

Peter R. Girguis

Harvard University
Biological Laboratories
16 Divinity Avenue, Room 3085
Cambridge, MA 02138-2020

(v) 617.496.8328
(f) 617.495.8848
pgirguis@oeb.harvard.edu
www.oeb.harvard.edu/faculty/girguis/
www.ai.harvard.edu/faculty

Positions

2013-present Professor of Organismic and Evolutionary Biology
Harvard University, Organismic and Evolutionary Biology

2018-present Adjunct Oceanographer
Woods Hole Oceanographic Institution

2009-2013 John L. Loeb Associate Professor of the Natural Sciences
Harvard University, Organismic and Evolutionary Biology

2005-2012 Adjunct Research Engineer
Monterey Bay Aquarium Research Institute

2005-2009 Assistant Professor, Department of Organismic and Evolutionary Biology
Harvard University, Organismic and Evolutionary Biology

2003-2005 Associate Research Scientist, Research and Development
Monterey Bay Aquarium Research Institute

Education

2001-2003 Postdoctoral Research Fellow, Monterey Bay Aquarium Research Institute
Research Advisor: Dr. Edward F. DeLong

1995-2000 Ph.D. in Marine Biology, University of California Santa Barbara (U.C.S.B.)
Dissertation Advisor: Dr. James J. Childress

1989-1994 B.Sc. in Biological Sciences, University of California Los Angeles (U.C.L.A.)

Honors and Awards

2020 Petra Shattuck Excellence in Teaching award
2019 Moore Foundation Investigator (*Symbiosis in Aquatic Systems*)
2018 2018 Lowell Thomas Award for groundbreaking advances in Marine Science and Technology
2011-2019 Consecutive commendations for Distinguished Teaching (Bio-E118, *Deep Sea Biology*)
2011 Lindbergh Foundation Award for Science & Sustainability
2010 ENI International Energy and the Environment Award, Honorable Mention
Discover Magazine's "10 Everyday Technologies That Can Change the World"
(*microbe-powered lighting for the developing world*)
2008 Buckminster Fuller Innovations in Science Award, Honorable Mention
2007 Lindbergh Foundation Award for Science & Sustainability
2006 Distinguished Lecturer, National Science Foundation
2006 Merck Co. Innovative Research Award

2003	State of California's <i>Distinguished Community Service Award</i>
2002	Department of Energy's E.C.-U.S. Biotechnology Fellowship
2000-2002	Monterey Bay Aquarium Research Institute Postdoctoral Fellowship
2000	U.C. Regents Fellowship, U.C. Santa Barbara
2000	U.C. Graduate Division Affiliates Fellowship for outstanding teaching and research
1999	U.C. Santa Barbara Graduate Division Fellowship

Research and Professional Interests

The deep sea is the largest habitat on Earth, representing over 80% of our planet's living space. It is home to microbes that play a critical role in ocean, and planetary, health.

My research is aimed at better understanding the role of these marine microbes in ocean and planetary biogeochemical cycles. To that end, I study physiological and biochemical adaptations to life in the deep sea, and employ methods and develop technologies that enable us to better associate microbial phylogenetic identity with metabolic activity. From novel laboratory incubators that better mimic environmental conditions to new underwater instruments such as mass spectrometers and isotope analyzers, we aim to bridge the expansive gap between microbial ecology and marine biogeochemistry.

Equally important, I am committed to democratizing technologies through the development of “open-design” instruments. I am also committed to providing opportunities for early-career scholars through direct engagement with my research program, and through the development of mentoring programs such as the New User Program I launched via the UNOLS-Deep Submergence Science Committee.

Research interests include:

- Quantifying deep sea primary productivity by chemoautotrophic microbial-animal symbiosis
- Studying energy metabolism of hydrothermal and subsurface microbes using *in situ* mass spectrometry and *in situ* isotope analyses
- Better understanding the role of microbes in shaping the evolution of deep sea animal communities

Technology developments include:

- Advanced *in situ* sensing with our open-design underwater mass spectrometer and isotope analyzer
- Enhancing remote sample collection and preservation through the development of new, high-performance and low-cost microbial and animal samplers
- Fostering cross-collaboration among space and ocean science sensor development to further our sensing capacities for Earth and other ocean world research.

Professional Service

Community leadership and service

2022	National Science Foundation Committee of Visitors, Integrative Programs Section (IPS) (GEO/OCE)
2021-present	Co-lead of the science advisory board for new Marine Science Research Park and Aquarium in the Hashemite Kingdom of Jordan
2018-present	United Nations Delegate (with International Council for Environmental Law) for negotiations on Marine Genetic Resources in Areas Beyond National Jurisdiction
2017-present	Governance Council On Microbial Sciences, <i>American Society of Microbiology</i>
2016-present	Board of Directors, <i>Ocean Exploration Trust</i> (OET)
2016-present	Scientific Advisory Board, <i>Schmidt Marine Partners</i>
2014-2016	Scientific Advisory Board, <i>Ocean Exploration Trust</i> (OET)
2009-2017	Chair, <i>UNOLS Deep Submergence Science Committee (DeSSC)</i>

2009-2016	Member, <i>UNOLS Council</i>
2014-2015	Vehicle Advisory Board Member, <i>Schmidt Ocean Institute</i>
2005-2008	Steering Committee, <i>National Science Foundation RIDGE-2000 program</i>
2003-2006	Chair, <i>National Academy of Sciences' US-China Frontiers Symposium</i>

University leadership and service

2022-present	Harvard Graduate Admissions and Graduate Education (GAGE) Working Group
2022-present	Harvard University Hearing Committee
2019-present	Co-Director, <i>Harvard University Microbial Sciences Initiative</i>
2017-present	Executive Advisory Committee, Dept. of Organismic and Evolutionary Biology (OEB)
2021-2022	Faculty Council (interim advisor to the Senior Leadership in the Faculty of Arts and Sciences), Harvard University
2019-2020	Faculty Council (interim advisor to the Senior Leadership in the Faculty of Arts and Sciences), Harvard University
2017-2019	General Education Committee, Harvard University
2017-2018	Provost's Academic Leadership Forum, Harvard University
2014-2017	Co-director of Graduate Studies, Dept. of Organismic and Evolutionary Biology (OEB)
2013-2016	Hoopes prize selection committee, Harvard University <i>The Hoopes prize is Harvard's distinguished award for undergraduate research</i>
2013-2016	Research Policy Committee, Harvard University
2013-2014	Laboratory Safety Committee, Harvard University
2010-2013	Co-director of Tenure-track Faculty Mentoring, Dept. of Org. and Evolutionary Biology
2009	Graduate Finance Committee, Dept. of Organismic and Evolutionary Biology
2006-2016	Graduate Admissions Committee, Dept. of Organismic and Evolutionary Biology

Editorial positions

2022-present	<i>Proceedings of the National Academy of Sciences</i> (<i>ad hoc</i> editor)
2018-present	<i>PLoS ONE</i> (Associate Editor)
2017-present	<i>PeerJ</i> (Associate Editor)
2016-2019	<i>Environmental Microbiology</i> (Associate Editor)
2009-2019	<i>Proceedings of the Royal Society Series B</i> (Editor)
2009-present	<i>Frontiers in Microbiology</i> and <i>Frontiers in Microbiological Chemistry</i> (Associate Editor)

Peer Reviewer

Nature, Science, Proceedings of the National Academy of Sciences, PLoS Biology, PLoS One, Journal of Experimental Biology, Environmental Microbiology, Applied and Environmental Microbiology, The ISME Journal, Microbial Ecology, Aquatic Microbial Ecology, Marine Biology, Geomicrobiology,

Environmental Science and Technology, Energy and Environmental Science, Journal of Power Sources, Limnology and Oceanography, Limnology and Oceanography: Methods, Deep Sea Research.

