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• Curriculum vitae •

EDUCATION

- 2001-2007 **Ph.D., Biochemistry, Microbiology, and Molecular Biology**
The Pennsylvania State University, University Park, PA
Ph.D. dissertation: The genetic basis for pigment variation among green sulfur
bacteria.
- 1995-1999 **B.A., Biology**
University of Chicago, Chicago, IL

PROFESSIONAL APPOINTMENTS AND EXPERIENCE

- 2017-present **Associate Professor**
Department of Civil and Environmental Engineering, University of Delaware
- 2011-2017 **Assistant Professor**
Department of Civil and Environmental Engineering, University of Delaware.
- 2020-present **Joint appointment**
Department of Plant & Soil Sciences, University of Delaware
- 2011-present **Joint appointment**
School of Marine Science and Policy, University of Delaware
- 2012-present **Joint appointment**
Department of Biology, University of Delaware
- 2007-2010 **Post-doctoral Associate**
Department of Civil and Environmental Engineering, Massachusetts Institute of
Technology.
Advisor: Dr. Edward F. DeLong
- 2003-2007 **Graduate Research Assistant**
Department of Biochemistry and Molecular Biology, The Pennsylvania State
University.
Advisor: Dr. Donald A. Bryant
- 2001-2002 **Graduate Teaching Assistant**
Department of Biochemistry and Molecular Biology, The Pennsylvania State
University.
Advisor: Dr. Donald A. Bryant

- 2000-2001 **IRTA Post-Baccalaureate Fellow**
 Lab of Viral Diseases, National Institute on Allergy and Infectious Disease.
 Advisor: Dr. Alison McBride
- 1999-2000 **IRTA Post-Baccalaureate Fellow**
 Lab of Auditory Mechanics, National Institute on Deafness and Communicative
 Diseases
 Advisor: Dr. Richard Chadwick
- 1998-1999 **Undergraduate Research Assistant**
 Department of Organismal Biology and Anatomy, University of Chicago
 Advisor: Dr. Martin Feder
- 1998 **Summer REU Fellow**
 Department of Biomedical Engineering, Duke University
 Advisor: Dr. Fan Yuan

PROFESSIONAL DEVELOPMENT

- 2016 PRIMER-E Statistics Workshop, North Carolina State University, Raleigh, NC
- 2014 Faculty Success Program, National Center for Faculty Development and Diversity
- 2013 Problem-Based Learning Workshop, University of Delaware, Newark DE
- 2011 ExCEED Teaching Workshop, US Military Academy, West Point, NY
- 2010 Field Workshop on Anaerobic Phototrophic Ecosystems, Syracuse, NY
- 2002 Microbial Diversity Course, Marine Biological Laboratory, Woods Hole, MA

Professional Society Memberships

American Society of Microbiology

International Society for Microbial Ecology

1. RESEARCH AND SCHOLARLY ACTIVITY

1.1 Refereed publications

Cumulative h-index: 19; h-index since 2014: 15. Total citations: 2863 (calculated by Google Scholar; <http://www.udel.edu/003287>)

¹University of Delaware undergraduate student. ²University of Delaware graduate student. ³University of Delaware postdoctoral scientist.

*Corresponding author. Please note that I am generally listed last on publications for which *students or postdocs under my direction* are first authors.

Publications above the line were published after my promotion to Associate Professor at the University of

Delaware.

1. P.P. Hempel², J.L. Keffer³, **J.A. Maresca**. Light and Darkness Are Different Stimuli in Freshwater Heterotrophic Actinobacteria. 2021. *Frontiers in Microbiology* 12:739005. doi: 10.3389/fmicb.2021.739005
2. M.W. Hahn, A. Pitt, U. Koll, J. Schmidt, **J.A. Maresca**, M. Neumann-Schaal. *Aurantimicrobium photophilum* sp. nov., a non-photosynthetic bacterium adjusting its metabolism to the diurnal light cycle and reclassification of *Cryobacterium mesophilum* as *Terramesophilobacter mesophilus* gen. nov., comb. nov. 2021. *International Journal of Systematic and Evolutionary Microbiology* 71(8). <https://doi.org/10.1099/ijsem.0.004975>.
3. E.A. Kiledal², S.G. McDermott¹, O. Shevchenko, J. Ross, S. Bediako¹, **J.A. Maresca***. Complete genome sequence of *Rhodococcus qingshengii* strain CL-05, isolated from concrete. 2021. *Microbiology Resource Announcements* 10: e00376-21. <https://doi.org/10.1128/MRA.00376-21>.
4. E.A. Kiledal², J.L. Keffer³, and **J.A. Maresca***. Bacterial communities in concrete reflect its composite nature and change with weathering. 2021. *mSystems*. 6:e01153-20. DOI: 10.1128/mSystems.01153-20.
5. J.C. Dunning Hotopp, D.A. Baltrus, V.M. Bruno, J.J. Dennehy, S.R. Gill, **J.A. Maresca**, J. Matthijssens, I.L.G. Newton, C. Putonti, D.A. Rasko, A. Rokas, S. Roux, J.E. Stajich, K.M. Stedman, F.J. Stewart, J.C. Thrash. Best Practices for Successfully Writing and Publishing a Genome Announcement in Microbiology Resource Announcements. 2020. *Microbiology Resource Announcements* 36(9): e00763-20. DOI: 10.1128/MRA.00763-20.
6. P.P. Hempel², M. Yao², S.M. Yannarell¹, O. Shevchenko, F. Vogt, N.M. Donofrio, **J.A. Maresca***. Complete Genome Sequence of *Bacillus velezensis* strain S4, isolated from biochar-treated soil. 2020. *Microbiology Resource Announcements* 9(20): e00352-20. doi: 10.1128/MRA.00352-20
7. D.A. Baltrus, C.A. Cuomo, J.J. Dennehy, J.C. Dunning Hotopp, **J.A. Maresca**, I.L.G. Newton, D.A. Rasko, A. Rokas, S. Roux, J.E. Stajich. 2019. Future-Proofing Your Microbiology Resource Announcements Genome Assembly for Reproducibility and Clarity. *Microbiology Resource Announcements* 9(20): e00352-20. <https://doi.org/10.1128/MRA.00954-19>
8. **J.A. Maresca***, J.L. Keffer³, P. Hempel², S.W. Polson, O. Shevchenko, K. J. Miller², A. Singh², and M.W. Hahn. 2019. Light enhances growth in non-phototrophic Actinobacteria. *Journal of Bacteriology*. 201 (10): e00740-18. doi: 10.1128/JB.00740-18
 - This article was featured in a *Journal of Bacteriology* “Commentary” (<https://jb.asm.org/content/201/10/e00082-19>), which highlights articles that have been deemed of significant interest by the editors.
9. P.P. Hempel², J.L. Keffer³, O. Shevchenko, C. Henny, S.W. Polson, and **J.A. Maresca***. Complete genome sequence of *Microbacterium* sp. strain 10M-3C3, isolated from an extremely phosphorus-poor lake. 2019. *Microbiology Resource Announcements*. 8 (4): e01649-18. doi: 10.1128/MRA.01649-18
10. **J.A. Maresca***, K.J. Miller², J.L. Keffer³, C.R. Sabanayagam, B.J. Campbell. 2018. Distribution and diversity of rhodopsin-producing microbes in the Chesapeake Bay. *Applied and Environmental Microbiology* 84: e00137-18. doi:10.1128/AEM.00137-18
 - This research was featured on the cover of *Applied and Environmental Microbiology*, vol. 84, no. 13.
11. **J.A. Maresca***, P. Moser¹, T. Schumacher. Bacterial communities in and on concrete. 2017. *Materials and Structures* 50: 25. doi:10.1617/s11527-016-0929-y
12. M. Yao², C. Henny, **J.A. Maresca***. 2016. Freshwater bacteria release methane as a byproduct of phosphorus acquisition and oxidation. *Applied and Environmental Microbiology* 82: 6994-7003. doi:10.1128/AEM.02399-16
 - This article was featured in the *Applied and Environmental Microbiology* “Spotlight” (<http://aem.asm.org/content/82/23/6809.full>) and in the “Editors’ Choice” feature of *Science* (<http://science.sciencemag.org/content/354/6313/twil>), which highlight articles that have been deemed of significant interest by the editors.
13. J. Tian²; V. (Beneski) Miller²; P.C. Chiu; **J.A. Maresca**; M. Guo, P.T. Imhoff*. 2016. Nutrient release

