**SALLIE WATSON CHISHOLM**

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Lab Website: <http://web.mit.edu/chisholm/www/>;

# Education:

1965-1969 Skidmore College B.A. (Biology/Chemistry)  
1969-1970 Cornell University

1970-1974 S.U.N.Y. Albany Ph.D. (Biology)

# Employment and Positions:

2015 Appointed Institute Professor, MIT

1993-present Joint Appointment, Department of Biology  
Massachusetts Institute of Technology

1976‑*present* Professor, Department of Civil and Environmental Engineering  
Massachusetts Institute of Technology

2002- 2008 Co-Director, Director, MIT Earth System Initiative

1988‑1995 MIT Director, MIT/Woods Hole Joint Program in Oceanography and Oceanographic Engineering

1978‑*present* Visiting Scientist, Biology Department  
Woods Hole Oceanographic Institution

1974-76 Post‑Doctoral Researcher, Biological Oceanography  
Scripps Institution of Oceanography

# Professional Societies:

American Society of Microbiology

American Geophysical Union

American Society of Limnology and Oceanography (Member‑at‑Large 1983‑1986)

Phycological Society of America (Associate Editor, J. Phycol. 1983‑1987)

The Oceanography Society (Charter Council Member 1989‑1991)

Ecological Society of America

American Association for the Advancement of Science

Sigma XI

**Honors and Awards:**

2019 Crafoord Prize in Biosciences, Royal Swedish Academy of Sciences

2018 Honorary Degree (Doctor of Science) Harvard University

2016 Jim Tiedje Award, International Society of Microbial Ecology

2015 Appointed Institute Professor, MIT

2015 Honorary Degree (Doctor of Laws) Skidmore College

2014 Reial Acadèmia de Ciències i Arts de Barcelona, Correspondent Member

2014 Killian Faculty Achievement Award, MIT

2014 Skidmore College Distinguished Alumni Award

2013 Ramon Margalef Prize in Ecology, Government of Catalonia, Spain

2013 Resident Scholar – Bellagio Conference and Study Center, Italy

2013 Elected Fellow, Massachusetts Academy of Science

2013 2011 National Medal of Science, the White House

2013 Elected Fellow, American Association for the Advancement of Science

2012 Elected Fellow, Ecological Society of America

2012 Ruth Patrick Award, American Society of Limnology and Oceanography

2011 Darbaker Prize: Botanical Society of America

2010 Agassiz Medal: National Academy of Sciences

2010 Petersen Award: IFM-GEOMAR Kiel, Germany

2009 Jardetzky Medal/Lecture, Lamont-Doherty Earth Observatory, Columbia University

2005 Huntsman Award for Excellence in Marine Science

2004 - 2012 Gordon and Betty Moore Foundation Investigator in Marine Science

2003 Elected to the National Academy of Sciences

2002- Lee and Geraldine Martin Professor of Environmental Studies (Endowed Chair)

1995- 2002 McAfee Professor of Engineering (Endowed Chair)

1998 Resident Scholar – Bellagio Conference and Study Center, Italy

1997 - 1998 Guggenheim Fellow

1996 Elected Fellow, American Geophysical Union

1993 Elected Fellow, American Academy of Microbiology

1993 Member, International Ecology Institute  
1992 Elected to the American Academy of Arts and Sciences

1991 Rosenstiel Award in Ocean Sciences

1980‑1982 Doherty Professor of Ocean Utilization (Endowed Junior Faculty Chair)

1977‑1978 Edgerton Assistant Professor (Endowed Junior Faculty Chair)

# Selected Outside Service:

Science Advisory Board, Institute for Systems Biology, Seattle WA. (2014-

Board Member, World Wildlife Fund (2004- 2008)

Board Member, Institute for Ecosystem Studies, Millbrook, NY (2003- 2012)

Board Member, Union of Concerned Scientists (1996- 2002)

# Selected MIT Service:

Associate Chair of the MIT Faculty (1987‑1989)

MIT/Woods Hole Joint Program Strategic Planning Committee (2010-2011)

Enviromnental Task Force (2007-2011)

Faculty Policy Committee (1987‑1990, 2001-2004)

Gender Equity Committee, School of Engineering (1999-2010)

President’s Task Force on Student Life and Learning (1996-1998)

Committee on Senior Women Faculty in the School of Science (1994-2000)

Council on the Environment (1992‑2012)

MIT Press Editorial Board (1989‑1996)

The MIT/WHOI Joint Committee on Biological Oceanography (periodically, 1979‑2010)

# Oceanographic Cruises:

R/V ALPHA HELIX, Gulf of California, 1974.