Grant Reviews

National Science Foundation (IODP, Microbial Observatories, Bio. and Chemical Oceanography, Geology and Geophysics, Low Temperature Geochemistry), NASA (Astrobiology Science and Technology for Exploring Planets), Office of Naval Research, NOAA, Austrian Science Fund, Deutsche Forschungsgemeinschaft (German Research Foundation), Schmidt Ocean Institute, British Petroleum/NSF Gulf of Mexico Research Institute review panel, Canadian Institute for Advanced Research (CIFAR).

Institutional, Departmental, Tenure reviews

Woods Hole Oceanographic Institution (2015); Harvard University's Organismic and Evolutionary Biology departmental review (2014); ~ eight tenure promotion committees to date.

University Affiliations and Professional Memberships

2017-present	Member, Kavli Institute of BioNano Science and Technology (KIBST)
2014-present	Affiliate, Harvard-MIT Broad Institute Genomics Research Center
2008-present	Member, Harvard Systems Biology
2008-present	Affiliate, Molecules, Cells, and Organisms Program
2007-present	Affiliate, Harvard Origins Initiative
2005-present	Member, Harvard Microbial Science Initiative
2000-present	Member, American Association for the Advancement of Science
2000-present	Member, American Society for Microbiology
1999-present	Member, American Geophysical Union
1994-present	Member, American Society for Limnology and Oceanography
1994-2007	Member, Society for Integrative and Comparative Biology

Teaching Experience

2005-present	Instructor (courses developed at Harvard University) <i>Freshman Seminar 50V/HUMA-E103: Sea Monsters</i> <i>OEB 119/Bio-E118: Deep Sea Biology</i> <i>OEB 191: Physiological and Biochemical Adaptation</i> <i>OEB 194: Laboratory Techniques in Ecological Physiology</i> <i>OEB 290: Microbial Sciences: Chemistry, Ecology and Evolution</i>
	Co-Instructor (courses developed at Harvard University) <i>OEB 209: Oxygen and Life (taught with Dr. Andrew Knoll)</i> <i>OEB 279: Microbial Metabolic Systems (taught with Dr. Chris Marx)</i>
2007-2010	Lecturer (courses at Harvard University) <i>LS 190r: Diverse Microbial Strategies for Metabolism, Pathogenesis, and Chemical Signaling</i> <i>OEB 10: Biodiversity and Systematics</i>
2000	Co-Instructor (U.C. Santa Barbara)

EEMB 143L: Laboratory Approaches in Ecological Physiology

1997-2000 Lead Teaching Assistant (U.C. Santa Barbara)
EEMB 143: Ecological Physiology

Student and Postdoctoral Mentoring (current and previous)

High school students and teachers

Grace Austin, Alexandra Brown, Michael Clinchot (teacher), Andre Dempsey, Emma Dillon, Lisa Evans (teacher), Katherine Farrar, Mbaka Francoise, Tinsley Gaylean, Denise Ghartey, Caspian Harding, Robert Hinson, Ryan Hussey, Cara Karra (teacher), Eleanor Lieberman, Sam Melton, John Melas-Kyriazi, Till Ohldenhorf, Ariela Schear, Caroline Stetson, Alexandra Thomsen, Ava Violich.

Undergraduates

Arielle Anderson (2011-2012), Kemi Ashing-Giwa (2020-2022), Aaron Behr (2013), Caroline Behr (2016), Annabel Beichman (2011-2012), Lauren Ballou (2015-2016), Dan Cahoon (2010-2011), Isabella Colocci (2017-2019); Jeanne Dang (2006-2010), Chelsea Ekelem (2016); Israel Figueroa (2007-2010), Amitra Goyal (2009-2010), Kalina Grabb (2104), Phil Griselda (2009-2012), Rebecca Helm (2006-2008), Adrienne Hoarfrost (2009-2012), Sofia Jacobson (2019); Nico Kirk-Giannini (2009-2011), Ashley Kleinman (Harvard Extension School; 2022), Hong Gam Le (2007), Amy Li (2019-2020)**, Amy Lorber (2012-2013), McKayla Gourneau (2017), John Melas-Kyriazi (2010), Tsui Moorosi (2008), Christine Park (2009-2011), Blair Paul (2007-2008), Molly Redmond (2006-2007), Annelys Roque (2005-2009), Beck Saine (2021); Niroshi Senarthe (2006-2008), Sonam Sharma (2006-2008), Chloe Shinsel (2015-2017), Daniel Stolper* (2005-2009), Alex Stote (2014), Rachel Taylor (2014), Alexandra Thomsen (2012; high school intern); Normandy Villa (2006), Alice Wang (2006-2007), Alexa Weingarden (2007-2008), Eloise Wheeler (2016-2107), Joshua Whitener (2016), Julia Winn (2010), Tom Yu* (2008-2012), Brian Zielinski (2006), ZiaZia Zhang (2011-2013),
(* = Harvard University Hoopes Prize winners)
(** = Harvard University James McCarthy “best thesis in ESPP” winner)

Kemi Ashing-Giwa

Graduate students

Current: Ian Hughes, Yunha Hwang, Stefan Kolle (co-advised with Prof. Aizenberg), Evan Patev (MFA), Sarah Rudawsky (MFA), Brooke Travis

Previous (current occupation): Melissa Adams (*patent law*); Isabelle Baker (*postdoc*); Roxanne Beinart (*faculty*); Edward Beucler (*MFA, unknown*); Jacob Cohen (*biotech*); Geoffrey Dilly (*faculty*); Brandon Enalls (*postdoc*); Kiana Frank (*faculty*); Emily Gardel (*patent law*); Tyler Garvin (*unknown*); Kelsey Lucas (*faculty*); Jessica Mitchell (*postdoc*); Heather Olins (*faculty*); Evan Patev (*unknown*); Jon Sanders (*postdoc*); Jeremy Tagliaferre (*MFA, unknown*); Tyson Trautz (*MFA, educator*)

Postdoctoral scientists and visiting scholars

Current: Hollie Emery, Rachel Harris, Andrea Unzueta-Martinez, Jessica Mitchell.

Previous (current occupation): Victoria Bertics (*deceased*); Arpita Bose (*faculty*); Erik Cordes (*faculty*); Arda Gulay (*postdoc*); Fauzi Haroon (*biotech*); Allon Hochbaum (*faculty*); Dan Hoer (*federal agency*); Amy Gartman (*postdoc*); Ulrike Jaekel (*staff scientist*); David Johnston (*faculty*); Beate Kraft (*postdoc*); Amit Kumar (*postdoc*); Dr. Peng Liang (*faculty*); Jeff Marlow (*faculty*); Mark Nielsen (*educator*); Spencer Nyholm

(faculty); Erika Parra (*entrepreneur*); Aude Picard (faculty); Aspen Reese (*Harvard Jr. Fellow, faculty*); Julie Robidart (faculty); Dan Rogers (faculty); Neha Sarode (*biotech*), Scott Wankel (faculty); Charles Vidoudez (*staff scientist*); Helen White (faculty); Dr. Lehua Zhang (faculty); Xiaofei Zhang (faculty).

