

Matthew B. Sullivan

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Departments of Microbiology and Civil, Environmental and Geodetic Engineering

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Education and Training

- 1997 B.S. Marine Science Long Island University, Southampton College, NY
- 1998 M.Phil. Biology Queens University of Belfast, Northern Ireland, U.K.
Thesis: "Fouling and anti-fouling in crustose coralline algae (Rhodophyta, Corallinales)"
Advisor: Matthew J. Dring
- 2004 Ph.D. Biology MIT/WHOI: Joint Program in Biological Oceanography
Thesis: "Ecology, diversity and comparative genomics of ocean cyanobacterial viruses"
Advisors: Sallie W. Chisholm and John B. Waterbury
- 2004-7 Post-Doctoral Associate MIT, Department of Civil and Environmental Engineering

Academic / Professional Appointments

- 2016-present Associate Professor, The Ohio State University, Departments of Microbiology and Civil, Environmental and Geodetic Engineering
- 2015-2016 Assistant Professor, The Ohio State University, Departments of Microbiology and Civil, Environmental and Geodetic Engineering
- 2014-2015 Associate Professor, University of Arizona, Department of Ecology & Evolutionary Biology
- 2009-2015 Joint appointment, University of Arizona, Department of Molecular & Cellular Biology
- 2009-2015 Biosphere 2 Research Professor, University of Arizona
- 2008-2014 Assistant Professor, University of Arizona, Department of Ecology & Evolutionary Biology
- 2004-2007 Post-doctoral fellow, Dr. Sallie Chisholm, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, MA
- 1998-2003 Pre-doctoral trainee, Drs. Sallie Chisholm and John Waterbury, Department of Biology, Massachusetts Institute of Technology, Cambridge, MA
- 1997-1998 Pre-doctoral trainee, Dr. Matthew J. Dring, Portaferry Marine Laboratory, Queens University of Belfast, Northern Ireland, U.K.
- 1996 Summer Undergraduate Research Fellow, Dr. Brian Palenik, Scripps Institution of Oceanography, U. California San Diego, San Diego, CA
- 1994 NSF Research Experience for Undergraduates Fellow, Dr. Todd Kana, Horn Point Environmental Laboratories, U. Maryland, Cambridge MD

Honors and Awards

- 1998 Fulbright Scholar
- 2012 Gordon and Betty Moore Foundation Investigator Award
- 2013 Kavli Frontiers of Science Fellow
- 2014 Beckman Scholar's Undergraduate Researcher Mentor
Editorial Board, *Environmental Microbiology* (John Wiley & Sons publishing group, IF=6.24)
- 2015 Senior Editor, *The ISME Journal* (Nature publishing group, IF=9.27)
Beckman Scholar's Post-doctoral Research Mentor

Teaching and advising

See details in separate documentation, available upon request.

Publications

(*Sullivan lab members underlined, * indicates papers based primarily upon work prior to U Arizona*)

- Summary: Dr. Sullivan career citation metrics include 73 peer-reviewed publications cited 6,705 times for an h-index of 38 and an i-10 index of 57.

73. Holmfeldt, K.[^], Solonenko, N., Howard-Varona, C., Moreno, M., Malmstrom, R.R., Blow, M.J., & **Sullivan, M.B.**[^] (2016). Large-scale maps of variable infection efficiencies in aquatic Bacterioidetes phage-host model systems. *Env. Micro.* ([^]=co-corresponding authors). doi:10.1111/1462-2920.13392.

