Devonshire Postdoctoral Scholar** Woods Hole Oceanographic Institution

2005-2012 **Research Associate** University of Washington, Oceanography
Conducted dissertation research on how the diatom cell wall changes in response to nutrient conditions and how these changes influence biogeochemistry.

2004 **Research Intern** EAWAG, Duebendorf, Switzerland
Collected and identified *Daphnia* zooplankton species from regional lakes

2003-2004 **Undergraduate Researcher** NOAA Northwest Fisheries Science Center
Collected juvenile salmon from the waters of Puget Sound and screened them for bacterial kidney disease using epifluorescent microscopy.

2004 **Senior Thesis** University of Washington, Oceanography
Designed, conducted, and presented a study addressing the drivers of diel vertical migration by dinoflagellates in Puget Sound, Washington.

2003 **Research Apprentice** Friday Harbor, University of Washington
Designed and conducted a study of the population genetics of the intertidal snail *Littorina* during a 3 month apprenticeship course entitled Marine Molecular Ecology.

2002-2003 **Undergraduate Researcher** University of Washington, Botany
Cultured diverse dinoflagellate species and tested the distribution of a gene among these species using PCR

Research Cruises

Nov 2010	R/V Thomas G. Thompson	2 days	PI: E. Virginia Armbrust
	Puget Sound educational and research cruise		
	Program: University of Washington Oceans and Human Health		
Sept 2010	R/V Wecoma	1 week	PI: Dr. Fred Prahl
	Coastal to open ocean transects along the WA and OR and in the Columbia River		
	Program: Coastal Margin Observation and Prediction		
March 2010	M/V Alta and the Barkley Star	1 week	PI: Dr. Richard Keil
	Survey of the basins and inlets of Barkley Sound on Vancouver Island		
	Program: University of Washington Ocean 444 senior thesis projects		
Oct 2009	R/V Thomas G. Thompson	2 days	PI: E. Virginia Armbrust
	Puget Sound educational and research cruise		
	Program: University of Washington Oceans and Human Health		
Sept 2009	R/V New Horizon	2 weeks	PI: Dr. Tawnya Peterson
	Coastal to open ocean transects along WA and OR and in the Columbia River		
	Program: Coastal Margin Observation and Prediction		
May 2009	R/V New Horizon	2 weeks	PI: Dr. Byron Crump
	Coastal to open ocean transects along WA and OR and in the Columbia River		
	Program: Coastal Margin Observation and Prediction		
May 2008	CCGS John P. Tully	3 weeks	PI: Marie Robert
	Transect from Sydney, B.C. to Station P in the NE subarctic Pacific Ocean		
	Program: Institute of Ocean Sciences Canada, Line P		

Teaching Experience

Advisor to undergraduate researchers 2006-2012

- Teach and train undergraduate laboratory assistants
- Encourage them to develop skills necessary to do science and participate in collaborative research
- Total undergraduates advised: 4

Invited lecturer October 2011

Ocean 530: Biological Oceanography, lecture title: "Nutrients and Phytoplankton"

Teaching Assistant Jan-June 2010

Ocean 443: Design of Oceanographic Field Experiments

Teaching Assistant

Ocean 444: Advanced Field Oceanography

Communicating Ocean Science course
Ocean 592: Communicating Ocean Science March-June 2008
Taught oceanography lessons to first graders

Teaching Assistant Sept-Dec 2006
Ocean 430: Biological Oceanography

Public Outreach 2005-present

- Laboratory tours, presentations, and demonstrations for visiting primary and middle school students
- Invited lecturer/teacher at local elementary and high schools

Additional Relevant Experiences

SOLAS Summer School 2011, Cargese, Corsica

- Accepted to a 2 week interdisciplinary course about biogeochemistry and climate offered by the Surface Ocean Lower Atmosphere Study (SOLAS) research initiative
- Awarded "Best Student Oral Presentation"

Science Film Workshop 2011, Friday Harbor, Washington

- Awarded a fellowship to attend a one week course on the creative and technical aspects required to produce films that effectively communicate science to the public.
- Produced a film that was selected to be shown at the 2011 Salish Sea Ecosystem Film Festival in Vancouver, British Columbia.

