

CURRICULUM VITAE

Stephen J. Giovannoni

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H Factor: 74

Education:

- University of Oregon; Ph.D. in Biology 1984
- Boston University; M.A. in Biology 1978
- University of California, San Diego; B.A. in Biology 1974

Research Interests:

- Marine Microbiology
- Microbial Genomics

Professional Experience:

- Distinguished Professor, Oregon State University 2012-present
- Director, Molecular and Cellular Biology Program, Oregon State University, Corvallis. 2000-2004
- Professor, Department of Microbiology, Oregon State University, Corvallis. 1999-present
- Associate Professor, Department of Microbiology, Oregon State University, Corvallis. 1993-1999
- Assistant Professor, Department of Microbiology, Oregon State University, Corvallis. 1988-1993
- NSF Postdoctoral Research Fellow with Norman Pace, Indiana University, Bloomington. 1984-1988
- Instructor, Department of Biology, University of Oregon, Eugene. 1984
- Graduate Research Assistant with Richard Castenholz, Department of Biology, University of Oregon, Eugene. 1979-1984
- Research technician with Edward Leadbetter, Biological Sciences Department, University of Connecticut. 1978-1979
- Graduate Teaching Fellow with Lynn Margulis, Department of Biology, Boston University, Boston. 1975-1978
- Research technician with George Feher, Department of Physics, University of California, San Diego. 1974-1975

Adjunct Faculty Status:

- Bermuda Institute of Ocean Science (BIOS)
- Monterey Bay Aquarium Research Institute (MBARI)

Honors and Awards:

- Jim Tiedje Award, for outstanding lifetime contribution to microbial ecology, International Society for Microbial Ecology 2012
- J. Roger Porter Award for contributions to microbial culture collections, American Society for Microbiology 2012
- Gilfillan Award, Distinguished Scholarship in Science, College of Science, Oregon State University 2011
- Proctor and Gamble Award in Environmental Microbiology

- American Society for Microbiology 2011
- Pernot Endowed Professor, OSU Department of Microbiology 2005-2010
- Milton Harris Award for Exceptional Achievement in Microbiology
College of Science, Oregon State University 2003
- Fellow, American Academy of Microbiology 1997
- Sugihara Young Faculty Research Award,
College of Science, Oregon State University 1994
- Emerging Scholar Award, Phi Kappa Phi 1993
- Morgenroth Award for Exceptional Achievement as a Graduate Student
University of Oregon 1984

Teaching:

- *Microbial Genomics, Biogeochemistry and Diversity* (MB420/520; 3 lecture hours)
- *Microbial Bioinformatics and Genome Evolution* (MB 668; 4 lecture hours), yearly
- Co-instructor *Microbial Oceanography: The Biogeochemistry, Ecology and Genomics of Oceanic Microbial Ecosystems*, http://www.bios.edu/education/microb_ocean.html, The Bermuda Institute of Ocean Science, July 2006-2013

Training Activity:

- Fourteen former graduate students and postdocs now hold faculty positions
- Served on over 40 graduate committees
- Provided research experiences for 49 undergraduates and 5 high school students

Public Outreach:

- Developer of teacher professional development module: *Carbon Cycling by Marine Microorganisms*, in OSU's Science & Math Investigative Learning Experiences (SMILE) program 2014-2015
- Advisor for American of Microbiology/Public Broadcasting
Production: "Intimate Strangers, Unseen Life on Earth" 1997-1998
- Member of Microbial Literacy Collaborative, an *American Society for Microbiology* organization dedicated to disseminating knowledge about microbiology to the general public 1997

University Service (since 2010):

- Faculty Senate Baccalaureate Core Curriculum Committee, 2015-2016
- Search Committee, Vice President for Research, 2015
- Marine Science Initiative Advisory Committee, 2014-present
- College of Science Awards Committee, 2013-present
- College of Science P&T Committee, 2013-present
- Co- Chair of search committee, BIG Strategic Initiative, *Nucleic Acids Bioinformaticist*, 2011-2012
- Co-PI of OSU Strategic Initiative, *Computational and Genome Biology* 2005-2010

Sponsored Seminars and Symposia (since 2007):