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72. Enault, F., Briet, A., Bouteille, L., Roux, S., & **Sullivan, M.B.**, Petit, M.A. (2016). Phages rarely encode antibiotic resistance genes: a cautionary tale for virome analyses. *ISMEJ*. doi:10.1038/ismej.2016.90.
71. Bolduc, B., Youens-Clark, K., Roux, S., Hurwitz, B.L.[^], & **Sullivan, M.B.**[^] (2016). iVirus: facilitating new insights into viral ecology with software and community datasets imbedded in a cyberinfrastructure. ([^]=co-corresponding authors). in press.
70. Trubl, G., Solonenko, N., Chittick, L., Solonenko, S., Rich, V.I., & **Sullivan, M.B.** (2016). Optimization of viral resuspension methods for carbon-rich soils along a permafrost thaw gradient. *PeerJ*. 4:e1999.
69. Howard-Varona, C., Roux, S., Dore, H., Solonenko, N., Holmfeldt, K., Markillie, L.M., Orr, G., & **Sullivan, M.B.** (2016). Regulation of infection efficiency in a globally abundant marine Bacteriodes virus. *ISME J*. doi: 10.1038/ismej.2016.81
68. Duhaime, M.B., Wichels, A., & **Sullivan, M.B.** (2016). Six Pseudoalteromonas strains isolated from surface waters of Kabeltonne, offshore Helgoland, North Sea. *Genome Announc* 4(1):e01697-15. doi:10.1128/genomeA.01697-15.
67. Guidi, L., Chaffron, S., Bittner, L., Eveillard, D., Larhlimi, A., Roux, S., Darzi, Y., Audic, S., Berline, L., Brum, J.R., Coelho, L.P., Espinoza, J.C., Malviya, S., Sunagawa, S., Dimier, C., Kandels-Lewis, S., Picheral, M., Poulain, J., Searson, S., Tara Oceans Consortium Coordinators, Stemmann, L., Not, F., Hingamp, P., Speich, S., Follows, M., Karp-Boss, L., Boss, E., Ogata, H., Pesant, S., Weissenbach, J., Wincker, P., Acinas, S.G., Bork, P., de Vargas, C., Iudicone, D., **Sullivan, M.B.**, Raes, J., Karsenti, E., Bowler, C., & Gorsky, G. Plankton networks driving carbon export in the oligotrophic ocean. 2016. **Nature**. 2016 Feb 10. doi: 10.1038/nature16942. [Epub ahead of print]
66. Brum J.R., Ignacio-Espinoza, J.C., Kim, E-H., Trubl, G., Jones, R., Roux, S., VerBerkmoes, N.C., Rich, V.I., & **Sullivan, M.B.** 2016. Illuminating structural proteins in viral “dark matter” with metaproteomics. **PNAS** published ahead of print February 16, 2016, doi:10.1073/pnas.1525139113.
65. Krupovic, M., Dutilh, B.E., Adriaenssens, E.M., Wittmann, J., Vogensen, F.K., **Sullivan M.B.**, Rumnieks, J., Prangishvili, D., Lavigne, R., Kropinski, A.M., Klumpp, J., Gillis, A., Enault, F., Edwards, R.A., Duffy, S., Clokie, M.R., Barylski, J., Ackermann, H.W., & Kuhn, J.H. 2016. Taxonomy of prokaryotic viruses: update from the ICTVbacterial and archaeal viruses subcommittee. **Archives of Virology** (Impact Factor: 2.39). 01/2016; 161. DOI: 10.1007/s00705-015-2728-0.
64. Pesant, S., Not, F., Picheral, M., Kandels-Lewis, S., Le Bescot, N., Gorsky, G., Iudicone, D., Karsenti, E., Speich, S., Troublé, R., Dimier, C., Searson, S. & Tara Oceans Consortium Coordinators. 2015. Open science resources for the discovery and analysis of Tara Oceans data. **Scientific Data 2**. Article number: 150023.
63. Dang, V. & Howard-Varona, C., Schwenck, S. & **Sullivan, M.B.** (2015) Variably lytic infection dynamics of large *Bacteroidetes* podovirus phi38:1 against two *Cellulophaga baltica* host strains. **Env. Micro**. In press.
62. Roux, S., Hallam, S., Woyke, T., **Sullivan, M.B.** 2015. Viral dark matter and virus-host interactions resolved from publicly available microbial genomes. **eLife**. 10.7554/eLife.08490.
 • Highlighted 14 Aug 2015 in *Nature Reviews Microbiology* 13: 526-527.
61. Poulos, B.T., John, S.G., & **Sullivan, M.B.** 2015. Iron Chloride Flocculation of Bacteriophages from Seawater. **Bacteriophages: Methods and Protocols**. in press.
60. Brum, J.R., Hurwitz, B., Schofield, O., Ducklow, H., & **Sullivan, M.B.** 2015. Seasonal time bombs: Dominant temperate viruses affect Southern Ocean microbial dynamics. **ISME J**. in press.
59. de Vargas, C.*, Audic, S.*, Henry, N.*, Decelle, J.*, Mahé, F.*, Logares, R., Lara, E., Berney, C., Le Bescot, N., Probert, I., Carmichael, M., Poulain, J., Romac, S., Colin, S., Aury, J.-M., Bittner, L., Chaffron, S., Dunthorn, M., Engelen, S., Flegontova, O., Guidi, L., Horák, A., Jaillon, O., Lima-Mendez, G., Lukeš, J., Malviya, S., Morard, R., Mulot, M., Scalco, E., Siano, R., Vincent, F., Zingone, A., Dimier, C., Picheral, M., Searson, S., Kandels-Lewis, S., **Tara Ocean Coordinators**, Acinas, S.G., Bork, P., Bowler, C., Gorsky, G., Grimsley, N., Hingamp, P., Iudicone, D., Not, F., Ogata, H., Pesant, S., Raes, J., Sieracki, M.E., Speich, S., Stemmann, L., Sunagawa, S., Weissenbach, J., Wincker, P., & Karsenti, E. 2015. Eukaryotic plankton diversity in the sunlit ocean. **Science**, 348. doi: 10.1126/science.1261605 (*=co-first authors)
58. Brum, J.R., Ignacio-Espinoza, J.C., Roux, S., Doucier, G., Acinas, S.G., Alberti, A., Chaffron, S., Cruaud, C., de Vargas, C., Gasol, J.M., Gorsky, G., Gregory, A.C., Guidi, L., Hingamp, P., Iudicone, D., Not, F., Ogata, H., Pesant, S., Poulos, B.T., Schwenck, S.M., Speich, S., Dimier, C., Kandels-Lewis, S., Picheral, M., Searson, S., Tara Oceans Coordinators, Bork, P., Bowler, C., Sunagawa, S., Wincker, P., Karsenti, E.,