R/V ELLEN B. SCRIPPS, Southern California Bight Survey, III, 1975.

R/V ELLEN B. SCRIPPS, Southern California Bight Survey IV, 1975.

R/V DAVID STAR JORDAN (National Marine Fisheries), 1976.

R/V COLUMBUS ISELIN, Sargasso Sea, 1977.

R/V G.W. PIERCE, Sargasso Sea, 1979.

R/V KNORR Caribbean, 1985.

R/V OCEANUS Caribbean, 1986.

R/V ATLANTIS II, Southern California Bight, 1986‑87.

R/V OCEANUS Caribbean, 1989.

R/V ISELIN Saragasso Sea, 1993.

R/V ISELIN Equatorial Pacific, 1993.

R/V OCEANUS Sargasso Sea, 1996,1997 (Chief Scientist)

# Research Interests:

General Areas: Biological oceanography, Global ecology, Ecological genomics.

Current Interests: Ecology, evolution, and comparative genomics of marine cyanobacteria and the viruses that infect them; Development of *Prochlorococcus*  as a model system for cross-scale systems biology

# Science Books for Children

2017 Bang, M. and P. Chisholm. Rivers of Sunlight: How the Sun moves water around the Earth. Blue Sky Press, Scholastic. 42pp. (a children’s book about the global water cycle).

2014 Bang, M. and P. Chisholm. Buried Sunlight: How fossil fuels have changed the Earth. Blue Sky Press, Scholastic. 42pp. (a children’s book about the origins of fossil fuel and global change). *Finalist,* *the AAAS/Subaru SB&F Prize for Excellence in Science Books*

2012 Bang, M. and P. Chisholm. Ocean Sunlight: How tiny plants feed the seas. Blue Sky Press, Scholastic 42 pp. (a children’s book about ocean phytoplankton and food webs). *Recipient of the AAAS/Subaru SB&F Prize for Excellence in Science Books, and the Massachusetts Book Award*

2009 Bang, M and P. Chisholm. Living Sunlight: How plants bring the Earth to life. Blue Sky Press, Scholastic. 43pp. (a children’s book about photosynthesis). *Recipient of the AAAS/Subaru SB&F Prize for Excellence in Science Books*

# Commentaries and White Papers

2009 Strong. A. S. Chisholm, C. Miller, and J. Cullen. Ocean Fertilization: Time to move on. *Nature*: 361:347-348.

2009 Strong, A.L., J. J. Cullen, and S.W. Chisholm. Ocean fertilization: Science, policy and commerce. *Oceanography Magazine* 22 (3):236- 261.

2002 Chisholm, S.W., P.G. Falkowski, and J.J. Cullen. Response to Johnson and Karl. *Science* 296:467-468

2001 Chisholm, S.W., P.G. Falkowski, and J.J. Cullen. Dis-Crediting Ocean Fertilization. *Science* 294:309-310.

2000 Chisholm, S.W. “Stirring Times in the Southern Ocean” *Nature* (News and Views):407:685-687.

# Publications:

2019 Becker, JW, Hogle, SL, Rosendo, K, and Chisholm, SW. [Co-culture and biogeography of *Prochlorococcus* and SAR11](https://chisholmlab.mit.edu/publications/co-culture-and-biogeography-prochlorococcus-and-sar11). *ISME J*. 13, 1506-1519.

2019 Berube, PM, Rasmussen, A, Braakman, R, Stepanauskas, R, and Chisholm, SW. [Emergence of trait variability through the lens of nitrogen assimilation in](https://chisholmlab.mit.edu/publications/emergence-trait-variability-through-lens-nitrogen-assimilation)*Prochlorococcus*. *Elife*, 8.

2019 Wolf, MJ, A Coe, LA Dove, MA Zawadowicz, KDooley, SJ Biller, Y. Zhang, SW Chisholm and DJ Cziczo. Investigating the Heterogeneous Ice Nucleation of Sea Spray Aerosols Using *Prochlorococcus* as a Model Source of Marine Organic Matter. . *Env. Sci. & Technol.* 53(3), 1139-1149.