- Co-organizer, Center for Genome Research and Biocomputing Annual Retreat, Sept. 20-21, 2014
- Co-organizer of session, *Putting Microbial Genomes To Work In Ecosystem Science*, Joint Aquatic Sciences Meeting, Portland, OR May 19, 2014
- Organizer, Symposium, *The Metagenome in Action*, 13th International Symposium on Microbial Ecology, Seattle, WA Aug. 23-27, 2010
- Organizer, *Workshop on Minimal Genomes*, National Science Foundation, Arlington VA. Aug. 10-11, 2009
- Organizer, *Workshop on the Implications and Opportunities of the Marine Genomics Revolution*, Bermuda Institute of Ocean Sciences. Oct. 29-31, 2007

Professional Societies:

- American Society for Microbiology
- American Association for the Advancement of Science
- American Society of Limnology and Oceanography

Recent Professional Service:

- Nominating Committee, Board of Governors,
American Academy for Microbiology 2012-present
- Editor, *MBio* 2012-present
- USFCC/J. Roger Porter Award Nominations Committee 2012-present
- Founding Co-editor, *Annual Reviews of Marine Science* 2007-present
<http://www.annualreviews.org/catalog/2009/ma01.aspx> 2007-present
- Associate Editor, *The ISME Journal* 2007-present
- Associate Editor, *Environmental Microbiology* 2000-present

Patents: U.S. No. 6951714B2 High-Throughput Microbial Culturing, awarded 2005.

High Throughput Culturing Laboratory: Giovannoni founded and directs the OSU High Throughput Culturing Laboratory (HTCL), which distributes cultures and DNA from oligotrophic marine bacteria to research institutions around the world. Forty laboratories have received materials from the HTCL. A list and resulting publications can be found at:

https://microbiology.science.oregonstate.edu/files/micro/HTCL%20Contributions%20to%20Science%20and%20Industry_0.pdf

Peer Reviewed Articles (since 1990):

138. Glass, J.B., C.B. Kretz, S. Ganesh, P. Ranjan, S.L. Seston, K. N. Buck, W. M. Landing, P.L. Morton, J.W. Moffett, S. J. Giovannoni, K.L. Vergin and F.J. Stewart. 2015. Meta-omic signatures of microbial metal and nitrogen cycling in marine oxygen minimum zones. *Frontiers in Microbiology* 6: 998

137. Carini, P., B.A.S. Van Mooy, J.C. Thrash, A.E. White, Y. Zhao, E.O. Campbell, H. Fredricks, and S. J. Giovannoni. 2015. SAR11 lipid renovation in response to phosphorus starvation. *PNAS* 112:7767-72. doi/10.1073/pnas.1505034112

136. Worden, A.Z., M.J. Follows, S.J. Giovannoni, S. Wilken, A.E. Zimmerman, P.J. Keeling. 2015 Rethinking the marine carbon cycle: factoring in multifarious lifestyles of microbes. *Science* 347 DOI: 10.1126/science.1257594

135. Giovannoni, S.J., J.C. Thrash, and B. Temperton. 2014. Implications of streamlining theory for microbial ecology. *ISME J.* doi: 10.1038/ismej.2014.60

134. Carini, P., A. E. White, E.O. Campbell, and S.J. Giovannoni. 2014. Methane production by phosphate-starved SAR11 chemoheterotrophic marine bacteria. *Nature Com.* 5:4346. DOI: 10.1038/ncomms5346

133. Carini, P., E.O. Campbell, J. Morré, S.A. Sañudo-Wilhelmy, B. Temperton, S.E. Bennett, J.C. Thrash, T. Begley and S.J. Giovannoni. 2014. Discovery of a SAR11 growth requirement for thiamin's pyrimidine precursor and its distribution in the Sargasso Sea. 2014. *ISME J.* doi: 10.1038/ismej.2014.61

132. Parsons, R.J., C.E. Nelson, C.A. Carlson, C.C. Denman, A.J. Andersson, A.L. Kledzik, K.L. Vergin, S.P. McNally, A.H. Treusch and S.J. Giovannoni. 2014. Marine bacterioplankton community turnover

within seasonally hypoxic waters of a subtropical sound: Devil's Hole, Bermuda. *Environ. Microbiol.* doi:10.1111/1462-2920.12445