Science Communication Fellowship 2011, Pacific Science Center, Seattle, Washington

- Accepted to a 4 month course hosted by Seattle's Pacific Science Center.
- Trained in techniques for communicating science in an interactive way to non-scientists.
- Designed a hands-on exhibit about my research and presented it to visitors at the Pacific Science Center.

Research Interests

- The influence of phytoplankton and species diversity on biogeochemical cycles and climate
- Phytoplankton ecology and evolution
- Molecular ecology and evolution
- Combining methods of flow cytometry, microscopy, genetics, physiology, and chemistry to characterize the role of phytoplankton in ocean ecology and biogeochemistry.
- Biomineralization
- The ecological and biogeochemical role of chitin in the oceans
- Microscopy and epifluorescent methods for visualizing biological characteristics
- Sinking biomass and vertical migration in the ocean

Publications

Durkin, C.A, S.J. Bender, K.Y.K. Chan, K. Gaessner, D. Grunbaum, E.V. Armbrust. 2012. Silicic acid supplied to coastal diatom communities influences cellular silicification and the potential export of carbon. Submitted.

Durkin, C.A., A. Marchetti, S.J. Bender, T. Truong, R. Morales, and E.V. Armbrust. 2012. Diverse patterns of silica precipitation and frustule-related gene transcription among iron-limited diatoms. Limnology and Oceanography 57: 1619-1633.

Marchetti, A.M., D.M. Schruth, **C.A. Durkin**, M.S. Parker, R. Kodner, C.T. Berthiaume, R. Morales, A.E. Allen, and E.V. Armbrust. 2012. Comparative metatranscriptomics identifies molecular bases for the physiological responses of phytoplankton to varying iron availability. PNAS. 109: E317-E325

Rhodes, L.D., C.A. Rice, C.M. Greene, D.J. Teel, S.L. Nance, P. Moran, **C.A. Durkin**, and S.B. Gezhegne. 2011. Nearshore ecosystem predictors of a bacterial infection in juvenile Chinook salmon. Marine Ecology Progress Series 432: 161-172

Ribalet, F., A. Marchetti, K.A. Hubbard, K. Brown**, C.A. Durkin**, R. Morales, Marie Robert, Jarred E. Swalwell, Philippe D. Tortell, and E. Virginia Armbrust. 2010. Unveiling a phytoplankton hotspot at a narrow boundary between coastal and offshore waters. PNAS. 107: 16571-16576.

Durkin, C.A, T. Mock, and E.V. Armbrust. 2009. Chitin in diatoms and its association with the cell wall. Eukaryotic Cell. 8: 1038-1050.

Mock, T., M. P. Samanta, V. Iverson, C. Berthiaume, M. Robison, K. Holtermann, **C. Durkin**, S.S. BonDurant, K. Richmond, M. Rodesch, T. Kallas, E. L. Huttlin, F. Cerrina, M. R. Sussmann, and E. V. Armbrust. 2008. Whole-genome expression profiling of the marine diatom Thalassiosira pseudonana identifies genes involved in silicon bioprocesses. PNAS 105:1579-1584.

Bowler, C., A. E. Allen, J. H. Badger, J. Grimwood, K. Jabbari, A. Kuo, U. Maheswari, C. Martens, F. Maumus, R. P. Otillar, E. Rayko, A. Salamov, K. Vandepoele, B. Beszteri, A. Gruber, M. Heijde, M. Katinka, T. Mock, K. Valentin, F. Verret, J. A. Berges, C. Brownlee, J.-P. Cadoret, A. Chiovitti, C. J. Choi, S. Coesel, A. De Martino, J. C. Detter**, C. Durkin**, A. Falciatore, J. Fournet, M. Haruta, M. J. J. Huysman, B. D. Jenkins, K. Jiroutova, R. E. Jorgensen, Y. Joubert, A. Kaplan, N. Kroger, P. G. Kroth, J. La Roche, E. Lindquist, M. Lommer, V. Martin-Jezequel, P. J. Lopez, S. Lucas, M. Mangogna, K. McGinnis, L. K. Medlin, A. Montsant, M.-P. O.-L. Secq, C. Napoli, M. Obornik, M. S. Parker, J.-L. Petit, B. M. Porcel, N. Poulsen, M. Robison, L. Rychlewski, T. A. Rynearson, J. Schmutz, H. Shapiro, M. Siaut, M. Stanley, M. R. Sussman, A. R. Taylor, A. Vardi, P. von Dassow, W. Vyverman, A. Willis, L. S. Wyrwicz, D. S. Rokhsar, J. Weissenbach, E. V. Armbrust, B. R. Green, Y. Van de Peer, and I. V. Grigoriev. 2008. The Phaeodactylum genome reveals the evolutionary history of diatom genomes. Nature 456: 239-244.