- & **Sullivan, M.B.** 2015. Patterns and ecological drivers of ocean viral communities. *Science*. 348. doi:10.1126/science.1261498.
- Highlighted in Quanta Magazine by Carl Zimmer (21 May 2015)
 - Highlighted on NPR Science Friday with Ira Flatow (21 May 2015)
 - Part of a *Tara Oceans* Special Issue on Ocean Plankton that was highlighted in the New York Times (21 May 2015), the BBC News (22 May 2015) and *Nature Reviews Microbiology* (8 June 2015)
57. Lima-Mendez, G., Faust, K., Henry, N., Decelle, J., Colin, S., Carcillo, F., Chaffron, S., Ignacio-Espinosa, J.C., Roux, S., Vincent, F., Bittner, L., Darzi, Y., Wang, J., Audic, S., Berline, L., Bontempi, G., Cabello, A.M., Coppola, L., Cornejo-Castillo, F.M., d'Ovidio, F., De Meester, L., Ferrera, I., Garet-Delmas, M.-J., Guidi, L., Lara, E., Pesant, S., Royo-Llonch, M., Salazar, G., Sánchez, P., Sebastian, M., Souffreau, C., Dimier, C., Picheral, M., Searson, S., Kandels-Lewis, S., Tara Oceans Coordinators, Gorsky, G., Not, F., Ogata, H., Speich, S., Stemmann, L., Weissenbach, J., Wincker, P., Acinas, S.G., Sunagawa, S., Bork, P., **Sullivan, M.B.**, Karsenti, E., Bowler, C., de Vargas, C., & Raes, J. 2015. Determinants of community structure in the global plankton interactome. *Science*. 348. doi:10.1126/science.1262073.
56. Villar, E., Farrant, G.K., Follows, M., Garczarek, L., Speich, S., Audic, S., Bittner, L., Blanke, B., Brum, J.R., Brunet, C., Casotti, R., Chase, A., Dolan, J.R., d'Ortenzio, F., Gattuso, J.-P., Grima, N., Guidi, L., Hill, C.N., Jahn, O., Jamet, J.-L., Le Goff, H., Lepoivre, C., Malviya, S., Pelletier, E., Romagnan, J.-B., Roux, S., Santini, S., Scalco, E., Schwenck, S.M., Tanaka, A., Testor, P., Vannier, T., Vincent, F., Zingone, A., Dimier, C., Picheral, M., Searson, S., Kandels-Lewis, S., Tara Oceans Coordinators, Acinas, S.G., Bork, P., Boss, E., de Vargas, C., Gorsky, G., Ogata, H., Pesant, S., **Sullivan, M.B.**, Sunagawa, S., Wincker, P., Karsenti, E., Bowler, C., Not, F., Hingamp, P., & Iudicone, D. 2015. Environmental characteristics of Agulhas rings affect interocean plankton transport. *Science*. 348. doi:10.1126/science.1261447.
55. Sunagawa, S., Coelho, L.P., Chaffron, S., Kultima, J.R., Labadie, K., Salazar, G., Djahanschiri, B., Zeller, G., Mende, D.R., Alberti, A., Cornejo-Castillo, F.M., Costea, P.I., Cruaud, C., d'Ovidio, F., Engelen, S., Ferrera, I., Gasol, J.M., Guidi, L., Hildebrand, F., Kokoszka, F., Lepoivre, C., Lima-Mendez, G., Poulain, J., Poulos, B.T., Royo-Llonch, M., Sarmiento, H., Vieira-Silva, S., Dimier, C., Picheral, M., Searson, S., Kandels-Lewis, S., Tara Oceans Coordinators, Bowler, C., de Vargas, C., Gorsky, G., Grimsley, N., Hingamp, P., Iudicone, D., Jaillon, O., Not, F., Ogata, H., Pesant, S., Speich, S., Stemmann, L., **Sullivan, M.B.**, Weissenbach, J., Wincker, P., Karsenti, E., Raes, J., Acinas, S.G., & Bork, P. 2015. Structure and function of the global ocean microbiome. *Science*. 348. doi:10.1126/science.1261359.
54. Roux, S., Enault, F., Hurwitz, B.L., & **Sullivan, M.B.** 2015. VirSorter: mining viral signal from microbial genomic data. *PeerJ*. 3:e985.
53. Roux, S., Enault, F., Ravet, V., Pereira, O., & **Sullivan, M.B.** 2015. Genomic characteristics and environmental distributions of the uncultivated Far-T4 phages. *Frontiers in Microbiology*. in press.
52. Cunningham, B., Brum, J., Schwenck, S., **Sullivan, M.B.**, & John, S. 2015. An inexpensive, accurate and precise wet-mount method for enumerating aquatic viruses. *Appl. Env. Microbiol.* in press.
51. **Sullivan, M.B.** 2015. Viromes, not gene markers for studying dsDNA viral communities. *J. Virology*. 89: 2459-61.
50. Lara, E., Holmfedlt, K., Solonenko, N., Sà, E.L., Ignacio-Espinoza, J.C., Cornejo-Castillo, F.M., Verberkmoes, N.C., Vaqué, D., **Sullivan, M.B.**, & Acinas, S.G. 2015. Life-style and genome structure of marine *Pseudoalteromonas* siphovirus B8b isolated from the Northwestern Mediterranean Sea. *PLOS One*. 10:e0114829.
49. Dang, V.T. & **Sullivan, M.B.** 2014. Emerging methods to study bacteriophage infection at the single-cell level. *Front. Microbiol.* 5:724.
48. **Sullivan, M.B.** 2014. The Phage Metagenomic Revolution. *Life in Our Phage World*. 2:55-70.
47. Brum J.R. & **M.B. Sullivan**. 2015. Rising to the challenge: Advances in marine virology accelerate the pace of discovery. *Nature Reviews in Microbiology*. 13:147–159.
46. Roux, S., A.K.Hawley, M.T.Beltran, M.Scofield, P.Schwientek, R.Stepanauskas, T.Woyke, S.J.Hallam & **M.B. Sullivan**. 2014. Ecology and evolution of viruses infecting uncultivated SUP05 bacteria as revealed by single-cell and environmental- genomics. *eLife*. 3:e03125.
45. Hurwitz, B.L., Brum, J.R., & **Sullivan, M.B.** 2014. Depth-stratified functional and taxonomic niche specialization in the 'core' and 'flexible' Pacific Ocean Virome. *ISMEJ*. 9:472–484.
44. Hurwitz, B., A. Westvald, J. Brum & **M.B. Sullivan**. 2014. Modeling ecological drivers in marine viral communities using comparative metagenomics and network analyses. *PNAS*. 111:10714–19.

