

JULIE A. HUBER

Associate Scientist with Tenure
Marine Chemistry and Geochemistry
Woods Hole Oceanographic Institution

266 Woods Hole Road, MS 51
Woods Hole, MA 02543
jhuber@whoi.edu
508-289-2556

EDUCATION

2004 Ph.D., University of Washington, Biological Oceanography
Certificate in Astrobiology, University of Washington
2002 M.S., University of Washington, Biological Oceanography
1998 B.S., Eckerd College, Marine Science (Biology)

PROFESSIONAL EXPERIENCE

2017-present Associate Scientist with Tenure, Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution
2017-present MBL Fellow
2014-2017 Associate Professor (MBL), Ecology & Evolutionary Biology, Brown University
2013-2017 Associate Scientist, Marine Biological Laboratory
2013-2016 Associate Director, Josephine Bay Paul Center, Marine Biological Laboratory
2013-present Associate Director, Executive Committee Member, NSF Science and Technology Center for Dark Energy Biosphere Investigations (C-DEBI)
2008-2014 Assistant Professor (MBL), Ecology & Evolutionary Biology, Brown University
2007-2012 Assistant Scientist, Marine Biological Laboratory
2005-2006 NRC/NASA Postdoctoral Fellow, Marine Biological Laboratory

HONORS and AWARDS

2017 Kavli Fellow
2010 Neal Cornell Career Development Award, MBL
2008 NSF RIDGE 2000 Distinguished Lecturer
2007 L'Oréal USA Fellowship for Women In Science
2004 National Research Council Research Associateship Award, NASA Astrobiology
2003 Dean A. McManus Excellence in Teaching Award, University of Washington
2002 First Place, NASA Astrobiology Science Conference Student Poster Award
2002-2004 NSF IGERT Fellowship in Astrobiology, University of Washington
1999 Totem Award (Puget Sound Chapter of the Public Relations Society of America) and Communicator of Excellence Award (Washington Press Association) for *Life Deep Down: Scientists explore undersea volcanic vents* on ABCNews.com
1998-2001 National Science Foundation Graduate Research Fellowship
1998 Sigma Xi Research Society
1997-1998 Ford Foundation Scholar
1997 Omicron Delta Kappa Honors Society
1996-1998 NASA/Joint University Venture Scholar

PROFESSIONAL AFFILIATIONS

American Geophysical Union, Member
American Society of Microbiology, Member

RESEARCH INTERESTS

- Marine microbiology
- Marine biogeochemistry
- Subseafloor biosphere
- Deep-sea hydrothermal vents
- Microbial genomics
- Deep-sea instrumentation
- Astrobiology

PROFESSIONAL ACTIVITIES: EXTERNAL TO WHOI, EDITORIAL & ADVISORY

- 2016-present Editor, *Environmental Microbiology and Environmental Microbiology Reports*
- 2016-2021 Member, International Scientific Advisory Board at the Max Plank Institute for Marine Microbiology, Bremen, Germany
- 2015-present Senior Editor, *mSystems*
- 2015 Science Advisory Council, 2015 Europa Lander study
- 2015 Editorial Board, *Environmental Microbiology and Environmental Microbiology Reports*
- 2015 Invited review panel member, NSF Postdoctoral Fellowship in Ocean Sciences
- 2014 Scientific Advisory Group to Schmidt Ocean Institute for N11K vehicle
- 2011-2013 Proposal review committee, Deep Carbon Observatory, Deep Life Community
- 2012 Invited review panel member, NSF Biological Oceanography
- 2010-2011 Member, The National Academies National Research Council committee on “Review of the Scientific Accomplishments and Assessment of the Potential for Future Transformative Discoveries with U.S. Supported Scientific Ocean Drilling”
- 2010-present Invited reviewer, L’Oréal USA Fellowship for Women In Science Program
- 2009-2013 Associate Member, SCOR/InterRidge Working Group “Hydrothermal energy transfer and its impact on ocean carbon cycles”
- 2009-2012 Steering Committee, NSF *Deep Biosphere* Research Coordination Network
- 2009 Advisor, Alfred P. Sloan Foundation, Deep Carbon Observatory
- 2008, 2012 Invited review panel member, NSF Biological Oceanography
- 2007 Invited review panel member, NASA Exobiology
- 2004-present Ad-hoc reviewer for NSF, IODP, NASA, NOAA, NURP, *Applied and Environmental Microbiology*, *Deep Sea Research*, *Environmental Microbiology*, *Estuarine Coastal and Shelf Science*, *FEMS Microbiology Ecology*, *Frontiers in Microbiology*, *Geobiology*, *Geochemistry Geophysics Geosystems*, *Geology*, *Journal of Geophysical Research*, *ISME Journal*, *mBio*, *Microbiology*, *Nature*, *Nature Reviews Microbiology*, *Proceedings of the National Academy of Sciences USA*, *Proceedings of the Royal Society B*, *Scientific Reports*, and *Science*