Student committees

Since 2006, I have also served on >45 graduate student committees in Harvard's Organismic and Evolutionary Biology, Molecular and Cellular Biology, Earth and Planetary Sciences, and Engineering and Applied Sciences. I have also served on nine graduate student committees at other universities.

Representative Outreach and Community Service

- 2021-present Advisory board member, Aqaba Marine Park for Science and Ecotourism (per His Royal Majesty King Abdullah II and Hashemite Kingdom of Jordan)
- 2019-present Ad-hoc advisor, Skype-A-Scientist (www.skypeascientist.com)
- 2006-present Founder and Co-Director, Cambridge Rindge and Latin School-Harvard Student Intern Program
A program developed with Mr. Paul McGuiness of CRLS to host high school students in Harvard research labs during the summers and onboard research expeditions. (eighteen students to date.)
- 2017-2021 Board of Advisors, OLLIE (Ocean Learning Lab and Immersive Experiences; <https://www.oceanlab.org>)
- 2016-2017 Scientific Advisor, Microbiology Gallery at the Harvard Museum of Natural History
- 2015-2017 Lead Scientific and Exhibit Advisor, Marine Gallery at the Harvard Museum of Natural History
- 2016 Harvard iGEM team mentor
- 2015 Speaker, TEDx Adventures (part of the Boston HUBWeek 2015)
- 2014 Distinguished speaker, Science for the Public television series, WGBH Boston (www.scienceforthepublic.org)
- 2010-2014 Co-director, Howard Hughes Medical Institute "Genomes to Biomes" Undergraduate Research Program
- 2013 Invited speaker, TEDx Beacon Street
- 2013 Invited speaker, Science by the Pint (a production of *Science in the News* at Harvard University)
- 2013 Invited speaker, NOVA's *Science Café* series
- 2008-2013 Scientist-Educator, Center for Ocean Science Education and Excellence- Ocean Systems (www.cosee.umaine.edu)
- 2012 TED distinguished speaker, Boston, Massachusetts.

2012	Invited speaker, Science for the Public television series, WGBH Boston (www.scienceforthepublic.org)
2012	Contributor and editor, <i>Scholastic Magazine</i> (www.scholastic.com)
2006-2012	Mentor, Howard Hughes Medical Institute's Program for Research in Science and Engineering
2011	Co-instructor, Harvard Teaching Pedagogy workshop
2011	Deep-sea photo exhibit and continuing lectures at Harvard Museum of Natural History (www.hmnh.harvard.edu)
2010	Contributor and editor, <i>World Book Encyclopedia</i> (www.worldbook.com)
2010	Invited speaker, <i>The Academic Minute</i> (www.wamc.org/programs/academic-minute)
2009-2010	Harvard "Holiday Lectures" (www.eduprograms.seas.harvard.edu/HolidayLecture/)
2009	Scientific consultant, actor for Dirt! The movie (http://www.thedirtmovie.org ; finalist at the Sundance Film Festival that featured Girguis lab research on microbial electricity production)
2008-2009	Mentor, International Genetically Engineered Machines competition (www.igem.org)
2008	Invited speaker, New England Aquarium's Evening Seminar Series (www.neaq.org)
2006, 2007	Summer mentor, HHMI-TRIP program <i>A program through which I hosted high school teachers in the Girguis lab during the school year.</i>

Publications in review, revision or in press

Le, J.T., Girguis, P.R., and Levin, L. *Submitted to Marine Environmental Research*. Using deep-sea images to examine ecosystem services associated with methane seeps.

Victoria Preston, Victoria, Flaspohler, G., Kapit, J., Pardis, W., Youngs, S., Martocello III, D.E., Roy, N., **Girguis, P.R.**, Wankel, S.D., and Michel, A.P.M. *Submitted to Frontiers in Earth Science*. Discovering Hydrothermalism from Afar: *In Situ* Methane Instrumentation and Change-Point Detection for Decision-Making.

Shaffer, J.P., Nothias, L-F., Thompson, L.R., Sanders, J.G., *et al. and the Earth Microbiome Project 500 (EMP500) Consortium*. *Submitted to Nature Microbiology*. Multi-omics profiling of Earth's biomes reveals that microbial and metabolite composition are shaped by the environment.

Publications

Bell, K.L.C., Chow, J.S., Hope, A., Quinzip, M.C., Cantner, K.A., Amon, D.J., Cramp J.E., Rotjan R.D., Kamalu L., de Vos, A., Talma S., Buglass S., Wade V., Filander Z., Noyes K., Lynch M., Knight A., Lourenço N., **Girguis P.R.**, de Sousa J.B., Blake C., Kennedy B.R.C., Noyes T.J., McClain C.R. 2022. Low-Cost, Deep-Sea Imaging and Analysis Tools for Deep-Sea

Exploration: A Collaborative Design Study. *Frontier in Marine Science*.
DOI:10.3389/fmars.2022.873700

Girguis, P., Shah Walter, S. R. 2022. Concentrations, d¹³C and D¹⁴C data for DOC and DIC in fluids collected from North Pond Cork Observatories U1382A and U1383C and from bottom seawater in 2012, 2014 and 2017. *Biological and Chemical Oceanography Data Management Office (BCO-DMO)*. (Version 1) Version Date 2022-08-10.
DOI:10.26008/1912/bco-dmo.876729.1. (NOTE: This is a publicly available datasets)

Hwang, Y. and **Girguis, P.R.**, 2022. Differentiated Evolutionary Strategies of Genetic Diversification in Atlantic and Pacific Thaumarchaeal Populations. *Msystems*, pp.e01477-21. DOI: 10.1128/msystems.01477-21

German, C.R., Blackman, D.K., Fisher, AT., **Girguis, P.R.**, Hand, L.P., Hoehler, T.M., Huber, J.A., Marshall, J.C., Pietro, K.R., Seewald, J.S., Shock, E.L., Sotin, C., Thurnherr, A.M., and Toner, B.M.. 2021. Ocean system science to inform the exploration of ocean worlds. *Oceanography*. DOI: 10.5670/oceanog.2021.411

Baker, I.R., Conley, B.E., Gralnick, J.A. and **Girguis, P.R.**, 2022. Evidence for Horizontal and Vertical Transmission of Mtr-Mediated Extracellular Electron Transfer among the Bacteria. *Mbio*, 13(1), pp.e02904-21. DOI: 10.1128/mbio.02904-21

de Oliveira, A.L., Mitchell, J., **Girguis, P.** and Bright, M., 2022. Novel insights on obligate symbiont lifestyle and adaptation to chemosynthetic environment as revealed by the giant tubeworm genome. *Molecular Biology and Evolution*, 39(1), p.msab347.
DOI:10.1093/molbev/msab347

Gomaa, F., Li, Z.H., Beaudoin, D.J., Alzan, H., **Girguis, P.R.**, Docampo, R. and Edgcomb, V.P., 2022. CRISPR/Cas9-induced disruption of *Bodo saltans* paraflagellar rod-2 gene reveals its importance for cell survival. *Environmental Microbiology*. doi:10.1111/1462-2920.15918