43. Deng, L., J.C. Ignacio-Espinoza, A. Gregory, B.T. Poulos, J.S. Weitz, P. Hugenholtz & **M.B. Sullivan**. 2014. Viral tagging reveals discrete populations in *Synechococcus* viral genome sequence space. *Nature*. 513:242-5.
42. Holmfeldt, K., C. Howard-Varona, N. Solonenko & **M.B. Sullivan**. 2014. Contrasting genomic patterns and infection strategies of two co-existing *Bacterioidetes* podovirus genera. *Environ Microbiol*. 16:2501–2513.
41. Hurwitz, B., S.J. Hallam[∞] & **M.B. Sullivan**[∞]. 2013. Metabolic reprogramming by viruses in the sunlit and dark ocean. *Genome Biology*. 14:R123. (∞=co-corresponding authors)
40. Solonenko, S.A. & **M.B. Sullivan**. 2013. Preparation of metagenomic libraries from naturally occurring marine viruses. *Methods in Enzymology*. 531:143-65.
39. Ignacio-Espinoza, J.C., S.A. Solonenko & **M.B. Sullivan**. 2013. The global virome: not as big as we thought? *Current Opinion in Virology*. 3:566-71.
38. Holmfeldt, K., N. Solonenko, M. Shah, K. Corrier, L. Riemann, N.C. VerBerkmoes & **M.B. Sullivan**. 2013. Twelve newly discovered phage genera are ubiquitous in the global oceans. *PNAS*. 110:12798-803.
37. Solonenko, S., J.C. Ignacio-Espinoza, A. Alberti, C. Cruaud, S.J. Hallam, K. Konstantinidis, G. Tyson, P. Wincker & **M.B. Sullivan**. 2013. Sequencing platform and library preparation choices impact viral metagenomes. *BMC Genomics*. 14:320.
36. Brum, J., R. Schenck & **M.B. Sullivan**. 2013. Global morphological analysis of marine viruses shows minimal regional variation and dominance of non-tailed viruses. *ISME J*. 7:1738-51.
35. Ceyssens, P.J., A. Aertsen, D. Donovan, R. Lavigne, **M.B. Sullivan**, L. Debarbieux & M. Vaneechoutte. 2013. Meeting report of the European Molecular Biology Organization (EMBO) Symposium 'Viruses of Microbes II', Brussels, July 2012. *Research in Microbiology*. 164:799-805.
34. Zhao, Y.* & B. Temperton*, J.C. Thrash, M.S. Schwalbach, K.L. Vergin, Z.C. Landry, M. Ellisman, T. Deerinck, **M.B. Sullivan** & S.J. Giovannoni. 2013. Abundant SAR11 viruses in the ocean. *Nature*. 494:357-60.
33. Allers, E.* & C. Moraru*, M.B. Duhaime, E. Beneze, N. Solonenko, J. Barrero-Canosa, R. Amann[∞] & **M.B. Sullivan**[∞]. 2013. Single-cell and population level viral infection dynamics revealed by phageFISH, a method to visualize intracellular and free viruses. *Environmental Microbiology*. 15: 2306-18. (*=co-first, ∞=co-corresp. authors)
32. Hurwitz, B. & **M.B. Sullivan**. 2013. The Pacific Ocean Virome (POV): a marine viral metagenomic dataset and associated protein clusters for quantitative viral ecology. *PLoS One*. 8:e57355.
31. 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 & S.W. Chisholm. 2013. Genomes of marine cyanopodoviruses reveal multiple origins of diversity. *Environmental Microbiology*. 15:1357-76.
30. Weitz, J.S., T. Poisot, J.R. Meyer, C.O. Flores, S. Valverde, **M.B. Sullivan** & M.E. Hochberg. 2013. Ecology and evolution of phage-bacteria infection networks. *Trends in Microbiology*. 21:82-91.
29. Duhaime, M.B. & **M.B. Sullivan**. 2012. Ocean viruses: Rigorously evaluating the metagenomic sample-to-sequence pipeline. *Virology*. 434:181-6. (special 'Viruses of Microbes' issue)
28. Deng, L., A. Gregory, S. Yilmaz, B.T. Poulos, P. Hugenholtz & **M.B. Sullivan**. 2012. Contrasting strategies of viruses that infect photo- and hetero-trophic bacteria revealed by viral-tagging. *mBio*. 3:e00373-12.
• Faculty of 1000Prime recommended this article "of special significance" on 27 Aug 2013
27. Allers, E.* & J.J. Wright*, K.M. Konwar, C.G. Howes, E. Beneze, S.J. Hallam[∞] & **M.B. Sullivan**[∞]. 2012. Diversity and population structure of Marine Group A bacteria in the Northeast subarctic Pacific Ocean. *ISME J*. 7:256-268. (*=co-first authors, ∞=co-corresponding authors)
26. Hurwitz, B.L., L. Deng, B.T. Poulos & **M.B. Sullivan**. 2012. Comparative evaluation of methods to concentrate and purify wild ocean virus communities through replicated metagenomics. *Environmental Microbiology*. 15:1428-40.
25. Duhaime, M., L. Deng, B.T. Poulos & **M.B. Sullivan**. 2012. Towards quantitative metagenomics of wild viruses and other ultra-low concentration DNA samples: a rigorous assessment and optimization of the linker amplification method. *Environmental Microbiology*. 14:2526-37.
24. Ignacio-Espinoza, J.C. & **M.B. Sullivan**. 2012. Phylogenomics of T4 cyanophages: Lateral gene transfer in the "core" and origins of host genes. *Environmental Microbiology*. 14:2113-26.
23. Holmfeldt, K., D. Odic, **M.B. Sullivan**, M. Middleboe & L. Riemann. 2012. Cultivated ssDNA phages that infect marine *Bacteroidetes* prove difficult to detect with DNA-binding stains. *Appl. Env. Micro*. 78: 892-4.