PROFESSIONAL ACTIVITIES: EXTERNAL MEETINGS & WORKSHOPS

- 2017 Lead PI and Organizer, USSSP Supported Workshop “Drilling into young oceanic crust for seafloor observations at Axial Seamount,” Palisades, NY
- 2017 Invited participant, 3rd US-Israel Kavli Frontiers in Science Symposia, Irvine, CA
- 2016 Invited participant, 14th Annual National Academies Keck Futures Initiative (NAKFI) conference, Discovering the Deep Blue Sea: Research, Innovation, Social Engagement, Irvine, CA
- 2016 Organizing Committee, 2nd Annual Ocean Worlds Meeting, Woods Hole, MA
- 2016 Organizing Committee, Symposium on Aquatic Microbial Ecology (SAME 15), Zagreb, Croatia
- 2016 Invited participant, 2nd Deep Submergence Science for the Next Decade (DESCEND-2) Workshop, Cambridge, MA
- 2015 Invited participant, NOVAE (Networked Observations and Visualizations of the Axial Environment) Workshop on Axial Seamount, Seattle, WA
- 2015 Invited participant, Deep Carbon Observatory Deep Life Community Meeting, Lisbon, Portugal
- 2014 Invited participant, NSF OCE and Earth Cube workshop on Ocean 'Omics and Cyberinfrastructure, Catalina Island, CA
- 2013 Invited participant, Deep Carbon Observatory Deep Life Meeting, Portland, OR
- 2013 Invited participant, Schmidt Ocean Institute Research Symposium, Honolulu, HI
- 2013 Invited participant, Deep Carbon Observatory International Science Meeting, Washington, DC
- 2012 Co-Organizer, OOI RSN Axial Seamount Science Workshop, Seattle, WA
- 2009 Invited participant, International Census of Marine Microbes (ICoMM) Annual Meeting, Woods Hole, MA
- 2009 Invited participant, American Academy of Microbiology “Rare Biosphere” Colloquium, San Francisco, CA
- 2008 Invited participant, Planning the “Dark Energy Biosphere Institute” Workshop, Catalina Island, CA
- 2008 Invited panelist, AAAS/American Junior Academy of Sciences
- 2006 Invited participant, Integrated Ocean Drilling Program (IODP) Exploring Subseafloor Life Workshop, Vancouver, CA
- 2006 Invited participant, International Census of Marine Microbes (ICoMM) First Annual Meeting, Noordwijkerhout, Netherlands
- 2005 Invited participant, NASA Astrobiology Institute Microbial Science Exploration Initiative Workshop, Chicago, IL
- 2004 Invited participant, Dark Energy: The Deep Oceanic Biosphere Workshop, Woods Hole, MA

PROFESSIONAL ACTIVITIES AT WHOI (2017 is WHOI, others previously at MBL)

- 2017-Present Member, Advisory Committee for Exploring Ocean Worlds Catalyst Project
- 2017 Panelist, Women in Science Panel, Rachel Carson Weekend
- 2017 Panelist, Postdoctoral Panel on Faculty Job Applications
- 2017 Speaker, WHOI Ocean Science Journalism Fellowship Program
- 2017-Present Member, WHOI Women’s Committee
- 2017 Panelist, Science and Storytelling, Woods Hole Film Festival

- 2015 Invited Speaker, University of Chicago and Affiliated Laboratories:
Powerful Partners in Transformative Science
- 2015-2017 Member, MBL Directors Council
- 2014 Organizing Committee, MBL-Chicago-Argonne 2nd Retreat
- 2014 Member, MBL/Chicago Director Search Scientific Advisory Committee
- 2013-2017 Associate Director, MBL Josephine Bay Paul Center"
- 2011-2014 Member, MBL Institutional Committee
- 2009-2016 Member, MBL Corporation, now MBL Society
- 2008-2016 Guest Lecturer, MBL Logan Science Journalism Program
- 2008-2016 Co-Leader (with Zoe Cardon), MBL Micro-Eco Discussion Group
- 2008 Member, MBL Science Council Nominating Committee

PARTICIPATION IN EDUCATION PROGRAMS

- 2017-present Member, Academic Advising Committee for MIT/WHOI Joint Program in
Chemical Oceanography
- 2017 WHOI Undergraduate Summer Student Fellow Lecture Series Lecturer
- 2017 Keynote Speaker, Microbiome Clinician Course, MBL and University of Chicago
- 2015 Faculty, "Experimental Biology by the Sea," MBL and University of Chicago
- 2015 Instructor, "Alvin Boot Camp," WHOI and DESSC
- 2011 Course Designer, "Reverse Ecology," MBL and Brown University IGERT
- 2010-present Lecturer, "Microbial Diversity Course," MBL Summer Course
- 2008-present Faculty, Semester in Environmental Sciences, "Microbial Ecology," MBL
- 2007, 2009 Lecturer, Southern Connecticut University ISIS teachers Program
- 2003 Teaching Assistant, "Oceanography 101," University of Washington
- 2001 Teaching Assistant, "Biological Oceanography," University of Washington
- 2000 Course Designer and Lecturer, University of Washington, Astrobiology
- 2000-2004 Guest Lecturer, University of Washington, Marine Microbiology, Principles
and Applications of Molecular Methods, and Undergraduate Honors Seminar