Marlow, J., Spietz, R., Kim, K.Y., Ellisman, M., **Girguis, P.** and Hatzenpichler, R., 2021. Spatially resolved correlative microscopy and microbial identification reveal dynamic depth-and mineral-dependent anabolic activity in salt marsh sediment. *Environmental microbiology*, 23(8), pp.4756-4777. <https://doi.org/10.1111/1462-2920.15667>

Smith, H.H., Hyde, A.S., Simkus, D.N. Libby, E., Maurer, S.E., Graham, H.V., Kempes, C.P., Lollar, B.S. Chou, L., Ellington, A.D., Fricke, G.M., **Girguis, P.R.**, Grefenstette, N.M., Pozarycki, C.I., House, C.H., and Johnson, S.S. 2021. "The Grayness of the Origin of Life" *Life* 11, no. 6: 498. <https://doi.org/10.3390/life11060498>

Leonard, J.M., Mitchell, J., Beinart, R.A., Delaney, J.A., Sanders, J.G., Ellis, G., Goddard, E.A., **Girguis, P.R.** and Scott, K.M., 2021. Co-occurring Activities of Two Autotrophic Pathways in Symbionts of the Hydrothermal Vent Tubeworm *Riftia pachyptila*. *Applied and Env. Microbiology*, 87(17), pp.e00794-21. <https://doi.org/10.1128/AEM.00794-21>

Marlow, J.J., Hoer, D., Jungbluth, S.P., Reynard, L.M., Gartman, A., Chavez, M.S., El-Naggar, M.Y., Tuross, N., Orphan, V.J. and **Girguis, P.R.**, 2021. Carbonate-hosted microbial communities are prolific and pervasive methane oxidizers at geologically diverse marine methane seep sites. *Proceedings of the National Academy of Sciences*, 118(25). DOI: 10.1073/pnas.2006857118

Leprich, D.J., Flood, B.E., Schroedl, P.R., Ricci, E., Marlow, J.J., **Girguis, P.R.** and Bailey, J.V. 2021. Sulfur bacteria promote dissolution of authigenic carbonates at marine methane seeps. *ISME: A Nature Journal* pp.1-14. DOI: 10.1038/s41396-021-00903-3

Picard, A., Gartman, A. and **Girguis, P.R.**, 2021. Interactions Between Iron Sulfide Minerals and Organic Carbon: Implications for Biosignature Preservation and Detection. *Astrobiology*. DOI: 10.1089/ast.2020.2276

Beam, J.P., George, S., Record, N.R., Countway, P.D., Johnston, D.T., **Girguis, P.R.**, and Emerson D.. 2020. *Frontiers in Marine Science*. Mud, microbes, and macrofauna: seasonal dynamics of the iron biogeochemical cycle in an intertidal mudflat. DOI: 10.3389/fmars.2020.562617

Nayfach, S., Roux, S., Seshadri, R., Udwary, D., Varghese, N., Schulz, F., Wu1, D., Paez-Espino, D., Chen, I., Huntemann, M., Palaniappan, K., Ladau, J., Mukherjee, S., Reddy, T., Nielsen, T., Kirton, E., Faria, J.P., Edirisinghe, J.N., Henry, C.S., Jungbluth, S.P., Chivian, D., Dehal, P., Wood-Charlson, E.M., Arkin, A.P., Tringe, S., Visel, A., and the **IMG/M Data Consortium**. A genomic catalog of Earth's microbiomes. *Nature Biotechnology*, 1-11. DOI: 10.1038/s41587-020-0718-6

Waterston, J., Florea, R., and **Girguis, P.R.**. "Undersea Supercharger™ Network?: A Commentary Promoting *In-Situ* Methane to Fuel Expansion of Seafloor Robotics." *Marine Technology Society Journal* 54.5 (2020): 5-7.

Breusing, C., Mitchell, J., Delaney, J., Sylva, S., Seewald, J., **Girguis, P.R.**, and Beinart, R. 2020. Physiological dynamics of chemosynthetic symbionts in hydrothermal vent snails. *ISME: A Nature Journal* DOI: 10.1038/s41396-020-0707-2

Murray, A.E., Freudenstein, J., Gribaldo, S., Hatzenpichler, R., Hugenholtz, P., Kämpfer, P., Konstantinidis, K.T., Lane, C.E., Papke, R.T., Parks, D.H. Rossello-Mora, R., et al., 2020. Roadmap for naming uncultivated Archaea and Bacteria. *Nature Microbiology*, pp.1-7. DOI: 10.1038/s41564-020-0733-x

Faktorová, D., Nisbet, R.E.R., Robledo, J.A.F., Casacuberta, E., Sudek, L., Allen, A.E., Ares, M., Aresté, C., Balestreri, C., Barbrook, A.C. Beardslee, P., et al., 2020. Genetic tool development in marine protists: Emerging model organisms for experimental cell biology. *Nature Methods*, 17(5), pp.481-494. DOI: 10.1038/s41592-020-0796-x

Totoiu, C.A., Phillips, J.M., Reese, A.T., Majumdar, S., **Girguis, P.R.**, Raston, C.L. and Weiss, G.A., 2020. Vortex fluidics-mediated DNA rescue from formalin-fixed museum specimens. *PloS ONE*, 15(1), p.e0225807. DOI: 10.1371/journal.pone.0225807

Picard, A., Gartman, A., Cosmidis, J., Obst, M., Vidoudez, C., Clarke, D.R. and **Girguis, P.R.**, 2019. Authigenic metastable iron sulfide minerals preserve microbial organic carbon in anoxic environments. *Chemical Geology*, 530, p.119343. DOI: 10.1016/j.chemgeo.2019.119343

Mitchell, J.H., Leonard, J.M., Delaney, J., **Girguis, P.R.*** and Scott, K.M.*., 2020. Hydrogen Does Not Appear To Be a Major Electron Donor for Symbiosis with the Deep-Sea Hydrothermal Vent Tubeworm *Riftia pachyptila*. *Applied and Environmental Microbiology*, 86(1). DOI: 10.1128/AEM.01522-19.