22. Marine, R., S.W. Polson, J. Ravel, G. Hatfull, D. Russell, **M.B. Sullivan**, F. Syed, M. Dumas & K.E. Wommack. 2011. Evaluation of a transposase protocol for rapid generation of shotgun high-throughput sequencing libraries from nanogram quantities of DNA. *Appl. Envir. Microbiol.* 77:8071-9.
21. Karsenti, E., S.G. Acinas, P. Bork, C. Bowler, C. De Vargas, J. Raes, **M.B. Sullivan**, D. Arendt, F. Benzoni, J.M. Claverie, M. Follows, G. Gorsky, P. Hingamp, D. Iudicone, O. Jaillon, S. Kandels-Lewis, U. Krzic, F. Not, H. Ogata, S. Pesant, E.G. Reynaud, C. Sardet, M.E. Sieracki, S. Speich, D. Velayoudon, J. Weissenbach, P. Wincker & the Tara Oceans Consortium. 2011. A holistic approach to marine ecosystems biology. *PLoS Biology*. 9:e1001177. (note: first 7 authors drove and wrote the paper)
20. John, S.G., C.B. Mendez, L. Deng, B.T. Poulos, A.K.M. Kauffman, S.E. Kern, J. Brum, M.F. Polz, E.A. Boyle & **M.B. Sullivan**. 2011. A simple and efficient method for concentration of ocean viruses by chemical flocculation. *Environmental Microbiology Reports*. 3:195-202.
- *19. **Sullivan, M.B.**, K.H. Huang, J.C. Ignacio-Espinoza, A.M. Berlin, L. Kelly, P.R. Weigele, A.S. DeFrancesco, S.E. Kern, L.R. Thompson, S. Young, C. Yandava, R. Fu, B. Krastins, M. Chase, D. Sarracino, M.S. Osburne, M.R. Henn & S.W. Chisholm. 2010. Genomic analysis of oceanic cyanobacterial myoviruses compared with T4-like myoviruses from diverse hosts and environments. *Environmental Microbiology*, 12:3035-56.
- *18. Liu, X., Q. Zhang, K. Murata, M.L. Baker, **M.B. Sullivan**, C. Fu, M.T. Dougherty, M.F. Schmid, M.S. Osburne, S.W. Chisholm & W. Chiu. 2010. Structural changes in a marine podovirus associated with viral genome release into *Prochlorococcus*. *Nature Structural & Molecular Biology*. 17:831-837.
- *17. Henn, M.R., **M.B. Sullivan**, N. Stange-Thomann, M.S. Osburne, A.M. Berlin, L. Kelly, C. Yandava, C. Kodira, Q.D. Zeng, M. Weiland, T. Sparrow, S. Saif, G. Giannoukos, S.K. Young, C. Nusbaum, B.W. Birren & S.W. Chisholm. 2010. Analysis of high-throughput sequencing and annotation strategies for phage genomes. *PLoS One*. 5:e9083.
- *16. **Sullivan, M.B.**, B. Krastins, J. Hughes, L. Kelly, M. Chase, D. Sarracino, & S.W. Chisholm. 2009. The genome and structural proteome of an ocean cyanobacterial siphovirus: A new window into the cyanobacterial 'mobilome'. *Environmental Microbiology*. 11:2935-51.
- *15. **Sullivan, M.B.**, M.C. Coleman, V. Quinlivan, J.E. Rosenkrantz, A.S. DeFrancesco, G. Tan, R. Fu, J.A. Lee, J.B. Waterbury, J.P. Bielawski, & S.W. Chisholm. 2008. Portal protein diversity and phage ecology. *Environmental Microbiology*. 10:2810-23.
- *14. Dammeyer, T., S.C. Bagby, **M.B. Sullivan**, S.W. Chisholm & N. Frankenberg-Dinkel. 2008. Efficient phage-mediated pigment biosynthesis in oceanic cyanobacteria. *Curr. Biol.*18:442-8.
- *13. Moore, L.R., A. Coe, E.R. Zinser, M.A. Saito, **M.B. Sullivan**, D. Lindell, K. Frois-Moniz, J.B. Waterbury & S.W. Chisholm. 2007. Culturing the marine cyanobacterium *Prochlorococcus*. *Limnology & Oceanography: Methods*. 5:353-362.
- *12. Breitbart, M., L.R. Thompson, C.S. Suttle & **M.B. Sullivan**. 2007. Exploring the vast diversity of marine viruses. *Oceanography*. 20:135-139.
- *11. Lindell, D.L., J.D. Jaffe, M.L. Coleman, M.E. Futschik, I.M. Axmann, T. Rector, G. Kettler, **M.B. Sullivan**, R. Steen, W.R. Hess, G.M. Church & S.W. Chisholm. 2007. Genome-wide expression dynamics of a marine virus and host reveal features of co-evolution. *Nature*. 449:83-86.
- *10. **Sullivan, M.B.*** & D.L. Lindell*, J.A. Lee, L.R. Thompson, J.P. Bielawski & S.W. Chisholm. 2006. Prevalence and evolution of core photosystem II genes in marine cyanobacterial viruses and their hosts. *PLoS Biology*. 4:e234. (* co-first authors)
- Faculty of 1000 "must read" 6 July 2006 (<http://www.f1000biology.com/article/16802857>), *Science* (21 Jul 06) + *Nat. Rev. Micro.* (Sept 06, v.4) Literature Highlight, 1 of 4 refs in Goldenfield & Woese, 2007. *Nature* 445: 369.
- *9. Coleman, M.C., **M.B. Sullivan**, A.C. Martiny, C. Steglich, K. Barry, E.F. Delong & S.W. Chisholm. 2006. Genomic islands and the ecology and evolution of *Prochlorococcus*. *Science*. 311:1768-1770.
- *8. DeLong, E.F., C.M. Preston, T. Mincer, V. Rich, S.J. Hallam, N.U. Frigaard, A. Martinez, **M.B. Sullivan**, R. Edwards, B.R. Brito, S.W. Chisholm & D.M. Karl. 2006. Community genomics among stratified microbial assemblages in the ocean's interior. *Science*. 311:496-503.
- Faculty of 1000 "Recommended paper" 17 Feb 2006
- *7. Paul, J.H. & **M.B. Sullivan**. 2005. Marine phage genomics: What have we learned? *Comp. Biochem. Physiol. B Biochem. Mol. Biol.* 16:299-307.