SUPERVISION

Postdoctoral Researchers

- Elizabeth Trembath-Reichert (NASA Astrobiology Institute Postdoctoral Researcher, 2017-)
- Caroline Fortunato (Postdoctoral Researcher, 2012-2017)
- Rika Anderson (NASA Astrobiology Institute Postdoctoral Researcher, 2015-2016)
- Benjamin Tully (C-DEBI Postdoctoral Researcher at USC, 2013-2015)
- Julie Reveillaud (Postdoctoral Researcher, 2012-2014)
- Chris Algar (Postdoctoral Researcher, 2012-2014)
- Nuria Fernandez Gonzalez (Postdoctoral Researcher, 2010-2013)
- Nancy Akerman (NASA Astrobiology Institute Postdoctoral Researcher, 2010-2012)
- Julie (Smith) Meyer (Postdoctoral Researcher, 2009-2013)

Graduate Student Advisees

Angus Angermeyer (Brown-MBL Joint Program, Ecology and Evolutionary Biology, 2009-2017)

Alexander Merkel (Winogradsky Institute of Microbiology, Russian Academy of Sciences, NASA Planetary Biology Internship Fellow, Summer 2009)

Thesis Committee Member

Nathalie Forget (University of Victoria, Biology, 2013)

Yuko Hasegawa (Brown-MBL Joint Graduate Program, Molecular Biology, Cell Biology and Biochemistry, 2012)

Erica Lasek-Nesselquist (Brown-MBL Joint Graduate Program, Ecology and Evolutionary Biology, 2010)

Technical Staff

Gretta Serres (Visiting Investigator, 2015-present)

Leslie Murphy (Research Assistant III, 2014-2016)

Emily Reddington (Research Assistant II/III, 2011-2016)

Holly Cantin (Research Assistant I, 2009-2011)

Oufae Rafie (Research Assistant I, 2008-2009)

Undergraduate Students

Tom Rizzitano (Cape Cod Community College, Summer 2017)

Renan Vianna (Cape Cod Community College, Summer 2017)

Emily Clark (Cape Cod Community College, Summer 2017)

Kyle Bryson (Cape Cod Community College, Summer 2016)

Joy Gomes (Cape Cod Community College, Summer 2016)

Thomas Scudder (Cape Cod Community College, Summer 2016)

Paula Pelayo (UCLA, Summer 2016)

Petra Byl (Univ. Chicago Metcalf Intern, Summer 2015/2016)

Cierra Armstrong (Cape Cod Community College, Summer 2015/2016)

Nick O'Sadcia (Cape Cod Community College, Summer 2015)

Sarah Nalven (Colby College, Summer 2012)

Charles Carpenter (Northwest Florida State College, Summer 2011)

Teresa Meza (Northwest Florida State College, Summer 2011)

Samantha Gourlie (Northwest Florida State College, Summer 2010)

Destinee Harder (Northwest Florida State College, Summer 2010)

~10 students mentored through SES Independent Projects

CRUISE AND FIELDWORK PARTICIPATION

R/V Falkor, Scientist. December 2016. Mariana Back Arc

Siders Pond. June 2015. Falmouth, MA

R/V Brown, Co-Chief Scientist. August 2014. Axial Seamount, Juan de Fuca Ridge

R/V Falkor, Chief Scientist. Sept-Oct 2013. Axial Seamount, Juan de Fuca Ridge

R/V Falkor, Scientist. July 2013. Mid-Cayman Rise, Caribbean Sea

R/V Atlantis, Scientist. January 2012. Mid-Cayman Rise, Caribbean Sea

R/V Cape Hatteras, Scientist. October 2009. Mid-Cayman Rise, Caribbean Sea
R/V Thompson, Scientist. May 2009. Lau Basin
R/V Atlantis, Scientist. August 2008. Axial Seamount & Endeavour, Juan de Fuca Ridge
 Little Sippewissett Salt Marsh, Weekly Sampling, 2007. Falmouth, MA
R/V Melville, Scientist. October 2006. Loihi Seamount, FeMO
R/V Melville, Scientist. May 2006. Mariana Arc, Submarine Ring of Fire
R/V Thompson, Scientist. July 2003. Juan de Fuca Ridge & Flanks, LExEn Fluids
R/V Barnes, Teaching Assistant. Spring 2003. Puget Sound, Teaching Assistant, Oceans 101
R/V Atlantis, Scientist. August 2002. Juan de Fuca Ridge and Flanks, LExEn Fluids
R/V Thompson, Scientist. May 2002. Puget Sound, Instrument Testing
R/V Brown, Scientist. August 2001. Axial Seamount, NeMO
R/V Brown, Scientist. August 2000. Axial Seamount, NeMO
R/V Thompson, Scientist. July 1999. Axial Seamount, NeMO
R/V Brown, Scientist. August 1998. Axial Seamount, NeMO
 Caribbean Marine Research Center, Researcher. 1996-97. Lee Stocking Island, Bahamas

PUBLICATIONS

Papers in Review, Revision, Press, and Published in Refereed Journals and Books: (*lab member; corresponding author)

