

Steven Biller

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EDUCATION

Ph.D., Biological Sciences, Stanford University, Stanford CA 2010
Hopkins Microbiology Summer Course, Hopkins Marine Station of Stanford University,
Pacific Grove CA 2007
B.A., Biology, Williams College, Williamstown MA 2002

POSITIONS HELD

Dept. of Biological Sciences, Wellesley College 2018 – Present
Assistant Professor

Parsons Laboratory for Environmental Science, MIT 2018 – Present
Research Affiliate

Parsons Laboratory for Environmental Science, MIT 2010 – 2018
Postdoctoral Associate/Research Scientist, Advisor: Dr. Sallie W. Chisholm

Dept. of Environmental Earth Systems Science, Stanford University 2010
Postdoctoral Researcher, Advisor: Dr. Christopher Francis

Dept. of Biological Sciences, Stanford University 2003 – 2010
Graduate student, Advisor: Dr. William Burkholder

Marine Biological Laboratory, Woods Hole MA 2002 – 2003
Research Assistant, Advisor: Dr. Mitchell Sogin

PUBLICATIONS

1. Wolf, MJ, Coe A, Dove LA, Zawadowicz MA, Dooley K, **Biller SJ**, Zhang Y, Chisholm SW and Ciczko DJ. “Investigating the Heterogeneous Ice Nucleation of Sea Spray Aerosols Using *Prochlorococcus* as a Model Source of Marine Organic Matter.” *Environmental Science & Technology* 53: 1139-1149 (2019).
2. **Biller SJ**, Berube PM, Dooley K, Williams M, Satinsky BM, Hackl T, Hogle SL, Coe A, Bergauer K, Bouman HA, Browning TJ, De Corte D, Hassler C, Hulston D, Jacquot JE, Maas EW, Reinthaler T, Sintès E, Yokokawa T and Chisholm SW. “Marine microbial metagenomes sampled across space and time.” *Scientific Data* 5: 180176 (2018).
3. Berube PM, **Biller SJ**, Hackl T, Hogle SL, Satinsky BM, Becker JW, Braakman R, Collins SB, Kelly L, Berta-Thompson J, Coe A, Bergauer K, Bouman HA, Browning TJ, De Corte D, Hassler C, Hulata Y, Jacquot JE, Maas EW, Reinthaler T, Sintès E, Yokokawa T, Lindell D, Stepanauskas R, and Chisholm SW. “Single cell genomes of *Prochlorococcus*, *Synechococcus*, and sympatric microbes from diverse marine environments.” *Scientific Data* 5: 180154 (2018).
4. **Biller SJ**, Coe A, Roggensack SE, and Chisholm SW. “Heterotroph Interactions Alter *Prochlorococcus* Transcriptome Dynamics during Extended Periods of Darkness.” *mSystems*: e00040-18 (2018).
5. Read RW, Berube PM, **Biller SJ**, Neveux I, Cubillos-Ruiz A, Chisholm SW and Grzymalski JJ. “Nitrogen cost minimization is promoted by structural changes in the transcriptome of N-deprived *Prochlorococcus* cells.” *The ISME Journal* 11: 2267-2278 (2017).
6. **Biller SJ**, McDaniel LD, Breitbart M, Rogers E, Paul JH and Chisholm SW. “Membrane vesicles in sea water: heterogeneous DNA content and implications for viral abundance estimates.” *The ISME Journal* 11(2): 394-404 (2017).