- Park, J.O., Liu, N., Holinski, K.M., Emerson, D.F., Qiao, K., Woolston, B.M., Xu, J., Lazar, Z., Islam, M.A., Vidoudez, C. and **Girguis, P.R.**, 2019. Synergistic substrate cofeeding stimulates reductive metabolism. *Nature Metabolism*, 1(6), pp.643-651.
- Beinart, R.A., Luo, C., Konstantinidis, K., Stewart, F. and **Girguis, P.R.**, 2019. The bacterial symbionts of closely related hydrothermal vent snails with distinct geochemical habitats show broad similarity in chemoautotrophic gene content. *Frontiers in Microbiology*, 10, p.1818.
- Rowe, A.R., Xu, S., Gardel, E., Bose, A., **Girguis, P.**, Amend, J.P. and El-Naggar, M.Y., 2019. Methane-linked mechanisms of electron uptake from cathodes by *Methanosarcina barkeri*. *mBio*, 10(2), pp.e02448-18.
- Bowles, M.W., Samarkin, V.A., Hunter, K.S., Finke, N., Teske, A.P., **Girguis, P.R.** and Joye, S.B., 2019. Remarkable capacity for anaerobic oxidation of methane at high methane concentration. *Geophysical Research Letters*, 46(21), pp.12192-12201.
- LeBris, N., Yucel, M., Das, A., Sievert, S.M. and Girguis, P.R., 2019. Hydrothermal energy transfer and organic carbon production at the deep seafloor. *Frontiers in Marine Science*, 5, p.531. DOI: 10.3389/fmars.2018.00531
- Picard, A., Gartman, A., Clarke, D.R. and **Girguis, P.R.**, 2018. Sulfate-reducing bacteria influence the nucleation and growth of mackinawite and greigite. *Geochimica et Cosmochimica Acta*, 220, pp.367-384.
- Shah Walter, S.R., Jaekel, U., Osterholz, H., Fisher, A.T., Huber, J.A., Pearson, A., Dittmar, T., **Girguis, P.R.** 2018. Microbial decomposition of marine dissolved organic matter in cool oceanic crust. *Nature Geoscience*. DOI: 10.1038/s41561-018-0109-5.
- Reese, B.K., Zinke, L.A., Sobol, M.S., LaRowe, D.E., Orcutt, B.N., Zhang, X., Jaekel, U., Wang, F., Dittmar, T., Defforey, D., Tully, B., Paytan, A., Sylvan, J.B., Amend, J.P., Edwards, K.J., and **Girguis, P.R.** 2018. Nitrogen Cycling of Active Bacteria within Oligotrophic Sediment of the Mid-Atlantic Ridge Flank, *Geomicrobiology Journal*. DOI:10.1080/01490451.2017.1392649
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- necessary adaptation to sulfide-oxidizing chemoautotrophic symbionts. *Journal of Experimental Biology*, 205: 3055-3066.
- Freytag, J.K., **Girguis, P.R.**, Bergquist, D.C., Andras, J.P., Childress, J.J., and Fisher, C.R. 2001. A paradox resolved: sulfide acquisition by roots of seep tubeworms sustains net chemoautotrophy. *Proceedings of the National Academies of Science*, 98(23): 13408–13413. doi:10.1073/pnas.231589498
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- Girguis, P.R.** and Childress, J.J. 1998. H⁺ equivalent elimination by the tubeworm *Riftia pachyptila*. *Cahiers de Marine Biologie*, 39: 285-296.
- Popular Science Features**
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| 2022 | “How to improve the search for aliens”, <i>The Economist</i> , viewed 28 May 2022.
https://www.economist.com/science-and-technology/2022/05/25/how-to-improve-the-search-for-aliens . |
| 2021 | “Protect High Seas Biodiversity”. Helm, R.R., Clark, N., Harden-Davies, H., Amon, D., Girguis, P. , Bordehore, C., Earle, S., Gibbons, M.J., Golbuu, Y., Haddock, S.H. and Houghton, J.D. 2021. <i>Science</i> 372(6546):1048-1049. DOI: 10.1126/science.abj0581. |
| 2021 | “Microbial Methane – New Fuel for Ocean Robots?” <i>Oceanus</i> March 8, 2021. |
| 2020 | “Oceans of Life”. A <i>Times Evoke</i> article in the Times of India. Nov 21, 2020. |
| 2020 | “World Ocean’s Week” at the <i>Explorer’s Club</i> . Speaker, June 8, 2020. |
| 2020 | “Why a landmark treaty to stop ocean biopiracy could stymie research”. <i>Nature</i> , Mar 2020. |
| 2019 | MIT Media Lab: All Hands On Deck Symposium Speaker. November 8 and 9, 2018
https://www.allhandsondeck.community/speakers |
| 2019 | “Women in Oceanography Still Navigate Rough Seas”. <i>EOS (Science News by AGU)</i> , Jun 2019 |
| 2018 | “Harvard Museum depicts deep-sea creatures through artistic lens”. <i>Cambridge Chronicle</i> , Dec 2018 |
| 2017 | “Hydrothermal vents generate deep-sea currents”. <i>Chemistry World</i> , Apr 2017 |
| 2017 | “The internet of things comes to the lab”. <i>Nature</i> , Feb 2017. |
| 2016 | “Let there be laser light”. <i>Marine Technology News</i> , Sept 2016. |
| 2016 | “Digitizing The Oceans In Real Time”. <i>Popular Science</i> , Sept 2016. |
| 2016 | “Immersing themselves in marine biology: High school students expand horizons with Harvard’s ‘Marine Life’ exhibition”. <i>Harvard Gazette</i> , Editor’s pick. January 2016 |
| 2015 | “Deep dive: Building on research and collections, HMNH opens permanent marine life gallery.” <i>Harvard Gazette</i> , Dec 2015. |
| 2015 | “Whale Microbiomes Hint At Their Evolutionary Past”. www.IFLScience.com |

- 2015 "Study shows whale microbiome shares characteristics with both ruminants and predators". www.Phys.org
- 2014 "Cambridge Rindge students talk deep-sea diving with *Alvin* submarine crew". *Cambridge Chronicle*, Mar 2014
- 2014 "A Whale of a Tale: Mammal's microbiome shares characteristics with both plant eaters and predators, study finds". *Harvard Gazette*, Editor's pick. October 2015.
- 2014 "Scientists Reveal How Microbe 'Eats' Electricity" www.IFLScience.com
- 2014 A Shocking Diet: Microbes that eat electricity. *Harvard Gazette*, April 2014.
- 2014 Miniaturizing mass spectrometry. *Science*, DOI: 10.1126/science.opms.p1400082
- 2012 Salt and Battery: Microbial Fuel Cells at Deep-Sea Vents. *Microbe Magazine*, 4/2012.
- 2012 Deep sea "batteries" could power sensors. (boingboing.net/2011/12/20/deep-sea-batteries-could-p.html)
- 2011 Deep sea battery comes to light. *Science News*, December 31, 2011, 180(14): 9.
- 2011 Hydrogen-powered symbiotic bacteria in deep-sea hydrothermal vent mussels. *Ocean Science and Technology*, Aug 13, 2011, Issue 13.
- 2010 Microbes may have eaten methane from BP oil spill. *National Public Radio's Morning Edition*. (www.npr.org/templates/story/story.php?storyId=130715342&ft=1&f=1025)
- 2010 From one extreme to another: Life in the deep sea. *Chemistry World* (American Chemical Society).
- 2009 Exploring life's hidden abundance. *Harvard Magazine*. (news.harvard.edu/gazette/story/2009/02/exploring-hidden-lifes-abundance/)
- 2008 Squeezing Juice from Bugs. *Nature Online*. (blogs.nature.com/boston/2008/01/18/squeezing-juice-from-bugs)
- 2008 "Literally, this is energy from dirt". *Interpress Service News Agency*, May 10, 2008 (www.ipsnews.net/)
- 2007 Methanol, Cheeseburgers and Metals. *Harvard Magazine* Featured Article.
- 2006 Batteries Not Included - Circuits of Slime. *Nature*, 441: 277-279. (by C. Schubert.)
- 2006 Living Batteries. July 1, 2006. *The Scientist*.
- 2006 Symbionts' Body Buffers. *Journal of Experimental Biology*, 209: 3481.
- 2006 Some like it hot: Deep sea worms favor a fiery 45-55 °C. *Harvard Gazette* (April 20th)
- 2006 Into Hot Water: Lab Test Shows that Worms Seek Heat. *Science News*, 169(15): 228.
- 2002 Deep Sea Tubeworms are Champion Proton Pumpers. *Journal of Experimental Biology*, 205: 1902.
- 2002 Primary Productivity in the Deep Oceans. *New Scientist*.
- 2001 Deep Sea Dynamos. *New Scientist*, Issue 2293
- 1998 Random Samples (tubeworm farming). *Science*. 279 (5351): 663.
- 1998 Bringing tubeworms back alive. *Discover Magazine*, p. 22.
- 1996 Meeting briefs (Proton elimination rates). *Science*, 275 (5315): 305.