- and ammonium sorption of poultry litter and wood biochars in stormwater treatment. *Science of the Total Environment* 553: 596–606. doi:[10.1016/j.scitotenv.2016.02.129](https://doi.org/10.1016/j.scitotenv.2016.02.129)
14. **J.A. Maresca***, J.L. Keffer³, K.J. Miller². Biochemical analysis of microbial rhodopsins. 2016. *Current Protocols in Microbiology* 41:1F.4.1-1F.4.18. DOI:10.1002/cpmc.5
 15. M. Yao², F. Elling, CA. Jones, C.P. Long², S. Nomosatryo, S.A. Crowe, M.R. Antoniewicz, K.-U. Hinrichs, **J.A. Maresca***. 2016. Heterotrophic bacteria from an extremely phosphate-poor lake have conditionally reduced phosphorus demand and utilize diverse sources of phosphorus. *Environmental Microbiology*, 18(2): 656-667. doi:[10.1111/1462-2920.13063](https://doi.org/10.1111/1462-2920.13063)
 16. J.L. Keffer³, M.W. Hahn, **J.A. Maresca***. 2015. Characterization of a novel freshwater rhodopsin from *Rhodoluna laticola*. *Journal of Bacteriology*, 197(16): 2704-2712. doi: 10.1128/JB.00386-15
 17. J.L. Keffer³, C.R. Sabanayagam, M.E. Lee, E.F. DeLong, M.W. Hahn, **J.A. Maresca***. 2015. Using total internal reflection fluorescence microscopy to visualize rhodopsin-containing cells. *Applied and Environmental Microbiology*, 81 (10): 3442-3450. doi:10.1128/AEM.00230-15.
 - This article was featured in the *Applied and Environmental Microbiology* “Spotlight,” which highlights articles that have been deemed of significant interest by the editors, and was recommended in the Faculty of 1000 as “being of special significance in its field” (<http://www.udel.edu/003349>).
 18. S.A. Crowe*, **J.A. Maresca**, CA. Jones, A.R. Sturm, S. Katsev, C. Henny, D.A. Fowle, R.P. Cox, E.F. DeLong, and D.E. Canfield. 2014. Deep-water anoxygenic photosynthesis in a ferruginous chemocline. *Geobiology*, 12: 322–339. doi: 10.1111/gbi.12089
 19. **J.A. Maresca**, S.A. Crowe, and J.L. Macalady*. 2012. Anaerobic photosynthetic ecosystems. *Geobiology*, 10: 193–195. doi: 10.1111/j.1472-4669.2012.00327.x
 20. A.L. Zerkle, K. Scheiderich, **J.A. Maresca**, L.J. Liermann, and S.L. Brantley*. 2011. Molybdenum isotope fractionation by cyanobacterial assimilation during nitrate utilization and N₂ fixation. *Geobiology*, 9(1):94-106. doi: 10.1111/j.1472-4669.2010.00262.x
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21. H. Kiss, M. Nett, N. Domin, K. Martin, **J.A. Maresca**, A. Copeland, A. Lapidus, S. Lucas, K. W. Berry, T. Glavina Del Rio, E. Dalin, H. Tice, S. Pitluck, P. Richardson, D. Bruce, L. Goodwin, C. Han, J. C. Detter, J. Schmutz, T. Brettin, F. Larimer, M. Land, L. Hauser, N. C. Kyrpides, N. Ivanova, M. Göker, T. Woyke, H.-P. Klenk, D.A. Bryant. 2011. Complete genome sequence of the filamentous gliding predatory bacterium *Herpetosiphon aurantiacus* type strain (114-95^T). *Standards in Genomic Sciences*, 5:3. doi: [10.4056/sigs.2194987](https://doi.org/10.4056/sigs.2194987)
 22. **J.A. Maresca**, J.C. Braff, and E.F. DeLong*. 2009. Characterization of canthaxanthin biosynthesis genes from an uncultured marine bacterium. *Environmental Microbiology Reports*, 1: 524-534. doi: 10.1111/j.1758-2229.2009.00075.x
 23. **J.A. Maresca**, S.P. Romberger, and D.A. Bryant*. 2008. Isorenieratene biosynthesis in green sulfur bacteria requires the cooperative actions of two carotenoid cyclases. *Journal of Bacteriology*, 190: 6384-6391. doi: 10.1128/JB.00758-08
 24. **J.A. Maresca**, J.E. Graham, and D.A. Bryant*. 2008. The biochemical basis for structural diversity in the carotenoids of phototrophic bacteria. *Photosynthesis Research*, 97: 121-140. doi: 10.1007/s11120-008-9312-3
 25. **J.A. Maresca**, J.E. Graham, M. Wu, J. Eisen, and D.A. Bryant*. 2007. Identification of a new family of lycopene cyclases in photosynthetic bacteria. *Proceedings of the National Academy of Sciences*, 104: 11784-11789. doi: 10.1073/pnas.0702984104
 26. Bryant, D. A.*, A.M. Garcia Costas, **J.A. Maresca**, A. Gomez Maqueo Chew, C.G. Klatt, M.M. Bateson, L.J. Tallon, J. Hostetler, W.C. Nelson, J.F. Heidelberg, and D.M. Ward. 2007. *Chloracidobacterium thermophilum*: an aerobic phototrophic acidobacterium. *Science*, 317: 523-526. DOI: 10.1126/science.1143236
 27. Kim, H., H. Li, **J.A. Maresca**, D.A. Bryant, and S. Savikhin*. 2007. Triplet exciton formation as a novel photoprotection mechanism in chlorosomes of *Chlorobium tepidum*. *Biophys. J.*, 93: 192-201. doi: [10.1529/biophysj.106.103556](https://doi.org/10.1529/biophysj.106.103556)
 28. **J.A. Maresca** and D.A. Bryant*. 2006. Identification of two genes encoding new carotenoid-modifying enzymes in the green sulfur bacterium *Chlorobium tepidum*. *Journal of Bacteriology*, 188: 6217-6223.

doi: 10.1128/JB.00766-06

29. R.E. Ley, J.K. Harris, J. Wilcox, J.R. Spear, S.R. Miller, B.M. Bebout, **J.A. Maresca**, D.A. Bryant, N.R. Pace*. 2006. Unprecedented bacterial community diversity and complexity in a hypersaline microbial mat. *Applied and Environmental Microbiology*, 72: 3685-3695. doi: 10.1128/AEM.72.5.3685-3695.2006
30. A.R. Brannon, **J.A. Maresca**, J.D. Boeke, M.A. Basrai, and A.A. McBride*. 2005. Reconstitution of BPV E2-mediated plasmid segregation in yeast by the Brd4 bromodomain protein. *Proceedings of the National Academy of Sciences* 102 (8): 2998-3003. doi: [10.1073/pnas.0407818102](https://doi.org/10.1073/pnas.0407818102)
31. N.-U. Frigaard, **J.A. Maresca**, C.E. Yunker, A.D. Jones, and D.A. Bryant*. 2004. Genetic manipulation of carotenoid biosynthesis in the green sulfur bacterium *Chlorobium tepidum*. *Journal of Bacteriology* 186: 5210-5220. doi: 10.1128/JB.186.16.5210-5220.2004
32. **J.A. Maresca**, A. Gomez Maqueo Chew, M. Ros Ponsatí, N-U. Frigaard, J.G. Ormerod, and D.A. Bryant. 2004. The *bchU* gene of *Chlorobium tepidum* encodes the C-20 methyltransferase in bacteriochlorophyll *c* biosynthesis. *Journal of Bacteriology* 186 (9): 2558-2566. doi: 10.1128/JB.186.9.2558-2566.2004
33. N-U Frigaard, A. Gomez Maqueo Chew, H. Li, **J.A. Maresca**, D.A. Bryant*. 2003. *Chlorobium tepidum*: Insights into the structure, physiology, and metabolism of a green sulfur bacterium derived from the complete genome sequence. *Photosynthesis Research* 78: 93-117.
34. EK Dimitriadis, F. Horkay, **J. Maresca**, B. Kachar, RS Chadwick*. 2002. Determination of elastic moduli of soft, thin samples using the atomic force microscope. *Biophysical Journal* 82(5): 2798-810.
35. A. Krol, **J. Maresca**, M. Dewhirst, F. Yuan*. 1999. Available volume fraction of macromolecules in the extravascular space of a fibrosarcoma: Implications for drug delivery. *Cancer Research* 59: 4136-4141.

1.2 Book Chapters and Conference Proceedings

36. S.I. Rooney, J.A. Enszer, **J.A. Maresca**, S.I. Shah, S.A. Hewlett, J.M. Buckley. Faculty Development Mini-Modules on Evidence-Based Inclusive Teaching and Mentoring Practices in Engineering. 2020. American Society for Engineering Education, Annual Conference.
➤ This paper was a finalist for the Best Diversity, Equity & Inclusion Paper Award at ASEE.
37. Frigaard, N.-U., A. Gomez Maqueo Chew, **J.A. Maresca**, and D.A. Bryant. 2006. Bacteriochlorophyll biosynthesis in green bacteria. In: *Advances in Photosynthesis and Respiration*, Vol. 25, B. Grimm, R. Porra, W. Rüdiger, and H. Scheer (eds.), *Chlorophylls and Bacteriochlorophylls: Biochemistry, Biophysics, Functions and Applications*, pp. 201-221. Springer, Dordrecht, The Netherlands.
38. **J.A. Maresca**, N.-U. Frigaard, and D.A. Bryant. 2005. Identification of a novel class of lycopene cyclases in photosynthetic bacteria. In: *Photosynthesis: Fundamental Aspects to Global Perspectives*, Proceedings of the XIIIth International Congress on Photosynthesis, Montreal, A. van der Est and D. Bruce, eds., pp. 884-886. Allen Press, Lawrence, KS, USA.
39. D.A. Bryant, N.-U. Frigaard, **J.A. Maresca**, A. Gomez Maqueo Chew and T. Li. 2005. Chlorophyll and carotenoid biosynthesis in green sulfur bacteria: a genomic perspective. In: *Photosynthesis: Fundamental Aspects to Global Perspectives*, Proceedings of the XIIIth International Congress on Photosynthesis, Montreal, A. van der Est and D. Bruce, eds., pp. 866-869. Allen Press, Lawrence, KS, USA.