7. **Biller SJ**, Coe A and Chisholm SW. “Torn apart and reunited: impact of a heterotroph on the transcriptome of *Prochlorococcus*.” *The ISME Journal* 10(12): 2831-2843 (2016).
8. Coe A, Ghizzoni J, LeGault K, **Biller SJ**, Roggensack SE and Chisholm SW. “Survival of *Prochlorococcus* in extended darkness.” *Limnology and Oceanography* 61: 1375–1388 (2016).
9. **Biller SJ**, Berube PM, Lindell D and Chisholm SW. “*Prochlorococcus*: The structure and function of collective diversity.” *Nature Reviews Microbiology* 13: 13-27 (2015).
10. Lea-Smith D, **Biller SJ**, Davey MP, Cotton CAR, Perez-Sepulveda BMP, Turchyn AV, Scanlan DJ, Smith AG, Chisholm SW and Howe C. “Contribution of cyanobacterial alkane production to the ocean hydrocarbon cycle.” *Proceedings of the National Academy of Sciences* 112(44): 13591-13596 (2015).
11. Berube PM, **Biller SJ**, Kent AG, Berta-Thompson JW, Roggensack SE, Roache-Johnson KH, Ackerman M, Moore LR, Meisel JD, Sher D, Thompson LR, Campbell L, Martiny AC and Chisholm SW. “Physiology and evolution of nitrate acquisition in *Prochlorococcus*.” *The ISME Journal* 9(5): 1195-207 (2015).
12. **Biller SJ**, Coe A, Martin-Cuadrado AB, and Chisholm SW. “Draft genome sequence of *Alteromonas macleodii* strain MIT1002, isolated from an enrichment culture of the marine cyanobacterium *Prochlorococcus*.” *Genome Announcements* 3(4): e00967-15 (2015).
13. **Biller SJ**, Schubotz F, Roggensack SE, Thompson AW, Summons RE and Chisholm SW. “Bacterial Vesicles in Marine Ecosystems.” *Science* 343: 183-186 (2014).
14. Kashtan N, Roggensack SE, Rodrigue S, Thompson JW, **Biller SJ**, Coe A, Ding H, Martinen P, Stocker R, Follows M, Stepanauskas R and Chisholm SW. “Single cell genomics reveals hundreds of coexisting subpopulations in wild *Prochlorococcus*.” *Science* 344: 416-420 (2014).
15. **Biller SJ**, Berube, PM, Berta-Thompson JW, Kelly L, Roggensack SE, Awad L*, Roache-Johnson KH, Ding H, Giovannoni SJ, Rocap G, Moore LR and Chisholm SW. “Genomes of diverse isolates of the marine cyanobacterium *Prochlorococcus*.” *Scientific Data* 1:140034 (2014). (*undergraduate co-author)
16. **Biller SJ**, Mosier AC, Wells GF and Francis CA. “Global biodiversity of aquatic ammonia-oxidizing archaea is partitioned by habitat.” *Frontiers in Aquatic Microbiology* 3: 252 (2012).
17. **Biller SJ**, Wayne KJ, Winkler ME and Burkholder WF. “The putative hydrolase YycJ (WalJ) affects the coordination of cell division with DNA replication in *Bacillus subtilis* and may play a conserved role in cell wall metabolism.” *Journal of Bacteriology* 193: 896–908 (2011).
18. **Biller SJ** and Burkholder WF. “The *Bacillus subtilis* SftA (YtpS) and SpoIIIE DNA translocases play distinct roles in growing cells to ensure faithful chromosome partitioning.” *Molecular Microbiology* 74(4): 790-809 (2009).
19. Laskowski M, **Biller SJ**, Stanley K, Kajstura T, and Prusty R. “Expression Profiling of Auxin-Treated *Arabidopsis* Roots: Towards a molecular analysis of lateral root emergence.” *Plant and Cell Physiology* 47(6): 788-792 (2006).
20. **Biller S**. “From the Drafting Table to the Front Lines: Designing, Building and Utilizing the Ironclad *USS Galena*.” *The Log of Mystic Seaport*. 53(1): 2-11 (2001).

SELECTED ORAL PRESENTATIONS

1. **Biller S**, Dooley KD and Chisholm SW. “Extracellular vesicles in the marine environment: origins, distributions, and putative ecological functions.” Invited lecture, Bigelow Marine Laboratory, September 2017.
2. **Biller S**, Dooley KD and Chisholm SW. “Features of extracellular vesicles from marine microbes.” Invited lecture, American Society for Microbiology annual meeting, June 2017, New Orleans.
3. **Biller S**. “Extracellular vesicles in marine ecosystems: methods and challenges.” Invited lecture, (Nano) Cytometry Development Workshop, June 2017, Boston.
4. **Biller S**, Dooley KD and Chisholm SW. “Extracellular vesicle production from marine bacteria: Diversity in release rates and DNA packaging.” International Society for Microbial Ecology conference, August 2016, Montreal.