- *6. **Sullivan, M.B.**, M. Coleman, P. Weigle, F. Rohwer & S.W. Chisholm. 2005. Three *Prochlorococcus* cyanophage genomes: Signature features and ecological interpretations. *PLoS Biology*. 3:e144.
 - *Nature Reviews Microbiology*, Highlight of the Literature (July 2005, vol. 3, 520)
- *5. Lindell, D.L.* & **M.B. Sullivan***, Z.I. Johnson, A. Tolonen, F. Rohwer & S.W. Chisholm. 2004. Transfer of photo-synthesis genes to and from *Prochlorococcus* viruses. *PNAS* 101:11013-11018. (*=co-first authors)
- *4. **Sullivan, M.B.**, J.B. Waterbury & S.W. Chisholm. 2003. Cyanophages infecting the oceanic cyanobacterium, *Prochlorococcus*. *Nature*. 424:1047-1051.
- *3. Rocap, G.R. F.W. Larimer, J. Lamerdin, S. Malfatti, P. Chain, N.A. Ahlgren, A. Arellano, M. Coleman, L. Hauser, W.R. Hess, Z.I. Johnson, M. Land, D. Lindell, A.F. Post, W. Regala, M. Shah, S.L. Shaw, C. Steglich, **M.B. Sullivan**, C.S. Ting, A. Tolonen, E.A. Webb, E.R. Zinser & S.W. Chisholm. 2003. Niche differentiation as seen from whole genome comparison of two ecotypes of *Prochlorococcus*. *Nature*. 424:1042-1047.
- *2. Paul, J.H., **M.B. Sullivan**, A.M. Segall & F. Rohwer. 2002. Marine Phage Genomics. *Comp. Biochem. Physiol. B Biochem. Mol. Biol.* 133:463-76.
- *1. Kana, T.M., **M.B. Sullivan**, J.C. Cornwell & K.M. Groszkowski. 1998. Denitrification in estuarine sediments as determined by membrane inlet mass spectrometry. *Limnology & Oceanography*. 43(2):334-339.

Electron micrographs published

Karleskint, G., R. Turner & J. Small. 2010. Introduction to Marine Biology, 3rd edition. Cengage Learning-Brooks/Cole: Florence, KY.

Garrison, T. 2010. Oceanography: An Invitation to Marine Science, 7th edition. Cengage Learning-Brooks/Cole: Florence, KY.

Six Sullivan cyanophage micrographs featured on European Union project Micro B3 banner, <http://www.microb3.eu/news/micro-b3-banners>, and image available at Sullivan Lab website, <http://eebweb.arizona.edu/Faculty/mbsulli/outreach.htm>.

Service / Outreach

Local and State Outreach:

- *High school course:* Co-developed NSF-funded course module, "Ocean viruses: From isolates to genomes," with Margaret Wilch (Tucson high school teacher) & Jennifer Brum (Sullivan post-doc); partially taught with Sullivan Lab members; Spring 2009, 2010, and 2011 at Tucson High School.
- *Oceans exhibit at Biosphere 2:* Co-developed an Oceans exhibit at Biosphere 2 highlighting ocean issues through the story of global oceanography (Sullivan lab is participant in *Tara Oceans*, French, and *Malaspina*, Spanish, global oceanographic research expeditions), with Matt Adamson (Biosphere 2), Becky Nankivell (Sullivan Outreach Coordinator), and John Kelly (UA Museums); on display September 2010 - September 2011 at Biosphere 2. Online exhibit available at <http://www.eebweb.arizona.edu/faculty/mbsulli/b2/exhibit-home.htm>.
- *Tara Oceans expedition launch event:* Organized event attended by about 300 visitors; September 5, 2009 at Biosphere 2.
- *Undergraduate course and exhibit:* Participated in Prof. Ellen McMahon's "Design and Science" training course as a *Tara Oceans* consultant, resulted in numerous posters produced by design students to communicate ocean messages to the public; on display December - January 2010 in Kachina Gallery, UA Student Union, then February - May 2010 at Biosphere 2.

National / International Outreach:

- *Middle and high school Oceans curriculum:* Helped develop curriculum for Tucson schools, also advertised to national teachers through the Biosphere 2 Stem Program, with Elena Martin (Tucson high school teacher), Margaret Wilch (Tucson high school teacher) and Victoria Milani (retired middle school teacher); curriculum: <http://www.b2science.org/teach/tara/curric> and http://eebweb.arizona.edu/Faculty/mbsulli/outreach/hs_lab_course.htm.
- *Contributor and interviewee for Biosphere 2 research specials:* (a) Arizona Public television, *Wavelengths* (b) Discover Magazine 30th anniversary issue, interviewed July 2010, (c) National Geographic Explorer's Series, broadcast August 2010.

- *Contributer to Biosphere 2 Ocean outreach*: (a) Helped developed an 'Oceans' exhibit that highlighted how Biosphere 2 Ocean research was translated to global oceanography, as well as emphasized the value and importance of microbes and viruses in ocean ecosystems (details above), (b) converted data from undergraduate student independent studies into Guides for the tour group leaders (both Guides are available at <http://eebweb.arizona.edu/Faculty/mbsulli/outreach.htm>)
- *Environmental Virology workshop*: Organized workshop to expose late PhD students and post-docs to cutting edge experimental, informatic, and theoretical thinking, attended by 50+ participants including individuals from 8 countries and 3 program officers from Moore Foundation and NSF; secured >\$35K funding from Moore Foundation, DOE, Sage Science, Amnis, Fisher Scientific, Millipore, the Biosphere 2 Institute to significantly subsidize workshop expenses; January 6-12, 2013 at Biosphere 2.
- *Hosted national scholars*:
 - (a) Steven Abedon, Ohio State University, phage ecologist; 1 month visit, January 2010
 - (b) Maureen Coleman & Jake Waldbauer, California Institute of Technology, microbial ecologists, led to successful Moore Foundation RFI proposal; 3 day visit, February 2011
 - (c) Joshua Weitz, Georgia Institute of Technology, theoretical phage-host ecologist, led to numerous collaborations to bring theoretical, ecological grounding to our large-scale datasets; 3 day visit, September 2011
 - (d) Brady Cunningham, University of South Carolina, & Mark Anderson, University of Chicago; 1.5 week training visit, May 2013
 - (e) Matt Kane, NSF Program Director; sabbatical, Fall 2013 – Summer 2014
 - (f) Joshua Weitz, Georgia Institute of Technology; sabbatical, Fall 2013 – Summer 2014.
- *Hosted international scholars*:
 - (a) Melissa Duhaime, Max Planck Institute for Marine Microbiology, Bremen, Germany; Spring 2009
 - (b) Cristina Moraru, Max Planck Institute for Marine Microbiology, Bremen, Germany; Summer 2011
 - (c) Elena Lara, Institute of Marine Sciences (ICM-CSIC), Barcelona, Spain; Summer 2012
 - (d) Pedro Márquez Zacarías, Universidad Nacional Autónoma de México; Summer 2013
 - (e) Chung Yeon Hwang, Korea Polar Research Institute, Incheon, Korea; July 2013.
- *Invited teacher at the ECODIM 2014 course in Chile*: Invited to teach a hands-on graduate training course in environmental microbiology headed by Oswaldo Ulloa.