1.3 Manuscripts in preparation

1. E.A. Kiledal², **J.A. Maresca***. Concrete hosts a large population of halophilic archaea. In preparation for *Environmental Science & Technology Letters* or *FEMS Microbiology Letters*, planned submission April 2022.

1.4 Professional and Scholarly Honors

1. 2011 ExCEED Teaching Fellow, American Society for Civil Engineers

2. 2007 Graduate School Alumni Association Dissertation Award, The Pennsylvania State University, for “The genetic basis for pigment variation in green sulfur bacteria”
3. 2005 International Travel Award, Biogeochemical Research Initiative for Education (NSF-IGERT) (Research at Ludwig-Maximilians University, Munich, Germany)
4. 2004-2006 NASA Space Grant Fellowship
5. 2004 Summer Research Fellowship, Center for Environmental Chemistry and Geochemistry, The Pennsylvania State University
6. 2003 Research Award, Biogeochemical Research Initiative for Education (NSF-IGERT)
7. 2002-2004 NASA Space Grant Fellowship
8. 2001-2002 University Graduate Fellowship, The Pennsylvania State University

1.5 Invited Seminars

Seminars above the line were given after my promotion to associate professor with tenure at the University of Delaware.

1. Bowling Green State University, Department of Biological Sciences. October 2021. *How freshwater heterotrophic bacteria use light.*
2. University of Alaska – Anchorage, Department of Biological Sciences. October 2021. *Hard Microbiology: Polyextremophilic Microbes in Concrete.*
3. Michigan Tech, Department of Biology. September 2021. *Hard Microbiology: The concrete microbiome.*
4. Miami University (Ohio), Department of Microbiology. April 2021. *How freshwater heterotrophic bacteria use light.*
5. University of the Sciences, Department of Biology. March 2021. *Do non-phototrophic Actinobacteria have circadian rhythms?*
6. National Renewable Energy Laboratory, Physical Biochemistry Group. March 2021. *Resource recovery in fresh water: how freshwater bacteria use resources in unexpected ways.*
7. University of Delaware, School of Marine Science & Policy REU program. June 2020. *More with less: How bacteria survive in a lake without phosphate.*
8. Indiana University, Department of Biology. October 2019. *Non-phototrophic Actinobacteria respond to light.*
9. New Jersey Institute of Technology, Department of Chemistry and Environmental Science. May 2019. *Photoheterotrophs and heterotrophs use light in terrestrial environments.*
10. University of Texas at San Antonio, South Texas Center for Emerging Infectious Diseases. February 2, 2018. *Hard Microbiology: The concrete microbiome.*
11. University of Maryland, Department of Civil and Environmental Engineering. December 8, 2017. *Hard Microbiology: Bacteria in concrete.*
12. Villanova University, Department of Biology. November 2, 2017. *Light capture and utilization by freshwater Actinobacteria.*
13. University of North Carolina, Charlotte, Department of Bioinformatics. October 20, 2017. *Bioinformatics in civil engineering: Identifying bacterial bio-indicators for damaged concrete.*

14. University of Delaware, Bioinformatics Seminar Series. November 7, 2016. *Cryptic light-enhanced growth in heterotrophic bacteria.* (Joint seminar with Priscilla Hempel, MS student.)
15. University of Delaware, Department of Civil and Environmental Engineering. May 13, 2016. *Civil microbiology: Bacteria in natural and engineered systems.*
16. Towson University, Department of Physics, Astronomy, and Geosciences, Towson, MD. April 8, 2016. *Hard Microbiology: Bacteria in concrete.*
17. Clemson University, Department of Biological Sciences, Clemson, SC. March 25, 2016. *Visualizing*

- microbial rhodopsins in the Chesapeake Bay.*
18. MicroSeminar, an online seminar series on environmental microbiology. January 21, 2016. *Doing more with less: Physiological traits of heterotrophic bacteria from a phosphate-limited lake.* Archived talk at <https://www.youtube.com/watch?v=ptYvEsvakJ0>
 19. Michigan State University, Department of Geological Sciences, East Lansing, MI. November 20, 2015. *Hard Microbiology: Bacteria in concrete.*
 20. National Renewable Energy Laboratory, Golden, CO. November 9, 2015. *Cryptic light-enhanced growth in bacteria with rhodopsins.*
 21. Wentworth Institute of Technology, Department of Civil Engineering and Technology. November 4, 2015. *Hard Microbiology: Bacteria in concrete.*
 22. Villanova University, Department of Civil and Environmental Engineering. October 23, 2015. *Hard Microbiology: Bacteria in concrete.*
 23. Rutgers University, Department of Biochemistry and Microbiology. September 18, 2015. *Visualizing microbial rhodopsins in the Chesapeake Bay.*
 24. University of Delaware, Department of Geography. May 15, 2015. *Microbes on the edge: Bacteria in an ultra-oligotrophic lake.*
 25. University of Delaware, DENIN Environmental Frontier Grant Program. October 6, 2014. *Allies and enemies in the rhizosphere.*
 26. University of Southern Denmark. August 16, 2012. *Microbe-manipulation: responses of natural photosynthetic populations to external stimulus.*
 27. Johns Hopkins University, Department of Geography and Environmental Engineering. April 19, 2012. *Microbe-manipulation: responses of natural photosynthetic populations to external stimulus.*
 28. University of Delaware, Department of Biology. February 29, 2012. *Microbe-manipulation: responses of natural photosynthetic populations to external stimulus.*
 29. University of Delaware, Department of Plant & Soil Sciences. Nov. 11, 2011. *Microbe-manipulation: responses of natural photosynthetic populations to external stimulus.*
 30. Delaware Biotechnology Institute and University of Delaware, Computational Biology Department. October 17, 2011. *Microbe-manipulation: responses of natural microbial populations to external stimulus.*
 31. University of Delaware, School of Marine Science and Policy. *Microbe-manipulation: responses of natural microbial populations to external stimulus.*
 32. University of Alberta, Cellular and Molecular Systems seminar series. September 9, 2011. *Microbe-manipulation: responses of natural microbial populations to external stimulus.*
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33. University of Wisconsin-Madison, Department of Bacteriology. March 24, 2010. *Color and conversation: The (meta)genomics of bacterial pigmentation and biofilms.*
 34. University of Delaware, Department of Civil and Environmental Engineering. March 17, 2010. *Color and conversation: The (meta)genomics of bacterial pigmentation and biofilms.*
 35. University of Kansas, Department of Geology. September 10, 2009. *Making molecular fossils and microbial sunscreen: Carotenoid biosynthesis and microbial ecology.*
 36. Microbial Systems Seminar, Massachusetts Institute of Technology, Department of Civil and Environmental Engineering. September 26, 2007. *The genetic basis of pigment variation among green sulfur bacteria.*
 37. Harvard Medical School, Department of Microbiology and Molecular Genetics. May 12, 2006. *The genetic basis of pigment variation among green sulfur bacteria.*
 38. Princeton University, Department of Molecular Biology. April 18, 2006. *The genetic basis of pigment variation among green sulfur bacteria.*
 39. Delaware Biotechnology Institute. October 14, 2004. *Carrots, tomatoes, and Chlorobium tepidum: Carotenoid biosynthesis in green sulfur bacteria.*

1.6 Regional, national, and international conference presentations

¹University of Delaware undergraduate student, ²University of Delaware graduate student, ³University of

Delaware postdoctoral associate, *presenting author.

Presentations above the line were given after my application for promotion to Associate Professor at the University of Delaware.

1. **J.A. Maresca***. *Engineering responses to emerging antibiotic-resistant diseases*. Engineering and Public Policy Symposium. November 22, 2019. (Invited lightning talk.)
2. **J.A. Maresca***. *Bacterial indicators of concrete structural health*. American Society for Microbiology – Conference for Undergraduate Educators. August 2019. (Invited talk.)
3. E.A. Kiledal*, J.L. Keffer, **J.A. Maresca**. *Analysis of bacterial communities in two types of concrete cylinders over time*. Applied and Environmental Microbiology Gordon Research Conference, July 2019. (Poster presentation)
4. E.A. Kiledal*, J.L. Keffer, **J.A. Maresca**. *Detection of Alkali-silica Reaction in Concrete with Microbial Bioindicators*. Research Showcase, Delaware Center for Transportation. Dover, DE. May 2019. (Poster presentation)
5. **J.A. Maresca***. *Light-enhanced growth in non-phototrophic Actinobacteria*. Association for the Sciences of Limnology and Oceanography, Aquatic Sciences Meeting. February 2019. (Invited talk.)
6. E.A. Kiledal^{2*}, J.L. Keffer, **J.A. Maresca**. *Longitudinal analysis of bacterial communities in two types of concrete cylinders*. American Geophysical Union Fall Meeting, December 2018. (Poster presentation)
7. **J.A. Maresca***. *Light-enhanced growth in non-phototrophic Actinobacteria*. International Society on Photosynthetic Prokaryotes, August 2018. (Invited talk.)
8. **J.A. Maresca***. *Hard Microbiology: Bacteria in concrete*. American Society for Microbiology General Meeting/Microbe, June 2018. (Invited talk.)
9. **J.A. Maresca***, N. Donofrio. *Self-defense: How a plant pathogenic fungus defends itself from antagonistic bacteria*. American Society of Plant Biology-Mid-Atlantic States Meeting, May 2018. (Invited talk.)
10. P.P. Hempel^{2*}, J.L. Keffer³, **J.A. Maresca**. *Cryptic light-enhanced growth in Actinobacteria*. Joint Genome Institute Annual User Meeting, March 2018.
11. **J.A. Maresca***. *Light capture by freshwater Actinobacteria*. Applied and Environmental Microbiology Gordon Research Conference, July 2017. (Invited talk.)
12. **J.A. Maresca***. *Light capture and utilization by freshwater Actinobacteria*. Eastern Regional Photosynthesis Conference, April 2017. (Invited talk.)
13. **J.A. Maresca***. *Urban geomicrobiology: Microbial communities in and on concrete*. Geological Society of America Annual Meeting, September 2016. (Invited talk.)