5. **Biller S** and Chisholm SW. “Extracellular vesicles in the marine environment: origins, distribution and putative ecological function.” Invited lecture, American Society for Microbiology annual meeting, June 2016, Boston.
6. **Biller S**. “Extracellular vesicles in marine ecosystems.” MIT Building 68 seminar series, April 2015.
7. **Biller S**, Williams M and Chisholm SW. “Extracellular vesicles produced by marine cyanobacteria: origins, distributions, and putative ecological functions.” Plenary speaker, 2015 International Symposium on Photosynthetic Prokaryotes, Tübingen Germany.
8. **Biller S**. “Ecological roles of microbial extracellular vesicles.” Invited lecture, UC Irvine Exosome Symposium, May 2015.
9. **Biller S**, Williams M, Chisholm SW. “Production rates of extracellular vesicles among marine bacteria.” International Society for Extracellular Vesicles - 2015 meeting, North Bethesda MD, April 2015.
10. **Biller S**. “*Prochlorococcus* and the global impact of tiny marine microbes.” Invited lecture, Castleton State College, VT, Sept 2014.
11. **Biller S**. “Bacterial vesicles in marine ecosystems.” MIT-Parsons Microbial Systems Seminar Series, May 2014.
12. **Biller S**, Schubotz F, Roggensack S, Thompson A, Summons R and Chisholm SW. “Extracellular vesicles from the marine cyanobacterium *Prochlorococcus* may mediate diverse community interactions.” Invited presentation, Gordon Conference on Applied and Environmental Microbiology, South Hadley MA, July 2013.
13. **Biller S**, Schubotz F, Roggensack S, Thompson A, and Chisholm SW. “Bacterial vesicles in the oceans: the potential global significance of vesicle production by the marine cyanobacterium *Prochlorococcus*.” International Society for Extracellular Vesicles - 2013 meeting, Boston MA, April 2013.
14. **Biller, S**. “What genomics can teach us about the ecology of *Prochlorococcus*, the most abundant photosynthetic organism on Earth.” Invited lecture, College of the Holy Cross, Oct 2012.
15. **Biller S**, “Microbial Genome Assembly and Analysis.” Guest lecture to the Bioinformatics class at U. Southern Maine, April 2011.
16. **Biller S** and SW Chisholm. “Extracellular vesicles from the marine cyanobacterium *Prochlorococcus* may mediate diverse community interactions.” International Society for Microbial Ecology conference, Copenhagen, Denmark, August 2012.
17. **Biller S** and Burkholder W. “A metallo- β -lactamase, YycJ, affects the coordination of cell division with DNA replication in *Bacillus subtilis*.” West Coast Bacterial Physiologists meeting, December 2009.
18. **Biller S** and Burkholder W. “YtpT, a paralog of the DNA translocase SpoIIIE in *Bacillus subtilis*, localizes to nascent division sites during vegetative growth.” West Coast Bacterial Physiologists meeting, December 2008.
19. **Biller S** and Burkholder W. “A gene that contributes to the coordination of cell division with DNA replication in *Bacillus subtilis*.” West Coast Bacterial Physiologists meeting, December 2007.

SELECTED POSTER PRESENTATIONS

1. **Biller S**. “Big data of small genomes: Toward improved, integrated analytics of *Prochlorococcus* (and more!)”. SCOPE annual meeting, Simons Foundation, NY, December 2016.
2. **Biller S**, Coe A, Roggensack S, and Chisholm SW. “*Prochlorococcus* in the dark (or, What happens if the sun doesn’t come out tomorrow?)”. Gordon Research Conference on Marine Microbes, Waltham MA, June 2014.
3. **Biller S**, Coe A, Roggensack S, and Chisholm SW. “*Prochlorococcus* in the dark (or, What happens if the sun doesn’t come out tomorrow?)”. American Society for Microbiology 2014 General Meeting, Boston MA, May 2014.
4. **Biller S**, Schubotz F, Roggensack S, Thompson A, Summons R and Chisholm SW. “Extracellular vesicles from the marine cyanobacterium *Prochlorococcus* may mediate diverse community interactions.” Gordon Research Conference on Applied and Environmental Microbiology, South Hadley MA, July 2013.

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5. **Biller S**, Roggensack S, Schubotz F, Thompson A, and Chisholm SW. “Extracellular vesicles from the marine cyanobacterium *Prochlorococcus* may mediate diverse community interactions.” US-EU Environmental Biotechnology Workshop, St. Louis MO, Nov 2012.
6. **Biller S**, Roggensack S, Schubotz F, Thompson A, and Chisholm SW. “A novel mechanism for producing energy-rich compounds from a minimal photosynthetic cell.” MIT Energy Initiative Research Conference, Oct 2012.
7. **Biller S** and Burkholder W. “The two FtsK-like DNA translocases in *Bacillus subtilis*, YtpS and SpoIIIE, play distinct roles in ensuring accurate chromosome partitioning.” Gordon Research Conference on Chromosome Dynamics, Lucca, Italy, May 2009.

HONORS AND AWARDS

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| 2013 | Best oral presentation award, International Society for Extracellular Vesicles-2013 meeting, Boston, MA |
| 2012 | Best Seed Grant poster award, MIT Energy Initiative Research Conference |
| 2006 – 2007 | Achievement Reward for College Scientists (ARCS) Fellowship |
| 2003 – 2006 | NSF Graduate Research Fellowship |
| 2002 | William C. Grant, Jr. Prize in Biology, Williams College |
| 2002 | Sigma Xi, Williams College |
| 2001 | Phi Beta Kappa, Williams College |
| 2001 – 2002 | Visiting Fellow at the G.W. Blunt White Library, Mystic Seaport Museum, Mystic, CT |
| 2001 | Gerald E. Morris Prize in Maritime History, Mystic Seaport Museum, Mystic CT |