University Committees:

- *Steering committees:*

- (a) Biosphere 2 Environmental Science; 2009-present
- (b) Biosphere 2 Outreach and Education; 2009-2011
- (c) UA Astrobiology; 2009-2010
- (d) Big Data; 2012-present
- (e) Data management; 2012-present

- *Advisory committees:*

- (a) Genome Sequencing Core (Arizona Research Labs, 2010-present)
- (b) Flow Cytometry Core (Arizona Research Labs, 2010-present)
- (c) High-performance Computing Cluster (Arizona Research Labs, 2010)
- (d) Precision Health Council; 2013-2014

College Committees:

- IGERT Genomics steering committee; 2010-present

Departmental Committees:

- Monday seminar committee; FY2009, FY2010
- Tuesday seminar committee; FY2012
- EEB Genomics Faculty search committee; 2009
- Served on 11 thesis committees (counting Ignacio-Espinoza's two stages as a single committee)
 - o *Masters*: Chris Schvarz (Hackett student, graduated EEB), Lea Gemmel (Worobey student, graduated EEB), Julio Ignacio-Espinoza (Sullivan student, graduated EEB), Ramanujam Nadathur (Hackett student, graduated GIDP), Jeremy Jonas (Nachman student, graduated EEB), Lynn Massey (Rich student, SWES).

- *PhD*: Jana d' Uren (Arnold student, graduated Plant Sciences), Parris Humphrey (Whiteman student, EEB, not on permanent committee), Bonnie Hurwitz (Sullivan student, graduated EEB), Julio Ignacio-Espinoza (Sullivan student, MCB), Sarah Doore (Fane student, Plant Pathology and Microbiology), Gareth Trubl (Rich student, SWES).

Other Service:

- *Viral scientific coordinator*: for each of two global oceanographic research expeditions – *Tara Oceans* (French expedition 2009-2012) and *Malaspina* (Spanish expedition 2010-2011).
- *Professional Advisory Boards*: (a) DOE Joint Genome Institute Program Advisory Committee; 2010, (b) Selection committee for Gordon and Betty Moore Foundation Virus Sequencing initiative; 2009-2010.
- *Grant Panels*: (a) DOE JGI Community Sequencing Program; 2008, 2009, (b) NSF/USDA Microbial Genome Sequencing panel; May 2009, (c) DOE JGI-EMSL User Program; May 2014.
- *Proposal reviewer*: (a) Diverse NSF directorates (DEB, MCB, DBI, OCE, Polar Programs, MRI); 2006-present, (b) The Natural Environment Research Council (NERC); 2006-present, (c) Agence Nationale de la Recherche; 2008-present.
- *Journal reviewer*: (a) *PLoS Biology*; 2005-present, (b) *Environmental Microbiology*; 2006-present, (c) *Applied and Environmental Microbiology*; 2006-present, (d) *Molecular Biology and Evolution*; 2008-present, (e) *Aquatic Microbial Ecology*; 2009-present, (f) *Science*; 2009-present, (g) *PNAS*; 2009-present, (h) *ISME Journal*; 2009-present, (i) *Microbiology and Molecular Biology Reviews*; 2011-present, (j) *Nature*; 2011-present, (k) *mBio*; 2012-present.
- *Active supporter*: The Cyanophage Literome Project, website: <http://www.phage.org>; 2002-present.
- *Research cruise participation and support*:
Sullivan post-docs: (a) Allers: R/V Tully, LineP subarctic Pacific Ocean; June 2009, (b) Brum: R/V Tully, LineP subarctic Pacific Ocean; Aug 2009, (c) Deng: R/V Western Flyer, Monterey Bay Line67; Nov 2009, (d) Brum: small-boat ops, Palmer Station, Antarctica; Nov-Dec 2010, (e) Brum: Eastern Tropical North Pacific Ocean; Jun 2013.
Sullivan students: (a) Ignacio-Espinoza: R/V Tara, L'Orient France; Aug 2009 (b) Ignacio-Espinoza: R/V Urania, eastern Mediterranean Sea hypersaline cruise; Sept 2009, (c) Knatz: R/V Urania, eastern Mediterranean Sea hypersaline cruise; Sept 2009.
Sullivan collaborators: (a) Hallam: University of British Columbia, R/V Tully, LineP subarctic Pacific Ocean; Jun 2008; Aug 2008; Feb 2009; Jun 2009; Aug 2009; Aug 2010, (b) Worden: MBARI, R/V Western Flyer, Monterey Bay Line67; Nov 2007; Nov 2009 (c) Bourne: Australian Inst. Marine Sciences, R/V Cape Ferguson, Great Barrier Reef; Oct 2009; Feb 2010.

Scholarly Presentations

Summary: 58 invited talks or lectures since 2008 (36 domestic and 22 foreign).