14. **J.A. Maresca***, J.L. Keffer³, K.J. Miller¹, P. Hempel¹. *Light capture and utilization by freshwater Actinobacteria*. International Society of Microbial Ecology, August 2016. (Poster presentation)
15. **J.A. Maresca***, J.L. Keffer³. *Microbial communities in concrete and their potential application in ASR-damaged concrete*. Mid-Atlantic Transportation Sustainability Center – Region 3 University Transportation Center Annual Meeting, August 2016. (Poster presentation and invited talk.)
16. A.K. Treglia^{1*}, J.L. Keffer³, **J.A. Maresca**. *Using Microbial Populations in Concrete as Bio-Indicators of Alkali-Silica Reaction*. American Society of Microbiology General Meeting/Microbe, June 2016. (Poster presentation)
17. K.J. Miller^{2*}, J.L. Keffer³, **J.A. Maresca**. *Visualization of rhodopsin-utilizing cells in the Chesapeake Bay*. American Society of Microbiology General Meeting/Microbe, June 2016. (Poster presentation)
18. M. Yao^{2*}, **J.A. Maresca**. *Methylphosphonate degradation may contribute to methane production in the oxic water column of Lake Matano*. American Society of Microbiology General Meeting/Microbe, June 2016. (Poster presentation)
19. **J.A. Maresca***, K. Zhang¹, Thomas Schumacher. *Naturally occurring bacterial communities in and on concrete*. American Concrete Institute, Research In Progress session. November 2015. (Oral presentation.)

20. P. Moser^{2*}, K. Zhang², T. Schumacher, **J.A. Maresca**. *Microbially mediated detection of damaged concrete*. International Conference on Ecology and Transportation, September 2015. (Poster presentation)
21. K. Zhang^{2*}, **J.A. Maresca**. *Microbial communities in concrete and their potential application in ASR-damaged concrete*. Mid-Atlantic Transportation Sustainability Center – Region 3 University Transportation Center Annual Meeting, August 2015. (Poster presentation.)
22. J.L. Keffer^{3*}, **J.A. Maresca**. *Light utilization in freshwater Actinobacteria*. Applied & Environmental Microbiology Gordon Research Conference, July 2015. (Poster presentation.)
23. **J.A. Maresca**^{*}, K. Zhang¹, P. Moser², T. Schumacher. *Hard microbiology: The bacteria in concrete*. Applied & Environmental Microbiology Gordon Research Conference, July 2015. (Poster presentation.)
24. **J.A. Maresca**^{*}, J.L. Keffer³. *Visualizing and characterizing an unusual microbial rhodopsin*. Eastern Regional Photosynthesis Conference, April 2015. (Oral presentation.)
25. **J.A. Maresca**^{*}, K. Zhang¹. *Hard microbiology: The bacteria in concrete*. American Phytopathological Society, Potomac Chapter, March 2015. (Invited talk.)
26. M. Yao^{1*}, C.A. Jones, S. Crowe, S. Nomosatryo, F. Elling, K.-U. Hinrichs, **J.A. Maresca**. *Heterotrophic bacteria in a lake without phosphate*. Northeast Geobiology Symposium, February 2015. (Poster presentation.)
27. S.M. Yannarell^{2*}, J.L. Keffer, **J.A. Maresca**. *Antifungal compounds produced by Bacillus spp. isolated from soil*. UCMB Undergraduate Research Symposium, October 2014. (Poster presentation.)
28. **J.A. Maresca**^{*}, K. Zhang¹, P. Moser², J. Moore, T. Schumacher. *Bacterial indicators of ASR-induced damage*. Corvallis Workshop on Cement-Based Materials, July 2014. (Invited talk)
29. J.L. Keffer^{*}, C. Sabanayagam, **J.A. Maresca**. *Characterization of a novel rhodopsin and identification of rhodopsin-containing cells by microscopy*. 5th Biennial National IDeA Symposium of Biomedical Research Excellence, June 2014. (Poster presentation.)
30. J.L. Keffer^{3*}, C. Sabanayagam, **J.A. Maresca**. *Characterization of a novel rhodopsin and identification of rhodopsin-containing cells by microscopy*. Delaware Membrane Protein Symposium, May 2014. (Poster presentation.)
31. S.M. Yannarell^{2*}, J.L. Keffer, **J.A. Maresca**. *Antifungal compounds produced by Bacillus spp. isolated from soil*. Scientista symposium, April 2014. (Poster presentation.)
32. J.L. Keffer^{*}, C. Sabanayagam, **J.A. Maresca**. *Freshwater Actinobacteria have a conference in the sun*. American Society of Microbiology General Meeting, May 2014. (Oral presentation.)
33. **J.A. Maresca**^{*}, M. Yao¹, S.A. Crowe, E.F. DeLong, D.E. Canfield. *Bacterial phosphate acquisition from minerals in ultra-oligotrophic, ferruginous environments*. Goldschmidt Conference, August 2013. (Poster presentation.)
34. **J.A. Maresca**^{*}, P. Moser², J. Moore, T. Schumacher. *Microbial inhabitants of damaged concrete*. Applied and Environmental Microbiology Gordon Research Conference, July 2013. (Poster presentation.)
35. J.L. Keffer^{*} and **J.A. Maresca**. *Light-stimulated growth of an Actinobacterium encoding actinorhodopsin*. Applied & Environmental Microbiology Gordon Research Conference, July 2013. (Poster presentation.)
36. **J.A. Maresca**^{*}, P. Moser², M.K. Sutter², F. Rajabipour, T. Schumacher. *Bio-indicators of ASR-induced damage*. American Concrete Institute, Minneapolis MN, April 2013. (Oral presentation.)
37. **J.A. Maresca**^{*}, M. Yao¹, S.A. Crowe, E.F. DeLong, D.E. Canfield. *Metagenomic analysis of aerobic and anaerobic phototrophic communities in a stratified lake*. International Society for Microbial Ecology, Copenhagen, August 2012. (Poster presentation.)
38. **J.A. Maresca**^{*}, C.R. Young, E.F. DeLong. *Transcriptional response of marine microbial biofilms to exogenous quorum sensing compounds*. Center for Bioinformatics and Computational Biology Annual Symposium, May 2012. (Oral presentation.)
39. **J.A. Maresca**^{*}, C.R. Young, E.F. DeLong. *Transcriptional response of marine microbial biofilms to exogenous quorum sensing compounds*. Metagenomics Workshop, UD Center for Environmental Genomics, December 2011. (Oral presentation.)

40. **J.A. Maresca**^{*}, S.A. Crowe, A. Sturm, C.A. Jones, E.F. DeLong, D.E. Canfield. *Metagenomic analysis of aerobic and anaerobic communities in a stratified lake*. Applied & Environmental Microbiology Gordon Research Conference, July 2011. (Poster presentation.)