131. Thrash, J.C. Thrash, B. Temperton, B.K. Swan, Z.C. Landry, T. Woyke, E.F. DeLong, R. Stepanauskas and S.J. Giovannoni. 2013. Genome features of a deep ocean SAR11 bathytype revealed by single-cell genomics and metagenomics. *ISME J.* 7: 1322–1332. doi:10.1038/ismej.2013.32

130. Ferla, M.P., J.C. Thrash, S.J. Giovannoni and W.M. Patrick. 2013. New rRNA gene-based phylogenies of the Alphaproteobacteria provide perspective on major groups, mitochondrial ancestry and phylogenetic instability. *PlosOne*. DOI: 10.1371/journal.pone.0083383

129. Smith D.P., J.C. Thrash, C.D. Nicora, M.S. Lipton, K.E. Burnum-Johnson, P. Carini, R.D. Smith, and S.J. Giovannoni. 2013. Proteomic and transcriptomic analysis of *Candidatus Pelagibacter ubique* describes the first P_{II}-independent response to nitrogen limitation in a free-living alphaproteobacterium. *mBio*. DOI:10.1128/mBio.00133-12

128. Vergin K.L., B. Done, C.A. Carlson, S.J. Giovannoni. 2013. Spatiotemporal distributions of rare bacterioplankton populations indicate a variety of adaptive strategies in the oligotrophic ocean. *Aquat. Microb. Ecol.* 71:1-13. doi 10.3354/ame01661

127. Giovannoni, S.J., B. Temperton and Y. Zhao. 2013. Reply to SAR11 virus and defensive host strains (Selina Våge, Julia E. Storesund, T. Frede Thingstad). *Nature*. 499:E4-5.

126. Swan, B., B. Tupper, A. Sczyr, F.M. Lauro, M. Martinez-Garcia, J. González, H. Luo, J.J. Wright, Z.C. Landry, N.W. Hanson, B.P. Thompson, N.J. Poulton, P. Schwientek, S.G. Acinas, S.J. Giovannoni, M.A. Moran, S.J. Hallam, R. Cavicchioli, T. Woyke, and R. Stepanauskas. 2013. Prevalent genome streamlining and latitudinal divergence of planktonic bacteria in the surface ocean. *Proc. Natl. Acad. Sci. U.S.A.* doi: 10.1073/pnas.1304246110

125. Vergin K.L., B. Beszteri, A. Monier, J.C. Thrash, B. Temperton, A.T. Treusch, F. Kilpert, A.Z. Worden, S.J. Giovannoni. 2013. High-resolution SAR11 ecotype dynamics at the Bermuda Atlantic Time-series Study site by phylogenetic placement of pyrosequences. *ISME J.* doi: 10.1038/ismej.2013.32

124. Zhao, Y., B. Temperton, J.C. Thrash, M.S. Schwabach, K.L. Vergin, Z.C. Landry, M. Ellisman, T. Deerinck, M. B. Sullivan and S. J. Giovannoni. 2013. Abundant SAR11 viruses in the ocean. *Nature* 494:357-60. doi: 10.1038/nature11921

123. Carini, P, L. Steindler, S. Beszteri and S. J. Giovannoni. 2012. Nutrient requirements for growth of the extreme oligotroph 'Candidatus Pelagibacter ubique' HTCC1062 on a defined medium. *ISME J.* doi:10.1038/ismej.2012.122

122. Grote, J., J.C. Thrash, M. J. Huggett, Z.C. Landry, P. Carini, S.J. Giovannoni, and M. S. Rappé, 2012. Streamlining and core genome conservation among highly divergent members of the SAR11 clade. *mBio* doi:10.1128/mBio.00252-12

121. Halsey, K.H., Carter, A. E., Giovannoni, S. J. 2011. Synergistic metabolism of a broad range of C1 compounds in the marine methylotrophic bacterium HTCC2181. *Environ. Microb.* doi:10.1111/j.1462-2920.2011.02605.x.