2018 Biller, SJ, Berube, PM, Dooley, K, Williams, M, Satinsky, BM, Hackl, T, Chisholm, SW. Marine microbial metagenomes sampled across space and time. *Scientific Data* 5, 180176.

2018 Berube, PM, Biller, SJ, Dooley, K, Hackl, T, Hogle, SL, Satinsky, BM, Chisholm, SW. Single cell genomes of *Prochlorococcus*, *Synechococcus*, and sympatric microbes from diverse marine environments. *Scientific Data* 5, 180154.

2018 Biller, SJ, A Coe, SE Roggensack, and SW Chisholm. Heterotroph Interactions alter *Prochlorococcus* Transcriptome Dynamics during Extended Periods of Darkness. mSystems May 2018, 3 (3): e00040-18

2017 Read, RW, PM Berube, SJ Biller, I Neveux, A Cubillos-Ruiz, SW Chisholm, and JJ Grzymski. Nitrogen cost minimization is promoted by structural changes in the transcriptome of N-deprived *Prochlorococcus* cells. *. The ISME Journal* 11(10):2267-2278

2017 Chisholm, S.W. *Prochlorococcus. Current Biology* 27, R431–R510, June 5, 2017

2017 Cubillos-Ruiz, A. J.W. Berta-Thompson, J.W. Becker, and S.W. Chisholm. Evolutionary radiation of lanthipeptides in marine cyanobacteria. *Proc Natl Acad Sci U S A* 114 (27), E5424 -E5433. doi/10.1073/pnas.1700990114

2017 Kashtan, N., S. E. Roggensack, J.W. Thompson, M. Grinberg, R. Stepanauskas, and S.W. Chisholm. Fundamental differences in diversity and genomic population structure between Atlantic and Pacific *Prochlorococcus. The ISME Journal* 11:1997-2011. doi:10.1038/ismej.2017.64

2017 Braakman, R. M.J. Follows, and S.W. Chisholm. Braakman R, Follows MJ, Chisholm SW. 2017. Metabolic evolution and the self-organization of ecosystems. *Proc Natl Acad Sci U S A*. 114 (15), E3091-E3100. doi: 10.1073/pnas.1619573114

2017 Murata, K. Q. Zhang, C Fu, M.L. Coleman, M.S. Osburne, M.F. Schmid, M. B. Sullivan, S. W. Chisholm and W. Chiu. Visualizing cyanophage adsorption to marine *Prochlorococcus. Scientific Reports* 7: Article 44176 | DOI: 10.1038/srep44176

2017 Biller, S.J. L. D. McDaniel, M. Breitbart, E. Rogers, J.H. Paul, and S. W. Chisholm. Membrane vesicles in seawater: heterogeneous DNA content and implications for viral abundance estimates. *ISME Journal*, 11:394-404. doi:10.1038/ismej.2016.134.

2017 Cermak, N. J.W. Becker, S. Knudsen, S.W. Chisholm, S. R. Manalis, and M. F. Polz. Direct single-cell biomass estimates formarine bacteria via Archimedes’ principle. *The ISME Journal* 11(3):825-828. Doi:10.1038/ismej.2016.161.

2016 Thompson, L, Q. Zeng, and S.W. Chisholm. Gene expression patterns during light and dark infection of *Prochlorococcus* by cyanophage *PLoS ONE* 11(10): e0165375. doi:10.1371/journal. pone.0165375.

2016 Coe, A., J. Ghizzoni K. LeGault, S. Biller, S.E Roggensack, and S.W. Chisholm. Survival of *Prochlorococcus* in extended darkness. *Limnol. Oceanogr.* 61(4): 1375-1388, doi:10.1002/lno.10302

2016 Biller, S. A. Coe, and S.W. Chisholm. Torn apart and reunited: Impact of a heterotroph on the transcriptome of *Prochlorococcus. The ISME Journal* , (3 June 2016) | doi:10.1038/ismej.2016.82

2016 Yelton, A, S. Acinas, S. Sunagawa, P. Bork, C. Pedrós-Alió, and S.W. Chisholm Global genetic capacity for mixotrophy in marine picocyanobacteria. *The ISME Journal* (advance online publication, 3 May 2016; doi:10.1038/ismej.2016.64).