Rhodes, L.D**., C.A. Durkin**, S.L. Nance, C.A. Rice. 2006. Prevalence and analysis of *Renibacterium salmoninarum* infection among juvenile Chinook salmon *Oncorhynchus tshawytscha* in North Puget Sound. Diseases of Aquatic Organisms 71: 179–190.

Meeting Presentations

2012 Uptake limitation of silicic acid in coastal diatoms controls cellular silicification
AGU/ASLO Ocean Science Meeting, Salt Lake City, Utah
Durkin, C.A., S.J. Bender, K. Gaessner, E.V. Armbrust

Identifying shared responses to nitrate starvation among three diatoms using whole cell transcriptomics
AGU/ASLO Ocean Science Meeting, Salt Lake City, Utah
Bender, S.J., **C.A. Durkin**, D. Schruth, R.L. Morales, E.V. Armbrust

2012 Environmentally induced changes to the diatom cell wall and the implications of these changes on biogeochemical cycles
Dissertations in Chemical Oceanography (DisCO), Lihue, Hawaii
Durkin, C.A.

2011 Excessive silicic acid supply leads to increased silicification in coastal diatoms
Eastern Pacific Ocean Conference, Fallen Leaf Lake, California
Durkin, **C.A.,** S.J. Bender, K. Gaessner, E.V. Armbrust

2011 Diversity in iron-limited diatoms has varied effects on silicon cycling
PSA Annual Meeting, Seattle, Washington
Durkin, C.A., A. Marchetti, S.J. Bender, T. Truong, R. Morales, E.V. Armbrust

2010 Common cell wall related genes in diatoms and their potential use as biological indicators in changing ocean environments
AGU/ASLO Ocean Science Meeting, Portland, Oregon
Durkin, C.A., S.J. Bender, T. Truong, A. Marchetti, E.V. Armbrust

Taxonomic and metabolic shifts in an iron-stimulated eukaryotic marine plankton community from the NE Pacific Ocean revealed through comparative metatranscriptomics
AGU/ASLO Ocean Science Meeting, Portland, Oregon
Marchetti, A,D Schruth, **C Durkin**, C Berthiaume, R Morales, MS Parker, R Kodner, EV Armbrust

2009 Contribution of different diatom genera to total community silicification in a coastal to open ocean transect and in response to iron fertilization.
ASLO Aquatic Science Meeting, Nice, France
Durkin, CA, A Marchetti, R Morales, EV Armbrust

Patchiness and diel variability of phytoplankton communities in the subarctic pacific ocean revealed by continuous-monitoring flow cytometry.

ASLO Aquatic Science Meeting, Nice, France
Ribalet, F., R. Morales, J. Swalwell, A. Marchetti, **C.A. Durkin**, D. Schruth, G. van den Engh, E.V. Armbrust.

2009 Biogeochemical implications of diatom growth, silicification, and species composition in iron limited environments.
Graduate Climate Conference, Pack Forest, Washington
Durkin C.A., A. Marchetti, R. Morales, E.V. Armbrust

2008 Chitin as a component of the diatom cell wall.
AGU/ASLO Ocean Science Meeting, Orlando, Florida
Durkin, CA, T. Mock, R. Marohl, E.V. Armbrust

Whole genome expression profiling of the marine diatom Thalassiosira pseudonana: New insites into the molecular underpinnings of global-scale processes.
AGU/ASLO Ocean Science Meeting, Orlando, Florida
Mock, T, MP Samanta, V Iverson, C Berthiaume, M Robison, K Holtermann**, C Durkin**, S Splinter BonDurant, K Richmond, M Rodesch

2007 Unexpected presence, diversity, and expression of chitin synthase genes in diatoms.
ASLO Aquatic Sciences Meeting, Santa Fe, New Mexico
Durkin, C. A., T. Mock, E.V. Armbrust