120. Treusch, A.H., E. Demir, K.L. Vergin, A.Z. Worden, C.A. Carlson, M.G. Donatz, R.M. Burton and S.J. Giovannoni. 2011. Phytoplankton distribution patterns in the northwestern Sargasso Sea revealed by small subunit rRNA genes from plastids. *ISME J.* 6:481-92 doi:10.1038/ismej.2011.117

119. Sun, J., L. Steindler, J.C. Thrash, K.H. Halsey, D.P. Smith, A.E. Carter, Z.C. Landry and S.J. Giovannoni. 2011. One carbon metabolism in SAR11 pelagic marine bacteria. *PLoS One*. 6:e23973
118. Thrash, J.C., A. Boyd, R.J. Yoder, M.J. Huggett, P. Carini, J. Grote, M.S. Rappe, B. Robberts, J.W. Spatafora, and S.J. Giovannoni. 2011. Phylogenomic evidence for a common ancestor of mitochondria and the SAR11 clade. *Sci. Reports* 1. doi:10.1038/srep00013
117. Bertagnolli, A.D., A.H. Treusch O.U. Mason O.U., U. Stingl, K.L. Vergin, F. Chan, B. Beszteri, S.J. Giovannoni. 2011. Bacterial diversity in the bottom boundary layer of the inner continental shelf of Oregon, USA. *Aquatic Ecol.* 64:15-25.
116. Steindler, L., M.S. Schwalbach, F. Chan, and S.J. Giovannoni. 2011. Energy starved candidatus pelagibacter ubique substitutes light-mediated ATP production for endogenous carbon respiration. *PLoS One* 9:e19725
115. Wang, L., S. Chen, K. Vergin, S.J. Giovannoni, S.W. Chan, M.S. DeMott, K. Taghizadeh, O.X. Cordero, M. Cutler, S. Timberlake, E.J. Alma, M. Polz, J. Pinhassi, Z. Deng, and P.C. Dedon. 2011. Phosphorothioation is widespread and quantized in bacterial genomes. *Proc. Natl. Acad. Sci. U.S.A.* 108:2963-8.
114. Thrash, J. C., Cho, J.-C., Bertagnolli, A. D., Ferriera, S., Johnson, J., Vergin, K. L., and Giovannoni, S. J. 2011. Genome sequence of the marine *Janibacter* sp. strain HTCC2649. *J. Bac.* 193: 584-5. doi:10.1128/JB.01298-10
113. Mason O.U., T. Nakagawa, M. Rosner, J.D. Van Nostrand, J. Zhou, A. Maruyama, M.R. Fisk, and Stephen J. Giovannoni. 2010. First investigation of the microbiology of the deepest layer of ocean crust. *PLoS One*. 55:e15399.
112. Sowell, S.M., P.E. Abraham, M. Shah, N.C. Verberkmoes, D.P. Smith, D.F. Barofsky, S.J. Giovannoni. 2011. Environmental proteomics of microbial plankton in a highly productive coastal upwelling system. *ISME J.* 5:856-65. Epub 2010 Nov 11.
111. Kido-Soule, M.C., K. Longnecker, S.J. Giovannoni, and E.B. Kujawinski. 2010. Impact of instrument and experiment parameters on reproducibility and repeatability of peaks within ultrahigh resolution ESI FT-ICR mass spectra of natural organic matter. *Org. Geochem.* 41:725-33.
110. Smith D P., J.B. Kitner, A. D. Norbeck, M.S. Lipton, M.S. Schwalbach, L. Steindler, C.D. Nicora, R. D. Smith, and S. J. Giovannoni. 2010. Integrated transcriptional and translational regulatory responses to iron limitation in the globally distributed marine bacterium *Candidatus Pelagibacter ubique*. *PLoS One*. 5:1-10.
109. Beszteri B., B. Temperton, S. Frickenhaus and S.J. Giovannoni. 2010. Average genome size: a potential source of bias in comparative metagenomics. *ISME J.* 4:1075-7.
108. Schwalbach, M. S., H.J. Tripp, L. Steindler, D.P. Smith and S.J. Giovannoni. 2009. The presence of the glycolysis operon in SAR11 genomes is positively correlated with ocean productivity. *Environ. Microbiol.* 12:490-500. doi:10.1111/j.1462-2920.2009.02092.x
107. Meyer, M. M., T. D. Ames, D. Smith, Z. Weinberg, M. S. Schwalbach, S.J. Giovannoni and R.R. Breaker. 2009. Identification of candidate structured RNAs in the marine organism '*Candidatus Pelagibacter ubique*'. *BMC Genomics* 10:268.
106. Treusch A.H., K.L. Vergin, L.A. Finlay, M.G. Donatz, R.M. Burton, C.A. Carlson and S.J. Giovannoni.