2016 Berube, PM, A Coe, SE Roggensack, and SW Chisholm. Temporal dynamics of *Prochlorococcus* cells with the potential for nitrate assimilation in the subtropical Atlantic and Pacific oceans. *Limnol. Oceanogr.* 61:482-495. doi 10.1002/lno.10226

2015 Lea-Smith, DJ, SJ Biller, MP Davey, CAR Cotton, BM Perez Sepulveda, AV Turchyn, DJ Scanlan, AG Smith, SW Chisholm, CJ Howe. Contribution of cyanobacterial alkane production to the ocean hydrocarbon cycle. *PNAS* 112 (44): 13591–13596, doi: 10.1073/pnas.1507274112

2015 Biller, SJ, A Coe, A-B Martin-Cuadrado, and SW Chisholm Draft genome sequence of *Alteromonas macleodii* Strain MIT1002, Isolated from and Enrichment Culture of the Marine Cyanobacterium *Prochlorococcus.* Genome Announc 3(4)e00967-15. doi10.1128/genomeA.00967-15.

2015 Bagby, S. and SW Chisholm. Response of *Prochlorococcus* to varying CO2:O2 ratios. *The ISME Journal*. 7 April 2015 doi: 10.1038/ismej.2015.36

2015 Biller, SJ, P Berube, D Lindell, and SW Chisholm. *Prochlorococcus.* The structure and function of collective diversity. *Nature Rev. Microbiol.* 13: 13-27. doi:10.1038/nrmicro3378

2014 Chisholm, SW Margalef’s mandala, *Prochlorococcus,* and geoengineering. *Contributions to Science* 10: 7-17. doi:10.2436/20.7010.01.183

2014 Berube, P. SJ Biller, AG Kent, JW Berta-Thompson, SE Roggensack, KH Roache-Johnson, M Ackerman, LR Moore, JD Meisel, D. Sher, LR Thompson, L Campbell, AC Martiny and SW Chisholm. Physiology and evolution of nitrate acquisition in *Prochlorococcus. The ISME Journal*. 1-13. doi:10.1038/ismej.2014.211.

2014 Biller, SJ, PM Berube, JW Berta-Thompson, L Kelly, SE Roggensack, L Awad, KH Roache-Johnson, H Ding, SJ Giovannoni, G Rocap, LR Moore, and S.W Chisholm. Genomes of diverse isolates of the marine cyanobacterium *Prochlorococcus. Scientific Data* 1: 140034. doi:10.1038/sdata.2014.34

2014 Kashtan, N. SE Roggensack, S. Rodrigue, JW Thompson, SJ Biller, A Coe, H Ding, P Marttinen, R Stocker, M. Follows, R. Stephanauskas, and SW Chisholm. Single cell genomics reveals hundreds of coexisting subpopulations in wild *Prochlorococcus. Science* Vol. 344 no. 6182 pp. 416-420

2014 Biller, SJ, F Schubotz,SE Roggensack, AW Thompson, RE Summons, and SW Chisholm. Bacterial vesicles in marine ecosystems. *Science* Vol. 343 no. 6167 pp. 183-186

2014 Becker, JW PM Berube, CL Follett, JB Waterbury, SW Chisholm, EF DeLong, DJ Repeta. Closely related phytoplankton species produce similar suites of dissolved organic matter. *Frontiers in Microbiological Chemistry*. 5:111. doi:10.3389/fmicb.2014.00111.

2013 Kelly, L. H. Ding, K.H. Huang, M.S. Osburne, S.W. Chisholm. Genetic diversity in cultured and wild marine cyanomyoviruses reveals phosphorus stress as a strong selective agent. *The ISME Journal* Sept 7(9):1827-41.

2013 Labrie S.J., K. Frois-Moniz, M.S. Osburne, L. Kelly, S.E. Roggensack, M.B. Sullivan, G. Gearin, Q. Zeng, M. Fitzgerald, M.R. Henn and S.W. Chisholm. Genomes of marine cyanopodoviruses reveal multiple origins of diversity. *Env. Microbiol*. DOI: 10.1111/1462-2920.12053

2013 Malmstrom, R., S. Rodrigue, K.H. Huang, L. Kelly, S. Kern, A. Thompson, S. Roggensack, M. Henn, and S. W. Chisholm. Ecology of Uncultured *Prochlorococcus* Clades Revealed Through Single-Cell Genomics and Biogeographic Analysis. *ISME Journal* 7, 184–198; doi:10.1038/ismej.2012.89.