41. **J.A. Maresca**^{*}, E.F. DeLong. *The transcriptional response of coastal biofilms to exogenous autoinducer-2*. 13th International Symposium on Microbial Ecology, August 2010. (Poster presentation.)
42. **J.A. Maresca**^{*}, E.F. DeLong. *Transcriptional response of microbes to exogenous AI-2*. Applied & Environmental Microbiology Gordon Research Conference, July 2009. (Poster presentation.)
43. **J.A. Maresca**^{*}, E.F. DeLong. *Small molecules in the big ocean: secondary metabolites in marine bacteria*. Boston Bacterial Meeting, July 2009. (Poster presentation.)
44. **J.A. Maresca**^{*}, J.C. Braff, E.F. DeLong. *Characterization of a carotenogenic gene cluster from a marine bacterium*. American Society for Microbiology General Meeting, June 2008. (Poster presentation.)
45. **J.A. Maresca**^{*}, T. Li, D.A. Bryant. *Functional characterization of the genes required for brown pigmentation in green sulfur bacteria*. International Symposium on Photosynthetic Prokaryotes, August 2006. (Oral presentation)
46. **J.A. Maresca**^{*}, T. Li, D.A. Bryant. *Identification of a gene cluster responsible for the brown phenotype in green sulfur bacteria*. Eastern Regional Photosynthesis Conference, Woods Hole, MA., April 2006. (Oral presentation)
47. **J.A. Maresca**^{*}, D.A. Bryant. *Interspecies signal abduction: An archaeal protein that degrades homoserine lactones*. Environmental Chemistry Student Symposium, March 2006. (Poster; Winner, Best Poster Award)
48. C.M. Cress^{*}, **J.A. Maresca**, and D.A. Bryant. *Characterization of the transcriptional regulator ModE in Chlorobium tepidum*. Environmental Chemistry Student Symposium, March 2006. (Oral presentation; Winner, Best Undergraduate Student Presentation)
49. **J.A. Maresca**^{*}, T. Li, D.A. Bryant. *Using comparative genomics to identify unique genes in bacteriochlorophyll biosynthesis*. Allegheny Branch of the American Society for Microbiology annual meeting, October 2005. (Oral presentation; Second Prize, Graduate Student Oral Presentations)
50. H. Kim^{*}, H. Li, **J. A. Maresca**, D.A. Bryant, S. Savikhin. *Novel photo-protection mechanisms in chlorosomes from the green sulfur bacterium Chlorobium tepidum*. Midwest Photosynthesis Conference, October 2006.
51. **J.A. Maresca**^{*}, T. Li, D.A. Bryant. *Comparative genomics of nine species of green sulfur bacteria*. Summer Symposium in Molecular Biology, July 2005. (Poster)
52. **J.A. Maresca**^{*}, D.A. Bryant. *Genetic basis for pigment variation in green sulfur bacteria*. American Society for Microbiology General Meeting, June 2005. (Poster)
53. **J.A. Maresca**^{*}, N.-U. Frigaard, D.A. Bryant. *Identification of a novel family of lycopene cyclases in photosynthetic organisms*. International Congress of Photosynthesis, August 2004. (Poster)
54. R.E. Ley^{*}, J. Wilcox, J.R. Spear, **J.A. Maresca**, D.A. Bryant, N.R. Pace. *A molecular view into hypersaline microbial mat communities: Vast diversity, unexpected composition, discrete structure*. American Society for Microbiology General Meeting, May 2004. (Poster)
55. **J.A. Maresca**^{*}, N-U. Frigaard, D.A. Bryant. *Photosynthesis in the near-dark: Why BChl c-containing green sulfur bacteria predominate in low-light environments*. Meeting of the Allegheny Branch of the American Society for Microbiology, Pittsburgh, PA. October 2003. (Oral presentation; First Prize, Graduate Student Oral Presentation)
56. **J.A. Maresca**^{*}, N-U. Frigaard, D.A. Bryant. *A molecular explanation for the predominance of BChl c-containing green sulfur bacteria in low light environments*. Environmental Chemistry Student Symposium, State College, PA. March 2003. (Oral presentation)
57. **J.A. Maresca**^{*}, A. Gomez, N-U. Frigaard, J.G. Ormerod, D.A. Bryant. *bchU encodes the bacteriochlorophyllide c C-20 methyltransferase in Chlorobium tepidum*. Midwest Photosynthesis Conference, Turkey Run, IN. October 2002. (Poster)

1.7 Student presentations at on-campus symposia (University of Delaware)

¹University of Delaware undergraduate student, ²University of Delaware graduate student, ³University of

Delaware postdoctoral associate, *presenting author. Entries above the line were presented since submission of my application for promotion and tenure in September 2016.

1. H. Tompkins*, E.A. Kiledal, **J.A. Maresca**. *Concrete bio-repair: Ability of bacteria isolated from concrete to induce carbonate precipitation*. Undergraduate Research and Service Symposium, August 2019. (Poster Presentation.)
2. E.A. Kiledal*, J.L. Keffer, **J.A. Maresca**. Detection of Alkali-silica Reaction in Concrete with Microbial Bioindicators. External Advisory Committee Reception, Department of Civil and Environmental Engineering. University of Delaware. May 2019. (Poster presentation)
3. E. Smith^{2*}, S. Law, **J.A. Maresca**. *Potential for Degradation of Long-Chain Perfluoroalkyl Substances*. DENIN Graduate Symposium, March 2019. (Poster presentation)
4. P. Hempel^{2*}, J.L. Keffer³, **J.A. Maresca**. *Cryptic Light-Enhanced Growth in Heterotrophic Bacteria*. DENIN Graduate Symposium, March 2019. (Oral presentation)
5. E.A. Kiledal^{2*}, J.L. Keffer³, **J.A. Maresca**. *The Concrete Microbiome*. DENIN Graduate Research Symposium, March 2019. (Poster presentation)
6. J. Heydt^{1*}, J.L. Keffer³, **J.A. Maresca**. *Light Activated DNA Repair in the Actinobacterium Rhodoluna laticola*. Microbial Systems Symposium, February 2019. (Poster presentation)
7. P. Hempel^{2*}, J.L. Keffer³, **J.A. Maresca**. *Cryptic Light-Enhanced Growth in Heterotrophic Bacteria*. Microbial Systems Symposium, February 2019. (Poster presentation; winner, best poster.)
8. E.A. Kiledal^{2*}, J.L. Keffer³, **J.A. Maresca**. *The Concrete Microbiome*. Microbial Systems Symposium, February 2019. (Oral presentation; second-place winner.)
9. C.M. Chapman^{2*}, S. Nakhli², J. Brown², **J.A. Maresca**, P.T. Imhoff. *Biochar Amendment to Roadway Soils for Stormwater Treatment – Role of Soil Aggregation*. DENIN Graduate Research Symposium, March 2018. (Poster presentation.)
10. E.A. Kiledal^{2*}, J.L. Keffer³, **J.A. Maresca**. *The Concrete Microbiome and Potential Bioindicators of Alkali-Silica Reaction Damage*. DENIN Graduate Research Symposium, March 2018. (Poster presentation)
11. P. Hempel^{2*}, J.L. Keffer³, **J.A. Maresca**. *Transcriptomic analysis of Actinobacteria that display light-enhanced growth*. Microbial Systems Symposium, February 2017. (Poster presentation)
12. E.A. Kiledal^{2*}, J.L. Keffer³, **J.A. Maresca**. *The Concrete Microbiome*. Microbial Systems Symposium, February 2017. (Poster presentation)

13. D. Kitt^{1*}, M. Yao², **J.A. Maresca**. Examining Alkaline Phosphatase Activity and Phosphate Starvation Induced Physical Changes in Bacteria Isolated from Ultra-Oligotrophic Lake Matano. NSF-EPSCOR site visit, September 2016. (Poster presentation.)
14. D. Kitt^{1*}, M. Yao², **J.A. Maresca**. Microbial Utilization of Mineral Associated Phosphate and Organophosphate Esters. Microbial Systems Symposium, February 2016. (Poster presentation)
15. A.K. Treglia^{1*}, **J.A. Maresca**. Role of Carotenoid Compounds In Oxidative Stress Response in Bacteria Isolated from Concrete. Microbial Systems Symposium, February 2016. (Poster presentation)
16. P. Hempel^{2*}, J.L. Keffer³, **J.A. Maresca**. Characterizing Light Responsive Growth of Actinobacteria Using In Silico Transcriptomic Analysis. Microbial Systems Symposium, February 2016. (Poster presentation)
17. K.J. Miller^{2*}, J.L. Keffer³, **J.A. Maresca**. Visualization of rhodopsin-utilizing cells in the Chesapeake Bay. Microbial Systems Symposium, February 2016. (Poster presentation)
18. M. Yao^{2*}, **J.A. Maresca**. Methylphosphonate degradation may contribute to methane production in the oxic water column of Lake Matano. Microbial Systems Symposium, February 2016. (Poster presentation)
19. D. Kitt^{1*}, M. Yao², **J.A. Maresca**. Microbial Utilization of Mineral Associated Phosphate and Organophosphate Esters. Undergraduate Research and Service Symposium, August 2015. (Poster presentation)
20. A.K. Treglia^{1*}, **J.A. Maresca**. Role of Carotenoid Compounds In Oxidative Stress Response in Bacteria Isolated from Concrete. Delaware Environmental Institute Environmental Scholars Symposium,

May 2015. (Poster presentation)