2009. Seasonality and vertical structure of microbial communities in an ocean gyre. *ISME J.* 3:1148-63. doi:10.1038/ismej.2009.60.
105. Kujawinski, E.B., K. Longnecker, N.V. Blough, R. Del Vecchio, L. Finlay, J.B. Kitner and S.J. Giovannoni. 2009. Novel markers for terrestrial and marine sources in marine dissolved organic matter using ultrahigh resolution electrospray ionization Fourier-transform ion cyclotron resonance mass spectrometry. *Geochem. et Cosmochem.* 73: 4384-99.
104. Carlson, C.A., R. Morris, R. Parsons, A.H. Treusch, S.J. Giovannoni, K. Vergin. 2009. Seasonal patterns in SAR11 populations in the euphotic and mesopelagic zones of the Northwestern Sargasso Sea. *ISME J.* 3:283-95. Epub 2008 Dec 4
103. Tripp, H.J., M.S. Schwalbach, M.M. Meyer, J.B. Kitner, R.R. Breaker and S.J. Giovannoni. 2009. Unique glycine-activated riboswitch linked to glycine-serine auxotrophy in SAR11. *Environ. Microbiol.* 11:230-238.
102. Mason, O.U., C.A. Di Meo-Savoie, J.D. Van Nostrand, J. Zhou, M.R. Fisk and S.J. Giovannoni. 2008. Prokaryotic diversity, distribution, and preliminary insights into their role in biogeochemical cycling in marine basalts. *ISEM J.* Oct 9. doi: 10.1038/ismej.2008.92
101. Sowell, S.M., L.J. Wilhelm, A.D. Norbeck, M.S. Lipton, C. Nicora, D.F. Barofsky, C.A. Carlson, R. D. Smith and S.J. Giovannoni. 2008. Transport functions dominate the SAR11 metaproteome at low nutrient extremes in the Sargasso Sea. *ISME J.* 74:4091-100.
100. Sowell, S.M., A.D. Norbeck, M.S. Lipton, C.D. Nicora, D.F. Barofsky, R.D. Smith and S.J. Giovannoni. 2008. Proteomic analysis of stationary phase in the marine bacterium, *Candidatus Pelagibacter ubique*. *Appl. Environ. Microbiol.* 74:4091-100.
99. Giovannoni, S.J., D.H. Hayakawa, H.J. Tripp, U. Stingl, S. Givan, J.C. Cho, H.M. Oh, J.B. Kitner, K. L. Vergin, and M.S. Rappé. 2008. The small genome of an abundant coastal ocean methylotroph. *Environ. Microbiol.* 10:1771-82.
98. Tripp, H.J., J.B. Kitner, M.S. Schwalbach, J.W.H. Dacey, L.J. Wilhelm, and S.J. Giovannoni. 2008. SAR11 marine bacteria require exogenous reduced sulphur for growth. *Nature* 452: 741-4.
97. Stingl U., J.C. Cho, W. Foo, K.L. Vergin., B. Lanoil, and S.J. Giovannoni. 2007. Dilution-to-extinction culturing of psychrotolerant oligotrophic bacteria from the water column of permanently ice-covered lakes in the McMurdo Dry Valleys, Antarctica. *Micro. Ecol.* 55:395-405.
96. Desiderio, R., S.R. Laney, R.M. Letelier and S.J. Giovannoni. 2007. Using lasers to probe the transient light absorption by proteorhodopsin in marine bacterioplankton. *Applied Optics.* 46:7329-36
95. Wilhelm, L., H.J. Tripp, S. Givan, D. Smith and S.J. Giovannoni. 2007. Natural variation in SAR11 marine bacterioplankton genomes inferred from metagenomic data. *Biol. Direct.* 2:27 doi:10.1186/1745-6150-2-27.
94. Stingl, U., H.J. Tripp and S.J. Giovannoni. 2007. Improvements of high-throughput culturing yielded novel SAR11 strains from the Oregon coast and the Bermuda Atlantic time-series study site (BATS). *ISME J.* 1:361-71.
93. Mason, O. U., U. Stingl, M. M. Moeseneder, C. A. Di Meo-Savoie. M.R. Fisk and S.J. Giovannoni. 2007. The phylogeny of endolithic microbes associated with marine basalts. *Environ. Microbiol.* 9:2539-50.
92. Vergin, K.L., D. M.S. Rappé, D. Denver, H.J. Tripp, L. Wilhelm and S.J. Giovannoni. 2007. High