2012 Waldbauer, J. S. Rodrigue, M.L. Coleman, and S. W. Chisholm. Transcriptome and proteome dynamics of a light-dark synchronized bacterial cell cycle. *PLoSONE* Vol. 7 Issue 8. e43432   DOI: 10.1371/journal.pone.0043432

2012 Chisholm, S.W. Unveiling *Prochlorococcus*: The Life and times of the ocean’s smallest photosynthetic cell. 2012. In: *Microbes and Evolution: The World That Darwin Never Saw*. In: R. Kolter and S. Maloy [eds]. ASM Press. p. 165. [Also published in 2011 in Microbe 6(6): 280-283 (cover story)].

2012 Martinez, C. M.S. Osburne, A. K. Sharma, E.F. DeLong and S.W. Chisholm. Phosphite utilization by the marine picocyanobacterium *Prochlorococcus* MIT9301. *Env. Microbiology* 14(6): 1363-1377doi:10.1111/j.1462-2920.2011.02612.x

2012 Zeng, Q. and S.W. Chisholm. Marine viruses exploit their host's two-component regulatory system in response to resource limitation. *Current Biology* 22:124-128 doi:10.1016/j.cub.2011.11.055

2011 Kelly, L. K.H. Huang, H. Ding, and S. W. Chisholm. ProPortal: A resource for integrated systems biology of *Prochlorococcus* and its phage. *Nucleic Acids Res*. 201140(D1):D632-D640 doi:10.1093/nar/gkr1022

2011 Osburne, M. S. B.M. Holmbeck, A. Coe, and S. W. Chisholm. The spontaneous mutation frequency in the marine cyanobacterium is commensurate with that of other bacteria. *Environ. Micro. Reports.* **3**(6), 744–749. doi: 10.1111/j.1758-2229.2011.00293.x.

2011 Thompson, L. W. Q. Zeng, L. Kelly, K.H. Huang, S. U. Singer, J. Stubbe, and S. W. Chisholm. Phage auxiliary metabolic genes and the redirection of cyanobacterial host carbon metabolism. *P.N.A.S*. | September 27, 2011 | vol. 108 | no. 39 | E757–E764 doi: 10.1073/pnas.1102164108

2011 Thompson, A.W. K. Huang, M. A. Saito, S.W. Chisholm. Transcriptome response of high- and low-light adapted *Prochlorococcus* strains to changing iron availability. *ISME Journal* 5(10):1580-1594 DOI: 10.1038/ISMEJ.2011.49

2011 Sher, D. J. W. Thompson, N. Kashtan, L. Croal, and S. W. Chisholm. Response of *Prochlorococcus* ecotypes to co-culture with diverse marine bacteria. *ISME Journal* Feb 2011 5(7):1125-1132. doi:10.1038/ISMEJ.2011.1

2010 Sullivan, M.B., K.H. Huang, J.C. Ignacio-Espinoza, A. Berlin, L. Kelly, P.R. Weigele, A.S. DeFrancesco, S.E. Kern, L.R. Thompson, S. Young, C. Yandava, R. Fu1, B. Krastins, M. Chase, D. Sarracino, M.S. Osburne, M.R. Henn, S.W. Chisholm. Genomic analysis of oceanic cyanobacterial myoviruses compared to T4-like myoviruses from diverse hosts and environments. *Envir. Microbiol*. 12(11):3035-3056 doi:10.1111/j.1462-2920.2010.02280.x

2010 Coleman, M. L. and S. W. Chisholm. Ecosystem-specific selection pressures revealed by comparative population genomics. *PNAS* 107 (43): 18634–18639.

2010 Malmstrom, R. A. Coe, G.C. Kettler, A.C. Martiny, J. Frias-Lopez, E. Zinser, and S. W. Chisholm. Temporal dynamics of *Prochlorococcus* ecotypes in the Atlantic and Pacific oceans. *ISME* *Journal* 4:1252–1264

2010 McCarren, J., J.W. Becker, D.J. Repeta, Y. Shia, C.R. Young, R.R. Malmstrom, S.W. Chisholm, and E. F. DeLong. Microbial community transcriptomes reveal microbes and metabolic pathways associated with dissolved organic matter turnover in the sea. *PNAS* 107: 16420–16427*.*

2010 Rodrigue, S. A. C. Materna, S. C. Timberlake, M. C. Blacburn, R.R. Malmstrom, E. J. Alm, and S. W. Chisholm. Unlocking Short Read Sequencing for Metagenomics. *PLoSONE* 5(7) e11840.