21. J.L. Keffer^{3*}, **J.A. Maresca**. Characterization of an unconventional rhodopsin in *Actinobacteria*. Microbial Systems Symposium, February 2015. (Oral presentation.)
22. K. Miller^{2*}, J.L. Keffer³, **J.A. Maresca**. Synthesis of bacterioruberin by light-responsive *Actinobacteria*. Microbial Systems Symposium, February 2015. (Poster presentation.)
23. K. Zhang^{2*}, P. Moser¹, **J.A. Maresca**. Microbial communities in concrete and their applications. Microbial Systems Symposium, February 2015. (Poster presentation.)
24. S.M. Yannarell^{1*}, M. Yao², **J.A. Maresca**. Antifungal compounds produced by *Bacillus* spp. isolated from soil. Microbial Systems Symposium, February 2015. (Poster presentation.)
25. A. Treglia^{1*}, K. Zhang², **J.A. Maresca**. Role of carotenoid pigments in protection from oxidative stress in concrete. Microbial Systems Symposium, February 2015. (Poster presentation.)
26. M. Yao^{2*}, C.A. Jones, S. Crowe, S. Nomosatryo, F. Elling, K.-U. Hinrichs, **J.A. Maresca**. Heterotrophic bacteria in a lake without phosphate. Microbial Systems Symposium, February 2015. (Poster presentation.)
27. S.M. Yannarell^{1*}, J.L. Keffer³, **J.A. Maresca**. Antifungal compounds produced by *Bacillus* spp. isolated from soil. DENIN Scholars symposium, May 2014. (Poster presentation.)
28. S.M. Yannarell^{1*}, J.L. Keffer³, **J.A. Maresca**. Antifungal compounds produced by *Bacillus* spp. isolated from soil. DENIN External Advisory Board meeting, April 2014. University of Delaware. (Poster presentation.)
29. A.S. DiPietro^{1*}, J.L. Keffer³, **J.A. Maresca**. Identification and characterization of an agarase- and melanin-producing marine *Pseudoalteromonas* sp. Undergraduate Research and Service Symposium, August 2013. (Poster presentation)
30. P. Moser^{1*}, J. Moore, T. Schumacher, **J.A. Maresca**. Microbially-mediated Detection of Damaged Concrete. Undergraduate Research and Service Symposium, August 2013. (Poster presentation)
31. J.V. Kerridge^{1*}, **J.A. Maresca**. Degradation of asphalt by microbial species. Undergraduate Research and Service Symposium, August 2013. (Poster presentation)
32. S. M. Yannarell^{1*}, M. Yao², **J.A. Maresca**. Phosphorus release and cross-feeding between bacteria and fungi. Undergraduate Research and Service Symposium, August 2013. (Poster presentation)
33. J.M. Page^{1*}, **J.A. Maresca**. Behaviors and classification of coastal bacteria. Summer Scholars Poster Session, April 2012. (Poster presentation)
34. B. Debord^{1*}, **J.A. Maresca**. Effects of the quorum quenching gene of *Sulfolobus solfataricus* on mineral degradation. Undergraduate Research and Service Symposium, August 2011. (Poster presentation)
35. J.M. Page^{1*}, **J.A. Maresca**. Behaviors and classification of coastal bacteria. Undergraduate Research and Service Symposium, August 2011. (Poster presentation)

1.8 Grants funded

	Title	Funding Agency	Dates	Amount	
<i>Completed</i>	The biogeochemistry of oil sands tailings ponds in the Athabasca Basin	Alberta Stream Watch	5/29/12-5/29/13	\$10,194	
	Microbially-mediated detection and repair of damaged concrete	University of Delaware Research Foundation	5/29/12-5/31/14	\$38,500	
	How much light is enough? The function of actinorhodopsin and its contribution to cellular ATP pools	National Institutes of Health	9/27/12-3/31/15	\$142,000	
	Reducing stormwater volume and nutrients with biochar (co-investigator)	National Fish & Wildlife Foundation	9/1/13-8/31/16	\$643,548	
	Room for everyone in the sandbox? Bacterial-fungal interactions in agriculturally relevant soils.	Delaware Environmental Institutes	2/1/14-12/31/15	\$50,000	
	Microbial biomarkers for ASR-damaged concrete	Mid-Atlantic Transportation Sustainability Center – Region 3 UTC	10/13/14-5/31/17	\$299,746	
	Integrating zero-valent iron and biochar amendments in green stormwater management systems for enhanced treatment of roadway runoff - Field demonstration	Delaware Department of Transportation	5/10/16-4/30/17	\$100,779	
	Light-dependent carbon uptake and processing.	Delaware INBRE	7/20/17-1/20/18	\$8,800	
	Reducing stormwater runoff volumes with biochar addition to highway soils	Center for Advanced Infrastructure and Transportation – UTC	9/1/16-12/31/18	\$140,047	
	Nanoparticle-mediated partial degradation of perfluorinated alkanes	University of Delaware Nanofabrication Facility	8/1/18-7/31/19	\$5,000	
	Light-induced gene expression in cosmopolitan freshwater Actinobacteria	Department of Energy - Joint Genome Institute	5/5/17-4/30/20	0	
	<i>In progress</i>	Use of bacterial DNA for early identification of ASR damage in concrete	Delaware Department of Transportation	7/5/19-12/31/22	\$99,479
		A novel physical-biological method for remediation of recalcitrant fluorochemicals	Delaware Bioscience Center for Advanced Technology	2/3/20-12/31/21	\$99,930
EDGE FGT: Genome-editing tools for keystone freshwater heterotrophs		National Science Foundation - EDGE	09/01/2021-08/31/2023	\$398,687	
<i>Pending</i>	SCIENCE HOORAY: Self Cleaning Infrastructure: ENgineered Concrete Ecosystems for HydrO-carbon and Oil Remediation Across Years	NSF-EFRI	9/1/2022-8/31/2026	2,000,000	

2. TEACHING, ADVISING, AND SUPERVISING

2.1 Research associates and visiting scholars

1. Francy Mendez, LaSalle University (Colombia). Colombian Summer Exchange Program. Summer 2017.
2. Jessica (Keffer) Clinton, April 2016 – September 2017.
3. Monica Numpaque, LaSalle University (Colombia). Colombian Summer Exchange Program. Summer 2014.

2.2 Postdoctoral scholars

Jessica Keffer, October 2012 – July 2015

2.3 Graduate student mentoring

2.3.1 Ph.D. students

1. Anders Kiledal, 2016 – 2021 (PhD, Biological Sciences, October 2021; DENIN fellowship 2018-2020, now a postdoctoral scholar at the University of Michigan)
2. Priscilla Hempel, 2015 – present (Bioinformatics and Computational Biology; anticipated graduation spring 2022; funded by NSF-IGERT award, Doctoral Dissertation Award 2020-2021)
3. Mengyin Yao, 2012 – 2016 (PhD, Environmental Engineering, now at GeneWiz)
4. Kehui (Keira) Zhang, 2013 – 2015 (Environmental Engineering, left without completing thesis research)

2.3.2 MS students

1. Megan Mauriello, September 2021 – present (Microbiology Graduate Program; anticipated graduation summer 2023)
2. Miranda Marini, July 2021 – present (Microbiology Graduate Program; anticipated graduation spring/summer 2023)
3. Emma Smith, 2018 – 2021 (MCE, Environmental Engineering, October 2021)
4. Christine Chapman, 2016 – (Water Science and Policy; abd)
5. Archana Singh, 2017 – January 2019 (Biological Sciences, now at Endo Pharmaceuticals)
6. Kelsey J. Miller, 2014 – 2016 (Biological Sciences, now at Kaleido Biosciences)
7. Valentina (Beneksi) Miller, 2011-2013 (Environmental Engineering, now at Langan Associates)

2.3.3 Graduate student committees (Environmental Engineering)

1. Ali Nakhli, Ph.D student
2. Madjid Delkash, Ph.D. student
3. Inyoung Kim, Ph.D. student
4. Chunjian Shi, Ph.D. student
5. Minh Maeng, Ph.D. 2015
6. Beomsok Kim, Ph.D. 2014

2.3.4 Graduate student committees (other departments)

1. Lingyi Wu, University of Delaware Water Science and Policy Ph.D student
2. Gretchen Dykes, University of Delaware Plant & Soil Sciences Ph.D student
3. Bianca Riddick, University of Delaware Plant & Soil Sciences, MS 2016
4. Katie Kalis, University of Delaware Marine Biosciences Ph.D student

5. Amanda Rosier, University of Delaware Plant & Soil Sciences Ph.D student
6. Jacob Hilzinger, University of Delaware Biology, Ph.D 2017.
7. Megan Carpenter, University of Delaware Biology, Ph.D. 2016.

2.4 Undergraduate research

2.4.1 Undergraduate research assistants

Students above the solid line did their research at the University of Delaware; those above the dashed line did their research here after my promotion to Associate Professor.

1. Stacy Bediako, University of Delaware Department of Biomedical Engineering, Class of 2024. Genomic analysis of bacteria isolated from concrete. October 2020-present.
2. Shannon McDermott, University of Delaware Department of Biology, Class of 2021. Genomic analysis of bacteria isolated from concrete. September 2020-present.
3. Janae Latta, University of Delaware Department of Biology, Class of 2020. Carotenoid biosynthesis in freshwater Actinobacteria. September 2019-March 2020.
4. Hannah Tompkins, Whitworth University/Washington University, Class of 2021. Carbonate precipitation by alkaliphilic concrete-associated bacteria. June-August 2019.
5. Jordan Heydt, University of Delaware Departments of Biology and Marine Science (double major), Class of 2021. DNA photolyase in light-sensitive Actinobacteria. January 2019-present.
6. Michael Rechsteiner, University of Delaware Civil and Environmental Engineering, Class of 2020. Bacterial effects on aggregate formation in biochar-treated soils.