- [45] *Reveillaud, J., *Anderson, R., Reves-Sohn, S., Cavanaugh, C., and **J.A. Huber**. In Review. Metagenomic investigation of vestimentiferan tubeworm endosymbionts from Mid-Cayman Rise reveals new insights into metabolism and diversity. *Microbiome*.
- [44] Van Dover, C.L., Arnaud-Haond, S., Gianni, M., Helmreich, S. **Huber, J.A.**, Jaekel, A.L., Metaxas, A., Pendleton, L.H., Petersen, S., Ramirez-Llodra, E., Steinberg, P.E., Tunnicliffe, V., and Yamamoto, Y. In Review. Scientific rationale and international obligations from protection of active hydrothermal vent ecosystems from deep-sea mining. *Marine Policy*.
- [43] Walter, S.S., Jaekel, U., Osterholz, H, Fisher, A., **Huber, J.A.**, Pearson, A. Dittmar, T, and P.R. Girguis. In Revision. Decomposition of marine dissolved organic matter in cool oceanic crust. *Nature Geosciences*.
- [42] Louca, S., Polz, M.F., Mazel, F., Albright, M.B.N, **Huber, J.A.**, O'Connor, M.I., Ackermann, M., Hahn, A.S., Srivastava, D.S., Crowe, S.A., Doebeli, M., and L.W. Parfrey. In Revision. Function and functional redundancy in microbial systems. *Nature Ecology and Evolution*.
- [41] *Fortunato, C.S., Larson, B.J., Butterfield, D.A., and **J.A. Huber**. In Press. Spatially distinct, temporally stable microbial populations mediate biogeochemical cycling at and below the seafloor in hydrothermal vent fluids. *Environmental Microbiology*.
- [40] *Tully, B., Wheat, C.G., Glazer, B., and **J.A. Huber**. 2017. A dynamic microbial community with high functional redundancy inhabits the cold, oxic subseafloor aquifer. *ISME Journal*. doi:10.1038/ismej.2017.187.

- [39] *Anderson, R.E., *Reveillaud, J.C., *Reddington, E., Delmont, T., Eren, A.M., McDermott, J.M., Seewald, J.S., and **J.A. Huber**. 2017. Genomic variation in microbial populations inhabiting the marine seafloor at deep-sea hydrothermal vents. *Nature Communications*. 8:1114. doi: 10.1038/s41467-017-01228-6
- [38] Mackey, K.R.M, Hunter-Cevera, K., Britten, G.L., Murphy, L.G., Sogin, M.L, and **J.A. Huber**. 2017. Seasonal succession and spatial patterns of *Synechococcus* microdiversity in estuarine waters of a salt marsh revealed through 16S rRNA gene oligotyping. *Frontiers in Microbiology*. 8:1496. doi: 10.3389/fmicb.2017.01496.
- [37] Sylvan, J., Wankel, S.D., LaRowe, D.E., Charoenpong, C.N., **Huber, J.A.**, Moyer, C.L, and K.J. Edwards. 2017. Evidence for microbial mediation of seafloor nitrogen redox processes at Loihi Seamount, Hawaii. *Geochemical et Cosmochimica Acta*. 198: 131–150. doi: <http://dx.doi.org/10.1016/j.gca.2016.10.029>
- [36] Fernandez-Gonzalez, N.*, **Huber, J.A.** and J.J. Vallino. 2016. Microbial communities are well adapted to disturbances in energy input. *mSystems*. 1(5) e00117-16; doi: 10.1128/mSystems.00117-16.
- [35] Topçuoğlu, B.D., Stewart, L.C., Butterfield, D.A., **Huber, J.A.**, and J.F. Holden. 2016. Hydrogen limitation and syntrophic growth among natural assemblages of thermophilic methanogens at deep-sea hydrothermal vents. *Frontiers in Microbiology*. 7:1240. doi: 10.3389/fmicb.2016.01240
- [34] *Meyer, J.L, Jaekel, U., *Tully, B. Glazer, B.T., Wheat, C.G., H-T, Lin., C-C, Hsieh, Cowen, J.P., Hulme, S.M., Girguis, P.R., and **J.A. Huber**. 2016. A distinct and active bacterial community in cold oxygenated fluids circulating beneath Mid-Atlantic seafloor. *Scientific Reports*. 6:22541. doi: 10.1038/srep22541
- [33] *Fortunato, C.F. and **J.A. Huber**. 2016. Coupled RNA-SIP and metatranscriptomics of active chemolithoautotrophic communities at a deep-sea hydrothermal vent. *ISME Journal*. 10:1925-1938. doi:10.1038/ismej.2015.258
- [32] *Reveillaud, J., *Reddington, E., McDermott, J., *Meyer, J.L., *Algar, C., Sylva, S., Seewald, J., German, C.G., and **J.A. Huber**. 2016. Seafloor microbial communities in hydrogen-rich vent fluids from hydrothermal systems along the Mid-Cayman Rise. *Environmental Microbiology*. 8:1970–1987. doi: 10.1111/1462-2920.13173
- [31] *Angermeyer, A.A., Crosby, S.C. and **J.A. Huber**. 2016. Decoupled distance-decay patterns between *dsrA* and 16S rRNA genes among salt marsh sulfate-reducing bacteria. *Environmental Microbiology*. 18:75-86.
- [30] *Meyer, J.L. and **J.A. Huber**. 2014. Strain-level genomic variation in natural populations of *Lebetimonas* from an erupting deep-sea volcano. *ISME Journal*. 8:867–880.