Media appearances

- 2022 Frontline Genomics' "Down the Rabbit Hole".
- 2022 Exploring by the Seat of Your Pants. World Ocean Week at the Explorer's Club.
- 2021 "Ocean Encounters: *the HOV ALVIN*". *WHOI online seminar series*. April 28, 2021.
<https://youtu.be/XBytjq0iPns>
- 2021 How microbes define life on Earth. EXPeditions video series. February 2021.
<https://www.joinexpeditions.com/exp3/763>
- 2020 "*FindingGenius*" podcast. June 25, 2020.
<https://www.findinggeniuspodcast.com/podcasts/microbes-of-the-deep-peter-r-girguis-discusses-ocean-microbial-life-and-our-biosphere/>
- 2019 "Prof Talks w/ Adam Vassallo" podcast. <https://prof-talks.com/2019/05/20/peter-girguis/>
- 2009 **Dirt! The movie** (<http://www.thedirtmovie.org>, a finalist at the Sundance Film Festival that featured Girguis lab research on microbial fuel cells).

Invited Seminars and Conference talks

- 2022 Ocean Sciences annual meeting, Plenary speaker (virtual meeting)
Goldschmidt Conference (Honolulu, HI)
Bigelow laboratory/COBRA RCN (virtual)
Astrobiology Science Conference (AbSciCon 2022; virtual).
Tri-Service Microbiome Consortium talk (virtual)
- 2021 TÜBİTAK* Research Institute of Fundamental Sciences (Instanbul, Turkey)
Hong Kong University of Science and Technology, Distinguished speaker (Clear Water Bay, Hong Kong)
Georgia Institute of Technology (Atlanta, GA)
University of Tennessee (Knoxville, TN)
Ocean Chemistry and Biogeochemistry, Plenary Speaker (virtual symposium)
World Microbe Forum (virtual symposium)
Woods Hole Oceanographic Institution (Woods Hole, MA)
- 2020 University of California Los Angeles (Los Angeles, CA)
California State University, Los Angeles (Los Angeles, CA)
University of Rhode Island (virtual)
Arizona State University Astrobiology Seminar Series (virtual)
Harvard Medical School/ Broad Institute Genetics Seminar (Boston, MA)
- 2019 United Nations Intergovernmental Conference on Marine Genetic Resources (NY, NY)
Scripps Institution of Oceanography (La Jolla, CA)
Permanent Mission of Singapore to the United Nations (New York, NY)
Astrobiology Science Conference (AbSciCon; Seattle, WA)
The Explorers Club (New York, NY)
University of Illinois at Urbana-Champaign (Champaign, IL)
Jackson Wild Summit (Jackson, WY)
- 2018 American Geophysical Union Fall meeting (Washington D.C.)
Deep Sea Biology Symposium (Monterey, CA)
FUSE 2018 Symposium (Boston, MA)

	University of Oklahoma, Cox Seminar Series (OK) 5 th International Symposium on Sulfur Metabolism (Vienna, Austria) Boston College (Boston, MA) MIT-EAPS (Science for the Public; Cambridge, MA) Massachusetts Institute of Technology Media Lab (Cambridge, MA) The Broad Institute (Cambridge, MA)
2017	University of South Florida (St. Petersburg, FL) American Geophysical Union Fall meeting (New Orleans, LA) MISSION INNOVATION (Carbon Capture and Utilization; Houston, TX) Naval Research Laboratories (Washington, DC) The Chemosynthetic Biological Ecosystems Symposium (Woods Hole, MA) The Maynard and Suzanne Goldman Lecture, Marine Biological Labs Microbial Diversity course (Woods Hole, MA) Skidaway Institute of Oceanography (Savannah, GA) Boston University RECS series (Boston, MA) Harvard Museum of Science and Culture: Evolution Matters (Cambridge, MA) CIFAR/Moore Foundation Symbiosis symposium (Maui, Hawaii) ARPA-E Annual Exposition (Washington, DC)
2016	American Geophysical Union Fall meeting (San Francisco, CA) NASA/NSF Ocean Worlds 2 symposium (Woods Hole, MA) National Academy of Sciences' Koshland Museum (Washington D.C.) Deep Sea Microbiology workshop (Kyoto, Japan) Extremophiles (Kyoto, Japan) JAMSTEC (Yokohama, Japan) American Society of Microbiology (Boston, MA) World Energy Forum (United Nations, New York) Radcliffe Symposium "From Sea to Changing Sea" 2016 (Cambridge, MA) Boston University RECS conference on climate change (Boston, MA)
2015	Transatlantic Science Week Conference (Boston, MA) Gordon Research Conference on Env. Microbiology (session organizer/intro. speaker) Berea College Convocation address (Berea, Kentucky) Microbial Diversity Course, Marine Biological Labs, Woods Hole, MA. <i>HOV Alvin</i> "boot camp", Woods Hole Oceanographic Institution American Geophysical Union Fall meeting (San Francisco, CA)
2014	Duke University (Beaufort, NC) Origins Initiative at Harvard University (Cambridge, MA) Underwater Interventions (New Orleans, LA) Microbial Diversity Course, Marine Biological Labs, Woods Hole, MA. Gordon Research Conference on Marine Microbiology C-DEBI Allhands workshop (Marina, CA) American Geophysical Union Fall meeting (San Francisco, CA)
2013	MIT (Cambridge, MA) NOVA/Science by the Pint (Cambridge, MA) MIT Science Café (Cambridge, MA) NSF EarthCube symposium on deep-sea research (<i>keynote</i> ; Narragansett, RI) Microbial Diversity Course, Marine Biological Labs, Woods Hole, MA. American Geophysical Union Fall meeting (San Francisco, CA)

Schmidt Research Symposium (Honolulu, HI)