2010 Osburne, M.S. ,B. M. Holmbeck, J. Frias-Lopez, R.Steen, K. Huang, L. Kelly, A. Coe, K. Waraska, A. Gagne, S. W. Chisholm. **UV hyper-resistance in** Prochlorococcus **MED4 results from a single base pair deletion just upstream of an operon encoding nudix hydrolase and photolyase**. Environmental Microbiol. 12:1978-1988

2010 Li, B. D. Sher, L. Kelly, K. Huang, I. Joewono, D. Rusch, S.W. Chisholm and W. A. van der Donk. Catalytic promiscuity in the biosynthesis of cyclic peptide secondary metabolites in planktonic marine cyanobacteria *PNAS*. 107: 10430–10435

2010 Steglich, C. M. Futschik, D. Lindell, T. Rector, R. Steen, and S. W. Chisholm. Short RNA half-lives in the slow-growing marine cyanobacterium *Prochlorococcus* *Genome Biology* 11:R54.

2010 Henn, M. R. Matthew B. Sullivan, Nicole Stange-Thomann, Marcia S. Osburne, Aaron M. Berlin, Libusha Kelly, Chandri Yandava, Chinnappa Kodira, Qiandong Zeng, Michael Weiand, T. Sparrow, Sakina Saif, Georgia Giannoukos, Sarah K. Young, Chad Nusbaum, Bruce W. Birren, Sallie W. Chisholm. **Analysis of high-throughput sequencing and annotation strategies for phage genomes.** PLoS ONE 5(2) e908

2010 Bragg. J. S. Dutkiewicz, O. Jahn, M. J. Follows, and S. W. Chisholm. Modeling selective pressures on phytoplankton in the global ocean. PLoS ONE | Volume 5 | Issue 3 | e9569i

2010 Liu, X. Q. Zhang, K. Murata, M.L. Baker, M.B. Sullivan, C. Fu, M.F. Schmid, M. S. Osburne, S. W. Chisholm & W. Chiu. **Structural changes in a marine podovirus associated with release of its genome into** Prochlorococcus. Nature Structure and Mol ***Biol* 17:830-U76.**

2009 Sullivan, M.B. B. Krastins, J.L Hughes, L. Kelly, M. Chase, D. Sarracino, and S. W. Chisholm. The genome and structural proteome of an ocean cyanobacterial siphovirus: A new window into the cyanobacterial ‘mobilome’ *Environ. Microbiol.* ***11****(11), 2935–2951*

2009 Rodrigue, S. R. R. Malmstrom, A.M. Berlin, B.W. Birren, M.R. Henn, and S.W. Chisholm. Whole genome amplification and *de novo* assembly of single bacterial cells. *PLoS ONE* 4(9): e6864. doi:10.1371/journal.pone.0006864

2009 Klein, M.G., P. Zward, S.C. Bagby, F. Cai, S.W. Chisholm, S. Heinhorst, G.C. Cannon, and C. A Kerfeld. Identification and structural analysis of a novel carboxysome shell protein with implications for metabolite transport.. *J. Mol. Biol.* 392:319-333.

2009 Zinser, ER, D. Lindell, ZI Johnson, ME Futschik, C. Steglich, ML Coleman, MA Wright, T Rector, R Steen, N McNulty, LR Thompson, and SW Chisholm. Choreography of the transcriptome, photophysiology, and cell cycle of a minimal photoautotroph, *Prochlorococcus* *PLoS ONE*  April 2009 | Volume 4 | Issue 4 | e5135

2009 Martiny, A.C., A.P.K. Tai, D. Veneziano, F. Primeau, and S. W. Chisholm Taxonomic resolution, ecotypes, and the biogeography of *Prochlorococcus. Env Microbiol.* 11:823-832.

2008 Frias-Lopez, J. Thompson, A. J. Waldbauer and S.W. Chisholm. Use of stable isotope labeled cells to identify active grazers of picocyanobacteria in ocean surface waters*Env. Microbiol*. 11: 512-525.