- [29] *Reveillaud, J., Maignien, L, Eren, M., Apprill, A., **Huber, J.A.**, Sogin, M.L, and A. Vanreusel. 2014. Host-specificity among abundant and rare taxa in the sponge microbiome. *ISME Journal*. 8:1198-1209.
- [28] Vallino, J.J., *Algar, C.K., *Fernandez Gonzalez, N., and **J.A. Huber**. 2014. Use of receding horizon optimal control to solve MaxEP-based biogeochemistry problems. In Dewar, R.C., Lineweaver, C., Niven, R. and Regenauer-Lieb, K., (eds), 337-359. *Beyond the Second Law: Entropy Production and Non-Equilibrium Systems*. Springer, Berlin, Germany.
- [27] Reed, D.C., *Algar, C.K, **Huber, J.A.** and G.J. Dick. 2014. Gene-centric approach to integrating environmental genomics and biogeochemical models. *Proceedings of the National Academy of Sciences USA*. 111:1879-84.
- [26] Orcutt, B. N., LaRowe, D. E., Lloyd, K. G., Mills, H., Orsi, W., Reese, B. K., Sauvage, J., **Huber, J. A.**, and Amend, J. 2014. IODP Deep Biosphere Research Workshop report – a synthesis of recent investigations, and discussion of new research questions and drilling targets. *Scientific Drilling*. 17:61–66.
- [25] *Merkel, A., **Huber, J.A.**, Chernyh, N., Bonch-Osmolovskaya, E. and A. Lebedinsky. 2013. Detection of putatively thermophilic anaerobic methanotrophs (ANMEs) in diffuse hydrothermal vent fluids. *Applied and Environmental Microbiology*. 79:915-923.
- [24] Bennett, S.A., Coleman, M., **Huber, J.A.**, *Reddington, E., Kinsley, J.C., McIntyre, C., Seewald, J.S., and C.R. German. 2013. Trophic regions of a hydrothermal plume dispersing away from an ultramafic-hosted vent-system: Von Damm vent-site, Mid-Cayman Rise. *Geochemistry Geophysics Geosystems*. 14:317-327.
- [23] Ver Eecke H.C., *Akerman, N.H., **Huber, J.A.**, Butterfield, D.A., and J.F. Holden. 2013. Growth kinetics and energetics of a deep-sea hyperthermophilic methanogen under varying environmental conditions. *Environmental Microbiology Reports*. 5:665-671.
- [22] *Meyer, J.L., *Akerman, N.H., Proskurowski, G. and **J.A. Huber**. 2013. Microbiological characterization of post-eruption “snowblower” vents at Axial Seamount, Juan de Fuca Ridge. *Frontiers in Microbiology*. 4:153. doi: 10.3389/fmicb.2013.00153
- [21] *Akerman, N.H, Butterfield, D.A, and **J.A. Huber**. 2013. Phylogenetic diversity and functional gene patterns of sulfur-oxidizing subsurface *Epsilonproteobacteria* in diffuse hydrothermal vent fluids. *Frontiers in Microbiology*. 4:185. doi: 10.3389/fmicb.2013.00185
- [20] Ver Eecke, H.C., Butterfield, D.A., **Huber, J.A.**, Lilley, M.D., Olson, E.J., Roe, K.K., Evans, L.J., *Merkel, A.Y., *Cantin, H.V., and J.F. Holden. 2012. Hydrogen-limited growth of hyperthermophilic methanogens at deep-sea hydrothermal vents. *Proceedings of the National Academy of Sciences USA*. 109:13,674–13,679.