2012	Goldschmidt Conference (<i>keynote</i> ; Montreal, Canada) BIO Emerging Biotechnology Conference (<i>keynote</i> ; Boston, MA) National Academy of Sciences - Institute of Medicine (Washington, DC) International Society of Microbial Ecology (Copenhagen, Denmark) Rutgers University (New Brunswick, NJ) Concord Preservation Trust (Lexington, MA) University of Rhode Island, Graduate School of Oceanography (Narragansett, RI) American Geophysical Union Fall meeting (San Francisco, CA)
2011	Stanford University (<i>Van Niel Distinguished Lecture</i> ; Monterey, CA) Schlumberger Inc. (Boston, MA) Woods Hole Oceanographic Institution (Woods Hole, MA) Pacific Northwest National Labs (Richland, WA) MBARI (Moss Landing, CA) University of Massachusetts, Boston (Boston, MA) Goldschmidt Conference (<i>keynote</i> ; Prague, Czechoslovakia) Pennsylvania State University (State College, PA) University of Delaware (Lewes, DE) American Geophysical Union (San Francisco, CA) Max Planck Society (<i>Annual Symposium</i> ; Berlin, Germany)
2010	Massachusetts Institute of Technology (Cambridge, MA) Tufts University (Medford, MA) Brown University (Providence, RI) University of Connecticut, Storrs (Storrs, CT) University of Massachusetts, Amherst (Amherst, MA) Gordon Conference on C ₁ microbial metabolism (Amherst, MA) New England Bioelectrochemical Systems Annual Meeting (Amherst, MA) RIDGE 2000 (Portland, OR) Goldschmidt Conference (Knoxville, TN) Ocean Sciences Annual Meeting (Portland, OR) International Society for Microbial Ecology Meeting (Seattle, WA) American Geophysical Union (<i>two invited talks</i> ; San Francisco, CA)
2009	Harvard University Microbial Sciences Institute Annual Meeting (Cambridge, MA) TTI-Vanguard (<i>keynote</i> ; Washington, D.C.) Ocean Sciences annual meeting (Orlando, FL) National Science Teacher Association meeting (<i>keynote</i> ; New Orleans, LA) Society for Integrated and Comparative Biology (Boston, MA) Advances in the Deep Subsurface Biosphere (<i>MARUM</i> , Bremen, Germany) American Geophysical Union (San Francisco, CA)
2008	American Geophysical Union (San Francisco, CA) Geological Society of America / Soil Society of America (Houston, TX) First Annual Microbial Fuel Cell Symposium (College Station, PA) National Science Teacher Association meeting (<i>keynote</i> ; Boston, MA)
2007	Oregon State University (Corvallis, OR) University of California, Irvine (Irvine, CA) International Development Design Summit (New England Biolabs, Ipswich, MA) American Geophysical Union (San Francisco, CA)

2006	Pennsylvania State University (State College, PA) Skidmore College (NSF-RIDGE 2000 Distinguished Lecture; Saratoga, NY) University of Massachusetts, Boston (Boston, MA) RIDGE Theoretical Institute (Lake Tahoe, CA) American Society of Microbiology annual meeting (New Orleans, LA) Berea College (NSF- RIDGE 2000 Distinguished Lecture; Berea, KY) Boston University (NSF- RIDGE 2000 Distinguished Lecture; Boston, MA)
2005	University of South Florida (Tampa, FL) Stanford University (Palo Alto, CA) University of California, Irvine (Irvine, CA)
2004	University of Washington (Seattle, WA) Harvard University (Cambridge, MA) Georgia Institute of Technology (Atlanta, GA) National Academy of Sciences, New Frontiers Symposium (Irvine, CA) Gordon Research Conference, Bioinorganic chemistry (Holyoke, MA) American Association for the Advancement of Science (AAAS) General Meeting (keynote; Seattle, WA)
2003	National Academy of Sciences, Workshop on global climate change (Irvine, CA)
2002	National Academy of Sciences, New Frontiers Symposium (Irvine, CA) University of Washington (Seattle, WA) Gordon Research Conference: Molecular basis of microbial one-carbon metabolism (Holyoke, CA)
2000	UCLA (Los Angeles, CA)

Sponsored Research

PI = *Principal Investigator*

2019	DARPA-STTR (Phase II). ~\$700,000. Development and Deployment of a Methane-fueled <i>in situ</i> power generator for kW production. PI
2017-2020	Gordon and Betty Moore Foundation. \$262,153 Spatial organization of microbial activity from nanometer to centimeter scale. Co-PI
2016-2019	National Science Foundation <i>OCE-1635365</i> . \$359,348. COLLABORATIVE RESEARCH: A multidimensional approach to understanding microbial carbon cycling beneath the seafloor during cool hydrothermal circulation. Co-PI.
2018-2023	NASA. \$751,506. Exploring Ocean Worlds: Ocean System Science to Support the Search for Life. PI.
2018-2023	NASA. \$420,683. Agnostic Biosignatures for Extant Life. PI.
2018-2020	STAR Family Foundation. Collecting and Protecting Microbiomes: Leveraging Natural History Collections to Study Microbial Communities. ~\$119,000. PI
2016-2019	NASA ~\$2,900,000. Development of an autonomous biogeochemical sensing and sampling system (ABISS). PI.
2016-2021	National Science Foundation <i>NSF-1542506</i> . \$1,956,000. DIMENSIONS:

	COLLABORATIVE RESEARCH: The phylogenetic and functional diversity of extracellular electron transfer across all three domains of life. PI.
2016-2019	National Science Foundation <i>OCE-6814423-01</i> . \$396,186.00 COLLABORATIVE RESEARCH: The role of iron-oxidizing bacteria in the sedimentary iron cycle: ecological, physiological and biogeochemical implications. CO-PI.
2013-2016	National Science Foundation <i>OCE-1344241</i> . \$800,000. INSPIRE: Microbial Sulfur Metabolism and its Potential for Transforming the Growth of Epitaxial Solar Cell Absorbers.
2012-2016	Gulf of Mexico Research Institute. \$4,551,234. Ecosystem Impacts of Oil and Gas Inputs to the Gulf (ECOGIG). Co-PI.
2011-2014	National Science Foundation <i>OCE-1061934</i> . \$354,080. Characterization of Microbial Transformations in Basement Fluids, from Genes to Geochemical Cycling.
2011-2013	<i>Department of Energy (ARPA-E) DE-AR0000079</i> . \$348,000. Engineering a Bacterial Electrolysis Cell for Biofuel Production. Co-PI.
2011-2013	<i>Department of Energy (ARPA-E) DE-AR0000079</i> . \$493,000. Bioprocess and Microbe Engineering for Total Carbon Utilization in Biofuel Production. Co-PI.
2010-2013	<i>NASA-ASTEP NNX09AB78G</i> . \$978,792. Exploration of Deep-Sea and Hydrothermal Vent Microbial Communities Using the Environmental Sample Processor. Co-PI.
2011-2013	<i>The Charles A. and Anne Morrow Lindbergh Foundation Prize for Science and Sustainability research</i> . \$10,580. Bio-catalyzed Arsenic Remediation for the Developing World.
2011-2012	<i>NOAA-NURP NA08OAR4300817</i> . \$133,375. Development and Deployment of <i>In Situ</i> Osmotic Sampling Systems for Capturing Temporal and Spatial Changes in Microbial Community Composition and Function.
2009-2012	National Science Foundation <i>OCE-0838107</i> . \$957,276. Development and Deployment of a Modular, Autonomous <i>In Situ</i> Underwater Stable Isotope Analyzer.
2009-2014	<i>Howard Hughes Medical Institute</i> . \$500,000 for undergraduate research. “Genomes to Biomes” Program. Co-Director.
2008-2010	National Science Foundation <i>OCE-0732369</i> . \$370,335. Collaborative Research: Processes and Patterns in Back Arc Basin Hydrothermal Vent Communities.
2008-2009	<i>Massachusetts Technology Transfer Center</i> . \$40,000. Commercializing Microbial Power Generators as an Alternative to Electrochemical Batteries.
2008-2009	<i>Gordon and Betty Moore Foundation Grant #53-4813-20 60</i> . \$300,000. The Deep Subsurface Biosphere at North Pond: A Mid-Atlantic Microbial Observatory. Co-PI.
2007-2009	<i>Petroleum Research Foundation/American Chemical Society 46685-AC2</i> . \$89,900. Characterizing Anaerobic Microbial Oxidation of Hydrocarbons: Tracing the Fate of C ₃ and C ₄ -derived Carbon in Marine Seeps.
2007-2009	National Science Foundation <i>MCB-0702504</i> . \$318,000. Collaborative Research (MIP): Microbial Interactions at Cold Seeps: Characterizing C ₂ -C ₄ Anaerobic Hydrocarbon Degradation and its Influence on AMO and Sulfate Reduction.
2007-2008	<i>NASA-ASTEP NNX07AV51G</i> . \$252,142. Neoproterozoic Evolution and Environmental Change: Integrated Experimental and Geological Approaches. Co-PI.