2008 Bragg, J. G. and S.W. Chisholm. Modeling the fitness consequences of a cyanophage-encoded photosynthesis gene. *PLoS ONE Volume 3 | Issue 10 | e3550*

2008 Sullivan, M.B., M. L. Coleman, V. Auinlivan, J.E. Roesnkrantz, A.S. DeFrancesco, G. Tan, Ross Fu, Jessica A. Lee, John B. Waterbury, Joseph P. Bielawski & Sallie W. Chisholm. Portal protein diversity and phage ecology. *Env. Microbiol.* **10**(10), 2810–2823

2008 Steglich, C. M. E. Futschik, D. Lindell, B. Voss, S.W. Chisholm and W. R. Hess. The challenge of regulation in a minimal photoautotroph: Non-coding RNAs in *Prochlorococcus.* *PLoS Genetics* August 2008 | Volume 4 | Issue 8 | e1000173

2008 Dammeyer, T., S. C. Bagby, M. B. Sullivan, S.W. Chisholm and N. Frankenberg-Dinkel. Efficient phage-mediated pigment biosynthesis in oceanic cyanobacteria. Current Biology 18:442-448.

2008 Frias-Lopez, J. Y. Shi, G. W. Tyson, M. L. Coleman, S.C. Schuster, S.W. Chisholm and E. F. DeLong Microbial community gene expression in ocean surface waters.  *P.N.A.S.* 105: 3805–3810

2007 Kettler, G. A.C. Martiny, K. Huang, J. Zucker, M.L. Coleman, S. Rodrigue, F. Chen, A. Lapidus, S. Ferriera, J. Johnson, C. Steglich, G. Church, P. Richardson, S.W. Chisholm. Patterns and Implications of Gene Gain and Loss in the Evolution of *Prochlorococcus. PLoS Genetics*, December 2007 | Volume 3 | Issue 12 | e231: pp. 2515-2528.

2007 Moore, L.R., A. Coe, E.R. Zinser, M.A. Saito, M.B. Sullivan, D. Lindell, K. Frois-Moniz, J. Waterbury, and S. W. Chisholm. Culturing the marine cyanobacterium *Prochlorococcus*.  *Limnol. Oceanogr. Methods* 5: 353–362

2007 Coleman, M.L. and S.W. Chisholm. Code and Context: *Prochlorococcus* as a model for cross-scale biology. *Trends in Microbiolo*gy 15:398-407

2007 Lindell, D. J.D. Jaffe, M.l. Coleman, I.M. Axmann, T. Rector, G. Kettler, M.B. Sullivan, R. Steen, W.R. Hess, G.M. Church, and S. W. Chisholm. Genome-wide expression dynamics of a marine virus and host reveal features of coevolution. *Nature* 449: 83-86

2007 Zinser, E. R. Z. I. Johnson, A. Coe, E. Karaca, D. Veneziano, And S. W. Chisholm. Influence of light and temperature on *Prochlorococcus* ecotype distributions in the Atlantic Ocean. *Limnol. Oceanogr.* 52 (5): 2205-2220.

2007 Follows, M. S. Dutkiewicz, S. Grant, S.W. Chisholm. Emergent biogeography of microbial communities in a model ocean. *Science* 315:1843-1846

2006 Steglich, C. Futschik, M., Rector, T. and S.W. Chisholm. Genome-wide analysis of light sensing in *Prochlorococcus*.  *J. Bacteriol*. 188: 7796–7806

2006 Tolonen, A.C. Aach, J. Lindell, D., Johnson, Z.I., Rector, T. Steen, R., Church, G. M. and S.W. Chisholm. Global gene expression of *Prochlorococcus* ecotypes in response to changes in nitrogen availability. *Molecular Systems Biology.* Volume 2, Article 53. doi:10.1038/msb4100087.

2006 Sullivan, M.B., D. Lindell, J.A. Lee, L. R. Thompson, J. P. Bielawski, and S.W. Chisholm. Prevalence and evolution of core photosystem II genes in marine cyanobacterial viruses and their hosts. *PLoS Biology* 4 (8) 1345-1357.

2006 Martiny, A.C., Coleman, M.L and S. W, Chisholm. Phosphate acquisition genes in *Prochlorococcus* ecotypes: Evidence for genome-wide adaptation. *Proc. Nat. Acad. Sci.* 103 (33): 12552–12557

2006 Coleman, M.L., M.B. Sullivan, C. Steglich, E.F. DeLong and S.W. Chisholm. Genomic Islands and the ecology and evolution of *Prochlorococcus.* *Science* 311:1768-1770

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# Publications from work conducted in part in my laboratory:

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