- [19] Breier, J.A., Gomez-Ibanez, D., *Reddington, E., **Huber, J.A.**, and D. Emerson. 2012. A precision multi-sampler for deep-sea hydrothermal microbial mat studies. *Deep-Sea Research Part I: Oceanographic Research Papers*.70:83-90.
- [18] Resing, J.A, Rubin, K.H., Embley, R.W., Lupton, J.E., Baker, E.T. Dziak, R.P., Baumberger, T., Lilley, M.D., **Huber, J.A.**, Shank, T.M., Butterfield, D.A., Clague, D.A., Keller, N.S., Merle, S.G., Buck, N.J., Michael, P.J., Soule, A. Caress, D.W., Walker, S.L. Davis, R., Cowen, J.P., Reysenbach, A-L., and H. Thomas. 2011. Active submarine eruption of boninite in the northeastern Lau Basin. *Nature Geoscience*. 4:799-806.
- [17] German, C.R., Bowen, A., Coleman, M.L., Honig, D.L., **Huber, J.A.**, Jakuba, M.V., Kinsey, J.C., Kurz, M.D., Leroy, S., McDermott, J.M, Mercier de Lépinay, B., Nakamura, K., Seewald, J.S., *Smith, J.L., Sylva, S.P., Van Dover, C.L., Whitcomb, L.L., and D.R. Yoerger. 2010. Diverse styles of submarine venting on the ultraslow spreading Mid-Cayman Rise. *Proceedings of the National Academy of Sciences USA*. 107:14,020-14,025.
- [16] Schrenk M,O., **Huber, J.A.**, and K.J. Edwards. 2010. Microbial Provinces in the Subseafloor. *Annual Review of Marine Science*. 2:279-304.
- [15] **Huber, J.A.**, *Cantin, H.V., Huse, S.M., Mark Welch, D.B., Sogin, M.L., and D.A. Butterfield. 2010. Isolated communities of *Epsilonproteobacteria* in hydrothermal vent fluids of the Mariana Arc seamounts. *FEMS Microbiology Ecology*. 73:538-549.
- [14] **Huber, J.A.**, Morrison, H.G., Huse, S.M., Neal, P.R, Sogin, M.L., and D.B. Mark Welch. 2009. Effect of PCR amplicon size on assessments of clone library microbial diversity and community structure. *Environmental Microbiology*. 11:1292-1302.
- [13] **Huber, J.A.** and J.F. Holden. 2008. Modeling the impact of diffuse vent microorganisms along mid-ocean ridges and flanks. In Lowell, R.P., J. S. Seewald, A. Metaxas, and M.R. Perfit (eds.), 215-231. *Magma to Microbe: Modeling Hydrothermal Processes at Oceanic Spreading Ridges*. American Geophysical Union Press, Washington, D.C.
- [12] Huse, S.M., Dethlefsen, L., **Huber, J.A.**, Mark Welch, D.B., Relman, D.A., and M.L. Sogin. 2008. Exploring microbial diversity and taxonomy using SSU rRNA hypervariable tag sequencing. *PLoS Genetics* 4:e1000255.
- [11] **Huber, J.A.**, Mark Welch, D.B., Morrison, H.G., Huse, S.M., Neal, P.R., Butterfield, D.A., and M.L. Sogin. 2007. Microbial population structures in the deep marine biosphere. *Science*. 318:97-100.
- [10] Wells, L.E, Armstrong, J.C. and **J.A. Huber**. 2007. Disciplinary aspirations and educational opportunities. In W.T. Sullivan III and J.A. Baross (eds.), 547-557. *Planets and Life:The Emerging Science of Astrobiology*. Cambridge University Press, Cambridge, UK.

[9] Baross, J.A., Schrenk, M.O., and **J.A. Huber**. 2007. Limits of Carbon Life on Earth and Elsewhere. In W.T. Sullivan III and J.A. Baross (eds.), 275-291. *Planets and Life: The Emerging Science of Astrobiology*, Cambridge University Press, Cambridge, UK.

[8] Huse, S.M., **Huber, J.A.**, Morrison, H.G., Sogin, M.L., and D.B. Mark Welch. 2007. Accuracy and quality of massively-parallel DNA pyrosequencing. *Genome Biology*. 8: R143.

[7] **Huber, J.A.**, Butterfield, D.A., and J.A. Baross. 2006. Diversity and distribution of subseafloor *Thermococcales* populations in diffuse hydrothermal vents at an active deep-sea volcano in the northeast Pacific Ocean. *Journal of Geophysical Research, Biogeosciences*. 111:G04016.

[6] **Huber, J.A.**, Butterfield, D.A., Johnson, H.P., and J.A. Baross. 2006. Microbial life in ridge flank crustal fluids. *Environmental Microbiology*. 88:88-99.

[5] Sogin, M.L., Morrison, H.G., **Huber, J.A.**, Mark Welch, D.B., Huse, S.M., Neal, P.R., Arrieta, J.M., and G.J. Herndl. 2006. Microbial diversity in the deep sea and the under-explored "rare biosphere." *Proceedings of the National Academy of Sciences USA*. 103:12,115-12,120.

[4] Mehta, M.P., **Huber, J.A.**, and J.A. Baross. 2005. Incidence of novel and potentially archaeal nitrogenase genes in the deep NE Pacific Ocean. *Environmental Microbiology*. 7:1525-1534.

[3] Butterfield, D.A., Lilley, M.D., **Huber, J.A.**, Roe, K.K., Embley, R.W., Baross, J.A., and G.J. Massoth. 2004. Mixing, reaction, and microbial activity in sub-seafloor hydrothermal upflow zones: Evidence from diffuse flow outcrops across the 1998 Axial Volcano Sea-floor eruption area through time. In W.S.D. Wilcock, E.F. DeLong, D.S. Kelley, J.A. Baross, and S.C. Cary (eds.), 269-289. *The Subseafloor Biosphere at Mid-Ocean Ridges*. American Geophysical Union Press, Washington, D.C.

[2] **Huber, J.A.**, Butterfield, D.A., and J.A. Baross. 2003. Bacterial diversity in a subseafloor habitat following a deep-sea volcanic eruption. *FEMS Microbiology Ecology*. 43:393-409.