2007-2008	<i>The Charles A. and Anne Morrow Lindbergh Foundation Prize for Science and Sustainability research.</i> \$10,580. Developing Fuel Cells from Soil for Lighting and Power in Rural Areas of the World.
2007-2008	<i>Gordon and Betty Moore Foundation.</i> \$59,000. Development and Deployment of BOSS: The Biological OsmoSampler System.
2005-2009	National Science Foundation <i>OCE-0623383.</i> \$191,000. Collaborative Research: Thermal Biology of Hydrothermal Vent Paralvinellid worms.

Patents and Related Activities

2008-present	Three patents in the area of bioelectrochemical systems focusing on electrochemical controls of microbial processes in bioreactors and bioelectrochemical technologies to harness energy from sour natural gas (61/056,764; 61/113,704).
2012-2014	Science advisor and strategic partner with <i>Spyglass Biosecurity, Inc.</i> , a California corporation focused on commercializing real-time environmental sensors for oceanographic research and water quality management (www.spyglassbio.com).
2008-2010	Co-founder and Chief Science Officer, <i>Trophos Energy, Inc</i> (Somerville, MA). Trophos was engaged in commercializing microbial fuel cell technology and raised over \$3 M. Trophos Energy, Inc was acquired by Teledyne-Benthos, Inc (Falmouth, MA) in 2010.

Research expeditions as Chief or Lead Scientist

Backyard Deep 2018	(Schmidt Ocean Institute). Chief Scientist. A research expedition to explore the connectivity of chemically-reduced ecosystems from Southern to Central California; to deploy the ABISS lander in the Southern California borderland, and explore areas of the seafloor that harbors different ecosystems, including putative undiscovered hydrothermal vents. <i>RV Falkor</i> and <i>ROV SUBastian</i> .
NASA ABISS 2017.	Lead scientist. A research expedition to deploy the ABISS lander in the Southern California borderland, an area of the seafloor that harbors many different ecosystems, including putative and previously undiscovered hydrothermal vents. <i>EV Nautilus</i> and <i>ROV Hercules</i> .
SoCal Borderlands 2016.	Lead scientist. An outreach/research expedition to explore the Southern California borderland, an area of the seafloor that harbors many different ecosystems, including putative and previously undiscovered hydrothermal vents. <i>EV Nautilus</i> and <i>ROV Hercules</i> .
SoCal Borderlands 2015.	Co-lead scientist. An outreach/research expedition to explore the Southern California borderland, an area of the seafloor that harbors many different ecosystems, including putative and previously undiscovered hydrothermal vents. <i>EV Nautilus</i> and <i>ROV Hercules</i> .
SVC 2014.	Chief Scientist. A cruise to the Gulf of Mexico to benchmark the scientific efficacy of the new <i>HOV Alvin</i> submersible. <i>R/V Atlantis</i> and <i>DSV ALVIN</i> .
North Pond 2011.	4/2011 to 5/2011. North Pond (Sargasso sea benthos) expedition with the <i>R/V Merian</i> and <i>ROV Jason</i> .
Deep-ESP 2011.	8/2010 to 9/2010. Chief scientist. Axial Seamount expedition with the R/V <i>Western Flyer</i> and ROV <i>Doc Ricketts</i> .

Deep-Sea 2010. 8/2010 to 9/2010. Co-chief scientist. Juan de Fuca ridge expedition via R/V *Atlantis* and DSV *ALVIN*.

Lau Basin 2009. 4/1/2009 to 5/10/2009. Eastern Lau Spreading Center expedition via the R/V *Thompson* and ROV *JASON*.

Thermal Bio 2008. Co-chief Scientist. 7-4-08 to 7-23-08. Juan de Fuca ridge expedition via R/V *Atlantis* and DSV *ALVIN*.

Thermal Bio 2007. Co-chief Scientist. 8-26-07 to 9-6-07. Juan de Fuca ridge expedition via R/V *Atlantis* and DSV *ALVIN*.

HOT VENTS 2006. Co-chief Scientist. 8-25-06 to 9-11-06. Juan de Fuca ridge via R/V *Atlantis* and DSV *ALVIN*.

VISIONS 2005. 10-1-05 to 11-4-05. Juan de Fuca ridge via R/V *Thompson* and ROV *JASON*.

Virtual Lost City 2005. 9-15-05 to 9-25-05. Lost City hydrothermal field via R/V *Ronald H. Brown* and the Institute for Exploration's ROV *Argus* and *Hercules*.

MBARI-KECK 2004. Chief Scientist. 8-16-04 to 8-29-04. Juan de Fuca ridge via R/V *Western Flyer* and ROV *Tiburon*.

>30 research expeditions to Monterey Bay Hydrocarbon seep cruises. Chief Scientist, visiting various seep sites in the Monterey Canyon via the R/V *Point Lobos* and the ROV *Ventana*. Various dates between 1-00 and 5-05.

Research expedition, 7-5-09 to 7-9-09. Santa Barbara channel. Bioluminescence studies.

LARVE '98. 9-16-98 to 12-6-98. 9 degrees North, East Pacific Rise. R/V *New Horizon*, R/V *Atlantis/ALVIN*.

HOT '97. 9-21-97 to 12-26-97. 9 degrees North, East Pacific Rise. R/V *New Horizon*, R/V *Atlantis/ALVIN*.

HOT '96. 2-10-96 to 3-25-96. 9 and 13 degrees North, East Pacific Rise. R/V *New Horizon*, R/V *Nadir/Nautile*.

Santa Barbara/Hyperion sewage outfall cruise, 6-15-1995 to 6-17-95. *Solemya* and *Lucinoma* dredging. R/V *Sproul*.

Midwater trawl, San Clemente basin, 3-20-95 to 3-27-95. R/V *New Horizon*.

EPR '94 cruise. 11-1-94 to 12-5-94. 9 and 13 degrees North, East Pacific Rise. R/V *New Horizon*, R/V *Atlantis II/ALVIN*.

Louisiana slope cold seep cruise, 11-94. Louisiana slope and escarpment. Brine pool. R/V *Edwin Link/Johnson Sea-Link*.

Juan de Fuca vent cruise, 7-10-94 to 7-31-94. Juan de Fuca and Explorer Ridge sites. R/V *Atlantis II/ALVIN*.