- intraspecific recombination rate in a native population of *Candidatus Pelagibacter ubique* (SAR11). *Environ. Microbiol.* 9:2430-40.
91. Lee K., Y.J. Choo, S.J. Giovannoni and J.C. Cho. 2007. *Ruegeria pelagia* sp. nov., isolated from the Sargasso Sea, Atlantic Ocean. *Int. J. Syst. Evol. Microbiol.* 57:1815-8.
90. Lee K., Y.J. Choo, S.J. Giovannoni and J.C. Cho. 2007. *Maritimibacter alkaliphilus* gen. nov., sp. nov., a genome-sequenced marine bacterium of the *Roseobacter* clade in the order *Rhodobacterales*. *Int. J. Syst. Evol. Microbiol.* 57:1653-8.
89. Stingl, U., K.L. Vergin and S.J. Giovannoni. 2007. The SAR92 clade: An abundant coastal clade of culturable marine bacteria possessing proteorhodopsin. *Appl. Environ. Microbiol.* 73:2290-6.
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87. Choi, D.H., J.C. Cho, B.D. Lanoil, S.J. Giovannoni and B.C. Cho, 2007. *Maribius salinus* gen. nov., sp. nov., isolated from a solar saltern and *Maribius pelagius* sp. nov., cultured from the Sargasso Sea, belonging to the *Roseobacter* clade. *Int. J. Syst. Evol. Microbiol.* 57:270-5.
86. Urbach, E., K.L. Vergin, G.L. Larson and S.J. Giovannoni. 2007. Bacterioplankton communities of Crater Lake, OR: dynamic changes with euphotic zone food web structure and stable deep-water populations. *Hydrobiologia* 574:161-77.
85. Cho, J.C. and S.J. Giovannoni. 2006. *Pelagibaca bermudensis* gen. nov., sp. nov., a novel marine bacterium within the *Roseobacter* clade in the order 'Rhodobacterales'. *Int. J. Syst. Evol. Microbiol.* 56:855-9.
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82. Giovannoni, S.J., H.J. Tripp, S. Givan, M. Podar, K.L. Vergin, D. Baptista, L. Bibbs, J. Eads, T.H. Richardson, M. Noordewier, M.S. Rappé, J. Short, J.C. Carrington and E.J. Mathur. 2005. Genome streamlining in a cosmopolitan oceanic bacterium. *Science.* 309:1242-5.
81. Giovannoni, S.J., L. Bibbs, J.C. Cho, M.D. Stapels, R. Desiderio, K.L. Vergin, M.S. Rappé, S. Laney, L. Wilhelm, H.J. Tripp, E.J. Mathur and D.F. Barofsky. 2005. Proteorhodopsin in the ubiquitous marine bacterium SAR11. *Nature* 433:82-5
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73. Cho, J.C., and S.J. Giovannoni. 2004. *Oceanicola granulosus* gen. nov., sp. nov. and *Oceanicola batsensis* sp. nov., poly-beta-hydroxybutyrate-producing marine bacteria in the order "Rhodobacterales". *Int. J. Syst. Evol. Microbiol.* 54:1129-1136.
72. Cho, J.C., K.L. Vergin, R.M. Morris and S.J. Giovannoni. 2004. Discovery of the novel bacterial phylum Lentisphaerae with cultivation of *Lentisphaera araneosa* gen. nov., sp. nov., a transparent exopolymer producing marine bacterium. *Environ. Microbiol.* 6:611-21.
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