[1] **Huber, J.A.**, Butterfield, D.A., and J.A. Baross. 2002. Temporal changes in archaeal diversity and chemistry in a mid-ocean ridge subseafloor habitat. *Applied and Environmental Microbiology*. 68:1585-1594.

Non-Refereed Papers: (*lab member; corresponding author)

[6a] **Huber, J.A.** 2015. Making methane down deep. *Science*. 349:376-377.

[5a] C.R. German, Tyler, P.A., McIntyre, C., Amon, D., Cheadle, M., Clarke, J., John, B., McDermott, J., Bennett, S., **Huber, J.A.**, Kinsey, J., Seewald, J. Van Dover, C., and K. Elliott. 2014. Exploration of the Mid-Cayman Rise. *Oceanography*. 25:52-53.

[4a] **Huber, J.A.** 2012. Microbial Oceanography. *iBio Magazine*.
<http://www.ibiomagazine.org/issues/september-2012-issue/julie-huber.html>.

[3a] Chadwick, W.W., Butterfield, D.A., Embley, R.W., Tunnicliffe, V., **Huber, J.A.**, Nooner, S., and D. Clague. 2010. Spotlight: Axial Seamount. *Oceanography*. 23:38-39.

[2a] Bach, W., Edward, K.J, Hayes, J.M., **Huber, J.A.**, Sievert, S.M., and M.L. Sogin. 2006. Energy in the dark: Fuel for life in the deep ocean and beyond. *Eos, Transactions AGU*. 87:73-78.

[1a] Johnson, H.P. and LEXEN Scientific Party. 2003. Probing for life in the ocean crust with the LEXEN program. *Eos, Transactions AGU*. 84:109-112.

INVITED PRESENTATIONS: SEMINARS

- 2017 Life in the extreme: Seafloor fluid flow and chemosynthetic life on Earth and beyond
Foster Hewett Lecture Series. Lehigh University. Bethlehem, PA.
- 2016 Microbes, fluids, and rocks: Life beneath the seafloor
Cardiff University. Cardiff, Wales.
- 2016 Microbes, fluids, and rocks: Life beneath the seafloor
Woods Hole Oceanographic Institution. Woods Hole, MA.
- 2016 Microbes, fluids, and rocks: Life beneath the seafloor
University of Southern California. Los Angeles, CA.
- 2016 From Woods Hole to the deep sea: Life beneath the seafloor
Duke University Marine Lab, Duke University. Beaufort, NC.
- 2015 Microbes, fluids, and rocks: Life beneath the seafloor
University of Tennessee, Knoxville. Knoxville, TN
- 2014 Microbial ecology of deep-sea hydrothermal vents
University of Chicago. Chicago, IL
- 2014 Microbial ecology of subseafloor hydrothermal systems
University of Minnesota. St. Paul-Minneapolis, MN
- 2014 Microbial life in a cold, hydrologically active oceanic crust
Woods Hole Oceanographic Institution. Woods Hole, MA
- 2013 Pushing the limits: Microbial life at deep-sea hydrothermal vents
Bridgewater State University. Bridgewater, MA
- 2013 Microbial ecology of deep-sea hydrothermal vents
United States Military Academy. West Point, NY

- 2012 Microbial ecology of deep-sea hydrothermal vents
Yale University. New Haven, CT
- 2010 Exploding submarine volcanoes and microbial life in the deep sea
Stockholm University. Stockholm, Sweden.
University of Washington. Seattle, WA
- 2010 Microbial ecology of seafloor communities at deep-sea hydrothermal vents
University of Massachusetts, Amherst. Amherst, MA
- 2008 Microbial life in the seafloor biosphere
Massachusetts Institute of Technology. Cambridge, MA
- 2008 Microbial ecology of seafloor communities at deep-sea hydrothermal vents
Woods Hole Oceanographic Institution. Woods Hole, MA
- 2008 RIDGE 2000 Distinguished Lecture Series
Pushing the limits: Microbial life at deep-sea hydrothermal vents
University of West Florida. Pensacola, FL
University of Missouri. Columbia, MO
Indiana University of Pittsburgh. Indiana, PA
- 2006 Microbial ecology of seafloor communities at deep-sea hydrothermal vents
University of Connecticut. Storrs, CT

INVITED PRESENTATIONS: CONFERENCES and SYMPOSIA

- 2017 Microbial biogeochemistry of seafloor fluid flow on Earth and implications for
biological potential on Enceladus
American Geophysical Union Fall Meeting. San Francisco, CA
- 2017 Technology meets science: Exploring microbes in the oceans from the
surface to seafloor
American Society for Microbiology General Meeting. New Orleans, MA
- 2017 Secrets of the seafloor
Third Israeli-American Kavli Frontiers of Science Symposium. Irvine, CA
- 2016 Life in the extreme: Seafloor fluid flow and chemosynthesis
Ocean Worlds 2. Woods Hole, MA
- 2016 Life beneath the seafloor
Microbial Sciences Initiative. Harvard University. Cambridge, MA.