- 2008 1/9 DOE Joint Genome Institute, Walnut Creek, CA
- 1/25 San Diego State University, Trilab seminar, San Diego, CA
- 4/12 American Society of Microbiology, Southwest regional meeting, Tempe AZ
- 7/10 Wellcome Trust Statistical methods for metagenomics workshop, Berlin, Germany
- 7/15 Gordon Research Conference, Marine Microbes, Il Ciocco, Italy
- 10/6 Environmental metagenomics workshop, Kiel, Germany
- 10/9 Max Planck Institute, Bremen, Germany
- 10/13 EU/US metagenomics workshop, Monaco
- 2009 2/17 *Tara Oceans* planning meeting, Roscoff, France
- 3/17 Monterey Bay Aquarium Research Institute, Moss Landing, CA
- 3/27 University of British Columbia, Vancouver, Canada
- 4/21 University of Southern California, Los Angeles, CA
- 4/28 AAM Colloquium "Exploring the Rare Biosphere", San Francisco, CA
- 5/17 American Society of Microbiology, Philadelphia, PA
- 6/15 Agouon Oceanography Course, invited lecturer, Honolulu, HI
- 2010 6/17 Australian Institute of Marine Sciences, Townsville, Australia
- 7/9 Advanced Water Management Center, Brisbane, Australia

- 2011 3/22 European Molecular Biological Labs, "Viruses of the Environment", Heidelberg, Germany
- 2012 1/5 DOE Joint Genome Institute, Walnut Creek, CA
- 3/22 DOE Joint Genome Institute Users Meeting, Walnut Creek, CA
- 7/18 ISVM 'Viruses of Microbes' Bi-annual meeting, Brussels, Belgium
- 8/22 ISME Bi-annual meeting, Copenhagen, Denmark
- 11/15 Ecole Normale Superior, Tara Oceans Coordinators and SAB meeting, Paris, France
- 2013 1/16 Bigelow Laboratory for Ocean Sciences, Boothbay Harbor, ME
- 2/4 Oregon State University, Corvallis, OR
- 2/19 U British Columbia, Vancouver, BC, Canada
- 3/14 U Wisconsin-Madison, Madison, WI
- 3/18 Microbial ecology and biogeochemistry of OMZ waters workshop, Santa Cruz, Chile
- 4/19 Plant Sciences Department, U Arizona, Tucson, AZ
- 4/13 American Society of Microbiology Southwest Regional Meeting, Tucson, AZ
- 5/18 American Society of Microbiology, National Meeting - Metagenomics Workshop, Denver, CO
- 7/7 Gordon Research Conference on Applied and Environmental Microbiology, Mt. Holyoke, MA
- 10/2 U Colorado Boulder, Boulder, CO
- 11/4 Aquatic Virology Workshop 7, Plenary Lecture, St. Petersburg, FL
- 2014 1/8 Austral Summer Institute Field Course, Universidad de Concepcion, Dichato, Chile
- 1/16 Ohio State University, Columbus, OH
- 5/17 American Society of Microbiology, Viromics Workshop, Boston, MA
- 6/4 U Chicago, Chicago, IL
- 6/21 American Society of Virology Meeting, Plenary Lecture, Fort Collins, CO
- 7/17 International Society for Viruses of Microorganisms, Zurich, Switzerland
- 2015 2/20 Montana State University, Bozeman, MO
- 4/13 University of Nebraska, Lincoln, NE
- 5/30 American Society of Microbiology, National Meeting, New Orleans, LA
- 6/11 Federation of European Microbiological Societies, 6th Congress, Maastricht, Netherlands
- 6/18 Third Microbial Single Cell Genomics workshop, Boothbay Harbor, ME
- 10/13 Brazilian Virology Society, Florianopolis, Brazil
- 10/26 Tara Oceans Retreat, Roscoff, France
- 11/18 Bowling Green State University, Bowling Green, OH
- 11/30 COP21 Climate Change Meetings, Paris, France
- 12/4 Lung Virome Symposium, Tucson, AZ
- 2016 1/15 Deep sea microbiology symposium, Universidad de Concepcion, Dichato, Chile
- 2/9 Center for RNA Biology talk, Ohio State University, Columbus, OH
- 2/10 Advances in Genome Biology and Technology, Orlando, FL
- 3/31 Center for Microbial Interface Biology talk, Ohio State University, Columbus OH
- 4/8 Biophysics Graduate Program Invited Seminar, Ohio State University, Columbus OH
- 4/8 Ohio Branch of the American Society of Microbiology Meeting, Cincinnati OH
- 5/6 Moore Foundation 'VirNuts' Collaborator's Meeting, Moss Landing CA
- 6/10 International Committee on the Taxonomy of Viruses Metagenomics Workshop, Boston MA
- 7/13 Eighth Aquatic Virology Workshop, Plymouth United Kingdom

List of Collaborators

Collaborators:

Steven Hallam (U. British Columbia), Philip Hugenholtz (U. Queensland, Australia), Rudolf Amann (Max Planck Institute, Bremen), Alexandra Worden (MBARI), Maureen Coleman and Jake Waldbauer (U. Chicago), Seth John (U. South Carolina), Steve Giovannoni (Oregon State U.), Felicia Goodrum (U. Arizona), Kenneth Knox (U. Arizona).

Graduate and Postdoctoral Advisors and Advisees:

Ph.D. advisors: S.W. Chisholm (MIT), J.B. Waterbury (Woods Hole Oceanographic Inst.)

Post-doctoral advisor: S.W. Chisholm (MIT)

Thesis (PhD) advisees at University of Arizona: Julio Ignacio-Espinoza (2008–present), Bonnie Hurwitz (2009–2012), Sergei Solonenko (2010–present), Cristina Howard (2012—present).

Post-doctoral advisees at University of Arizona: Li Deng (University of Bristol, 2008–2011), Elke Allers (Max Planck Institute, Bremen, 2009–2013), Jennifer Brum (University of Hawaii, 2010–present), Melissa Duhaime (Max Planck Institute, Bremen, 2010–2012), Karin Holmfeldt (Kalmar University, 2010–2012).