7. Eric Rouviere, University of Delaware Quantitative Biology/Physics, Class of 2018. Using TIRF microscopy to estimate single-protein rhodopsin fluorescence. September 2016 – May 2017.
8. Steven Olson, University of Delaware Biology, Class of 2018. DNA photolyase activity in Actinobacteria. January 2016 – December 2016.
9. Natalie Muneses, University of Delaware Biomedical Engineering, Class of 2018. Developing a microscale cell-sorter. January 2016 – December 2016.
10. Dianna Kitt, University of Delaware Civil and Environmental Engineering, Class of 2017. Biophysical consequences of lipid remodeling in phosphate-starved bacteria. June 2015 – June 2017. *DENIN Environmental Scholar (2015-2016), Senior thesis.*
11. Katherine Dillon, University of Delaware Biological Sciences, Class of 2016. Actinorhodopsin oligomerization and its effect on bacterial membrane integrity. Summer 2015.
12. Alison Treglia, University of Delaware Civil and Environmental Engineering, Class of 2018. Carotenoid-enhanced tolerance of oxidative stress in bacteria isolated from concrete. November 2014-December 2016. *DENIN Environmental Scholar (2014-2016).*
13. Sarah Yannarell, University of Delaware, Chemistry and Biochemistry, Class of 2015. Bacterial-fungal interactions in soil. June 2013 – June 2015. *Senior thesis.*
14. Elena Dadukova, University of Delaware Civil and Environmental Engineering, Class of 2015. Analysis of a colorless mutant of *Rhodoluna ladicola*. Spring 2014. *CIEG 461 credit.*
15. Danielle Weader, University of Delaware Civil and Environmental Engineering, Class of 2015. Vampire bacteria in an ultra-oligotrophic lake. Spring 2014. *CIEG461 credit.*
16. Andrew DiPietro, University of Delaware, Chemical Engineering, Class of 2015. Relationship between pigmentation and agar degradation in a marine bacterium. Summer 2013 – Spring 2014.
17. Paul Moser, University of Delaware, Civil and Environmental Engineering, Class of 2015. Microbial populations on concrete. Fall 2012 – Spring 2014.
18. Joseph V. Kerridge, University of Delaware, Chemical Engineering, Class of 2015. Degradation of organic components of asphalt. Spring – Summer 2013.
19. Mary Katherine Sutter, University of Delaware, Civil and Environmental Engineering, Class of 2014. Alkalitolerant microbial populations on concrete. Fall 2011 – Spring 2012.
20. Samayyah Williams, California State University at Pomona, Civil Engineering Class of 2013. Summer 2012.

21. Julianne Page, University of Delaware Civil and Environmental Engineering Class of 2012. Bacterial population analysis in Canadian oil sands tailings ponds. June 2011 to June 2012.
 22. Brittany Debord, University of Delaware Civil and Environmental Engineering Class of 2012. Archaeal population analysis in Canadian oil sands tailings ponds. June 2011 to June 2012.
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23. Julia Hopkins, MIT Class of 2012. Actinorhodopsins in freshwater ponds. May 2009 - December 2009.
24. Mike Lee, MIT Bioengineering Class of 2009. Construction of three carotenogenic strains of *E. coli*. June 2008 - May 2009.
25. Aleksandr Lewicki, Penn State BMB Class of 2010. Oxygen sensitivity of carotenoid mutants of *Chlorobium tepidum*. January 2006-December 2006.
26. Christina M. Cress, Penn State BMB Class of 2006. Analysis of nitrogen- and molybdenum-dependent gene expression in *Chlorobium tepidum*. January 2004 – May 2006.
27. Lindsay Glace, Penn State Biology. Transcriptional regulation of *modE* in *Chlorobium tepidum* in response to nitrogen availability. Summer 2004.
28. Jennifer Vrentas, Penn State BMB Class of 2006. Characterization of *Chlorobium phaeobacteroides* isolated from Fayetteville Green Lake. Summer 2004.

2.4.2 Undergraduate senior theses supervised

1. Dianna Kitt, University of Delaware Civil and Environmental Engineering, Class of 2017. Biophysical consequences of lipid remodeling in phosphate-starved bacteria. June 2015 – June 2017. *DENIN Environmental Scholar (2015-2016), NSF Graduate Research Fellowship recipient, 2017.*
2. Sarah Yannarell, University of Delaware, Chemistry and Biochemistry, Class of 2015. Bacterial-fungal interactions in soil. June 2013 – June 2015.

2.4.3 Undergraduate senior thesis committees

1. Reid Williams, Department of Civil and Environmental Engineering Class of 2020.
2. Katherine Dillon, Department of Biology Class of 2016.
3. Tracie Ervin, Department of Civil and Environmental Engineering Class of 2012

2.5 Courses taught

* indicates a course that I substantially revised; ** indicates a newly-developed course.

1. CIEG867**

Title: Metagenomics for environmental chemistry

Course structure: Lecture, discussion, bioinformatics workshop sessions

Terms taught: Fall 2020.

2. CIEG437*

Title: Water and wastewater quality

Course structure: Lecture, discussion, laboratory with final project, poster session

Terms taught: Spring 2012, Fall 2013, Fall 2015, Spring 2017.

3. CIEG444/644**

Title: Microbiology of engineered systems

Course structure: Lecture, journal club, discussion

Terms taught: Spring 2013, Spring 2015, Fall 2016, Spring 2018, Fall 2018, Fall 2019.

4. CIEG867 (Permanent course number to be assigned)**

Title: Bioengineering and molecular genetics

Course structure: Journal club, student-led discussions
Terms taught: Spring 2016

5. CIEG439**

Title: Bio-sustainability and public health
Course structure: Lecture, discussion
Terms taught: Fall 2012 (co-taught with Steve Dentel), Fall 2014

6. CIEG636 (co-taught with Dan Cha)

Title: Biological Aspects of Environmental Engineering
Course structure: Lecture
Terms taught: Fall 2011

2.6 Professional Development

1. January 2019 Winter Institute on Learning (invited)
2. Summer 2018 Inclusive Teaching reading group. This group had the goal of identifying evidence-based strategies for enhancing inclusion in the classroom and developing short modules for presentation at faculty meetings
Modules available online at <http://www.udel.edu/007191>; Module 5 ("Teamwork") is the one I prepared and recorded.
3. Sept. 8, 2017 CTAL First Friday Roundtable, "Why don't they talk?"
4. January 2013 Winter Faculty Institute: Problem-Based Learning Workshop
5. Oct. 5, 2012 CTAL First Friday Roundtable, "Broadening Your Repertoire of Active Learning Approaches"
6. July 2011 ASCE-EXCEED Teaching Workshop, US Military Academy at West Point

3. SERVICE

3.1 Department service

3.1.1 Department committees

(items above the line began after I submitted my application for promotion to assistant professor)

- | | |
|------------------------|--|
| 1. April 2019 | Panel, "Making the Most of Conferences", Civil Engineering Student Seminar |
| 2. February 2019, 2020 | CEE Laird Fellowship Selection Committee |
| 3. September 2017-2019 | Civil Engineering Undergraduate Curriculum Committee |
| <hr/> | |
| 4. 2016-present | ABET Self-Study Committee, Environmental Engineering |
| 5. 2013-present | Environmental Engineering Undergraduate Curriculum Committee |
| 6. May 2016 | Search Committee, Environmental Engineering Laboratory Manager |
| 7. May 2013 | CEE Alumni Awards Committee |
| 8. 2012 | Search Committee, CEE Undergraduate Program Coordinator |

3.1.2 Department undergraduate recruiting and alumni events

1. April 2019 Decision Days
2. October 2017 Blue and Gold Saturday
3. September 2017 CEE Alumni Tailgate
4. February and October 2016 Decision Days

- | | |
|---------------|----------------|
| 5. April 2013 | Decision Days |
| 6. July 2013 | Discovery Days |
| 7. April 2012 | Decision Days |

3.2 College of Engineering service

3.2.1 College of Engineering Committees

(items above the line began after I submitted my application for promotion to assistant professor)

- | | |
|---------------------------|---|
| 1. May 2018 – present | Co-Director, Microbiology Graduate Program |
| 2. February 2017-May 2018 | Assistant Chair, Graduate Student subcommittee for College of Engineering Diversity Committee |
| <hr/> | |
| 3. April 2015 | Grade grievance panel, College of Engineering |
| 4. Fall 2014-Spring 2017 | College of Engineering Educational Activities Committee |
| 5. Fall 2013-Spring 2017 | Dean’s Junior Faculty Advisory Council |

3.2.2 Engineering outreach and mentoring

(items above the line began after I submitted my application for promotion to assistant professor)

- | | |
|---------------------------|---|
| 1. February 14, 2018 | University of Delaware Scholar in the Library seminar. <i>The Road Ahead: How bacteria in concrete could save transportation.</i> |
| 2. September 2017-present | Faculty Lead, STEM Faculty Writing Program (ADVANCE) |
| 3. October 2016 | Organized seminars by staff from Center for Counseling and Student Development for graduate students coping with high levels of stress and for faculty mentoring those students |
| <hr/> | |
| 4. June-August 2016 | Mentor, UD K-12 Engineering High School Internship program |
| 5. April 27, 2016 | University of Delaware College of Engineering Coffee Talk. <i>Hard Microbiology: Bacteria in concrete.</i> |
| 6. 2012 | Invited presenter at lunch with Women in Engineering students, UD College of Engineering |

3.3 University service

3.3.1 Graduate College Council

- | | |
|-------------------------------|---|
| 1. June 2020-December 2020 | College of Engineering Representative, Graduate College Executive Committee |
| 2. September 2019-August 2021 | College of Engineering Representative, Graduate College Council (elected) |
| 3. December 2019-present | Graduate College Council Subcommittee on Interdisciplinary Programs |

3.3.1 Diversity and inclusion activities

- | | |
|-------------------------------|--|
| 1. September 2017-August 2018 | Co-chair, College of Engineering Diversity Subcommittee on Graduate Students |
| 2. January 2017 | Organized and attended LGBTQ+ Ally Training session for faculty |

3.3.2 Interdisciplinary research and educational initiatives

1. 2018 – present Co-director, Microbiology Graduate Program
2. 2015 – present Microbiology Graduate Program steering committee
3. 2016 – 2018 Environmental Council

3.3.3 *Affiliations with interdisciplinary programs*

1. Delaware Institutes for the Environment (DENIN)
2. Center for Bioinformatics and Computational Biology
3. Biogeochemistry/Biogeosciences
4. Water Science and Policy

3.3.4 *Committee membership*

1. August 2019-present Member, Bioremediation Search Committee (part of Coastal Water Security cluster hire)
2. April 2019 DENIN Fellowship Review Committee
3. September 2018 – May 2019 Member, Toxicology Search Committee (part of Coastal Water Security cluster hire)
4. September 2018-present Member, Coastal Water Security Cluster Hire Committee
5. September 2018-December 2019 Search committee, Biological Sciences

3.3.5 *On-campus symposia*

(items above the first line occurred after I submitted my application for promotion to assistant professor; items above the second line occurred after I arrived at UD)

1. February 2017 Organizing committee chair, University of Delaware Microbial Systems Symposium

2. February 2016 Organizing committee, University of Delaware Microbial Systems Symposium
3. May 2015 Session Chair, COBRE Membrane Protein Symposium
4. February 2015 Organizing committee, University of Delaware Microbial Systems Symposium

5. May 2014 Session Chair, COBRE Membrane Protein Symposium

6. March 19-20, 2004 Session Chair, Environmental Chemistry Symposium, Penn State University
7. Spring 2004 Organizing Committee, Environmental Chemistry Symposium, Penn State University

3.3.5 *Outreach activities*

1. 2020 Data Visualization workshop, SMSPP REU Program, UD
2. 2018 Coast Day (Lewes, DE)
3. 2017 Activity Lead, Sussex Science Night (Sussex Co., DE)

4. 2017 Presenter, Darwin Day at UD
5. 2014 Panelist, DENIN Environmental Scholars' Winter Retreat.
6. 2012 Environmental Technology Teacher Training Workshop, Institute of Soil and Environmental Quality, University of Delaware.
7. 2012 Exhibitor, AAUW Awards Luncheon for Excellence in Science and Mathematics. Dover, DE.

8. 2010 Judge, Massachusetts State Science and Engineering Fair. Cambridge, MA.

9. 2010 Judge, Orchard Gardens Elementary School Science Fair. Roxbury, MA.
10. 2006 Volunteer, BioDays at Penn State.
11. 2004, 2005 Volunteer Coordinator, BioDays at Penn State. Organized volunteers to present their current research and staff demos presenting biological sciences to the general public.
12. 2004 Demonstration for BioDays: “Glowing bacteria: How bacteria count without counting.”
13. 2003 Workshop for middle school girls: “Who’s on the sunshine diet? Colored bacteria and how they use sunlight.” Expanding Your Horizons Conference, Women in Science and Engineering Institute, The Pennsylvania State University.
14. 2002 Workshop for middle school girls: “What lives in pond scum?” MathFest Conference, Women in Science and Engineering Institute, The Pennsylvania State University.

3.3.6 Press interest

1. August 2018 UDaily article, “Biochar, microbes and dirt — oh my!” <http://www.udel.edu/005036>
2. July 2018 UDaily article, “Examining microbes under a new lens.” <http://www.udel.edu/004938>
3. June 2018 Podcast, “Content in Cement” (MicroTalk, sponsored by the South Texas Center for Emerging Infectious Diseases and the American Society for Microbiology) <http://www.udel.edu/004912>
4. February 2017 UDaily article, “New pathway for microbially minded.” <http://www.udel.edu/003686>
5. November 2016 UDaily article, “Finding phosphorus: Research provides evidence that bacteria in freshwater lakes release methane as a byproduct of phosphorus acquisition.” <http://www.udel.edu/003687>
6. November 2016 The Scientist, “Freshwater Bacteria Might Help Explain the ‘Methane Paradox’” <http://www.udel.edu/003476>
7. October 2016 Geological Society of America press release, “Tough Microbe Settlers in the Concrete Jungle” <http://www.geosociety.org/news/pr/2016/16-59.htm>
8. October 2015 MATS-UTC Newsletter Faculty Spotlight, “Microbial Biomarkers for ASR-Damaged Concrete” <http://www.udel.edu/003339>
9. August 2015 UDaily article, “Concrete evidence: Bacteria may be harbingers of invisible damage in concrete” <http://www.udel.edu/003340>
10. April 2013 UDaily article, “Monitoring concrete: UD professors study microbes as potential biomarkers for damaged concrete” <http://www.udel.edu/003341>

3.4 Professional service

3.4.1 Editorial service

1. January 2019 – December 2021 Editorial board, *Applied and Environmental Microbiology* (ASM journal)
2. July 2018 – present Senior Editor, *Microbiology Resource Announcements* (ASM journal)

- | | |
|---------------------------------|--|
| 3. November 2017 | Panelist, American Society of Microbiology Editor-in-Chief Meeting |
| 4. January 2016 – December 2018 | Editorial board, <i>Applied and Environmental Microbiology</i> (ASM journal) |
| 5. 2011 – present | Editorial board, <i>Frontiers in Extreme Microbiology</i> |
| 6. 2011 | Guest editor, special issue of <i>Geobiology</i> on anoxic photosynthetic ecosystems (http://onlinelibrary.wiley.com/doi/10.1111/gbi.2012.10.issue-3/issuetoc) |

3.4.2 Peer reviews

- | | |
|-------------------|--|
| 1. 2019-present | <i>Limnology and Oceanography</i> |
| 2. 2019-present | <i>mBIO</i> |
| 3. 2019-present | <i>Scientific Advances</i> |
| 4. 2019-present | <i>Photochemistry and Photobiology</i> |
| 5. 2018-present. | <i>PeerJ</i> |
| 6. 2018 | Einstein Foundation (Germany) |
| <hr/> | |
| 7. 2016-present. | <i>Nature Scientific Reports</i> |
| 8. 2016-present. | <i>Biophysica et Biochimica Acta</i> |
| 9. 2015-present. | <i>ISME Journal</i> |
| 10. 2014-present. | <i>Journal of Bacteriology</i> |
| 11. 2014-present. | <i>Nature Geosciences</i> |
| 12. 2014-present. | <i>Environmental Science and Technology</i> |
| 13. 2014-present. | <i>Journal of Materials in Civil Engineering</i> |
| 14. 2013-present. | <i>Microbiome</i> |
| 15. 2012-present. | <i>Geobiology</i> |
| 16. 2011-present. | <i>Ecotoxicology and Environmental Safety</i> |
| 17. 2011-present. | <i>Separation and Purification Technology</i> |
| 18. 2011-present. | <i>Frontiers in Microbiology</i> |
| <hr/> | |
| 19. 2010-present. | <i>PLOS One.</i> |
| 20. 2009-present. | <i>Environmental Microbiology.</i> |

3.4.3 Funding agency proposal review panels

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|-------------------|--|
| 1. September 2021 | NSF: Integrative Ecological Physiology (panel) |
| 2. March 2021 | NSF: Hydrologic Sciences (<i>ad hoc</i>) |
| 3. November 2019 | NSF: Division of Environmental Biology (<i>ad hoc</i>) |
| 4. June 2019 | DOE: Biological Systems Science Division (panel) |
| 5. November 2018 | DOE: Joint Genome Institute, Community Sequencing Proposals (panel) |
| 6. April 2018 | NSF: Environmental Engineering (panel) |
| <hr/> | |
| 7. October 2016 | NASA: Exobiology (panel) |
| 8. May 2016 | DOE: Office of Biological & Environmental Research (panel) |
| 9. March 2015 | NSF: Environmental Engineering (panel) |
| 10. May 2014 | DOE: Pacific Northwest National Laboratory Scientific Focus Area (panel) |
| 11. March 2013 | NSF: Environmental Engineering (panel) |

3.4.4 Conference organizing committees

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|------------------------|---|
| 1. July 2019-June 2020 | Applied and Environmental Sciences programming committee for American Society for Microbiology's Microbe 2020 meeting |
| 2. July 2018-June 2019 | Applied and Environmental Sciences programming committee for American Society for Microbiology's Microbe 2019 meeting |
| 3. July 2017-June | Applied and Environmental Sciences programming committee for |

2018

American Society for Microbiology's Microbe 2018 meeting

Sessions organized:

Plenary session: Urban Microbiology

Symposium: Urban Aquatic Microbiology

Symposium: Growing Up: Modern Cultivation Methods

Symposium: Microniches in the Built Environment (co-moderator)

Symposium: Plumbers and Electricians: Microbes that work (moderator)