- 2016 Microbes, fluids, and rocks: Life beneath the seafloor
Society for Women in Marine Science Symposium. Woods Hole, MA
- 2015 Microbial life beneath the seafloor
American Society for Microbiology General Meeting. New Orleans, LA
- 2015 Carbon cycling beneath the seafloor
Gordon Research Conference on Applied and Environmental Microbiology
Mount Holyoke, MA
- 2015 How geochemical landscapes shape subseafloor microbial communities at deep-sea hydrothermal vents.
Gordon Research Conference on Chemical Oceanography. Holdren, NH
- 2015 Microbial and viral research at Axial Seamount
NOVAE - Networked Observations and Visualizations of the Axial Environment
Seattle, WA
- 2014 Pushing the limits: Microbial life at deep-sea hydrothermal vents
Advancing STEM Education CASE Conference, K-12 Educators.
Bridgewater, MA
- 2013 Subseafloor microbial life in venting fluids from the Mid Cayman Rise hydrothermal system
Deep Carbon Observatory General Meeting. Washington, DC
Deep Carbon Observatory Deep Life Meeting. Portland, OR
- 2012 Meet the marine intraterrestrials
Gordon Research Conference on Marine Microbes. Berga, Italy
- 2012 Subseafloor microbial life in venting fluids from the Mid Cayman Rise hydrothermal system
American Geophysical Union Fall Meeting. San Francisco, CA
- 2011 Biological communities at and beneath the seafloor at Axial Seamount
Axial RSN Science Workshop (NSF). Seattle, WA
- 2009 Microbial diversity of subseafloor communities at deep-sea hydrothermal vents
Bacterial Genetics and Ecology Conference (BAGECO-10). Uppsala, Sweden
- 2009 Rare microbial populations in the deep ocean
American Society of Microbiology General Meeting. Philadelphia, PA
- 2008 Using crustal fluids to peer into the subseafloor microbial habitat
American Geophysical Union Fall Meeting. San Francisco, CA

- 2007 Microbial diversity in the deep sea
Microbial Genomics. Hinxton Cambridge, UK
- 2006 Microbial diversity in the deep sea and the under-explored “rare biosphere”
14th Annual Meeting on Microbial Genomics. Lake Arrowhead, CA
- 2006 Microbial ecology of seafloor communities at deep-sea hydrothermal
seamounts
International Census of Marine Microbes (ICoMM) First Annual Meeting.
Noordwijkerhout, Netherlands

CONTRIBUTED PRESENTATIONS: CONFERENCES (presenting author only)

- 2017 Spatially distinct, temporally stable chemolithoautotrophic microbial populations
mediate biogeochemical cycling at and below the seafloor in venting fluids from
Axial Seamount
6th International Symposium on Chemosynthesis-Based Ecosystems. Woods Hole,
MA
- 2016 What’s Up Down There? Microbial life in the seafloor at Axial Seamount
National Academies Keck Futures Initiative (NAKFI) conference, Discovering
the Deep Blue Sea: Research, Innovation, Social Engagement. Irvine, CA
- 2014 Investigating microbes, viruses, and carbon across thermal and chemical gradients
in the seafloor at Axial Seamount
Gordon Conference on Marine Microbes. Waltham, MA
- 2014 An active microbial community in fluids circulating through the cold oceanic
crust beneath the Mid-Atlantic seafloor
International Society of Subsurface Microbiology. Pacific Grove, CA
- 2014 Application of RNA Stable Isotope Probing (SIP) to link community activity with
microorganisms responsible for autotrophy in the seafloor at Axial Seamount
American Geophysical Union Fall Meeting. San Francisco, CA
- 2013 Microbial anaerobic methane cycling in the seafloor at the Von Damm
hydrothermal vent field, Mid-Cayman Rise
American Geophysical Union Fall Meeting. San Francisco, CA
- 2009 Molecular diversity and activity of methanogens in the seafloor at deep-sea
hydrothermal vents of the Pacific Ocean
American Geophysical Union Fall Meeting. San Francisco, CA
- 2009 Microbial communities in erupting fluids from West Mata Volcano, Tonga Arc
American Geophysical Union Fall Meeting. San Francisco, CA

- 2008 Using 454 tag sequencing to determine the diversity and distribution of subseafloor indicator organisms at deep-sea hydrothermal seamounts of the Pacific Ocean
American Society of Microbiology General Meeting. Boston, MA
- 2008 Subseafloor archaeal communities at deep-sea hydrothermal seamounts
Astrobiology Science Conference. Santa Clara, CA
- 2006 Deep sampling of bacterial diversity at diffuse flow hydrothermal vents on Axial Seamount, Juan de Fuca Ridge
RIDGE Theoretical Institute: From Magma to Microbes. Mammoth Lakes, CA
- 2006 The International Census of Marine Microbes (ICoMM) and a strategy for exploring microbial diversity throughout the world's oceans
Seamount Biogeosciences Network Workshop. La Jolla, CA
- 2006 Metagenomics of diffuse hydrothermal vents: Determining the distribution of anaerobic thermophilic life in subseafloor habitats
Astrobiology Science Conference. Washington, DC
- 2006 Microbial ecosystems and their connection to hydrothermal flow
RIDGE Theoretical Institute: From Magma to Microbes. Mammoth Lakes, CA
- 2005 Describing the anaerobic thermophilic subseafloor population: A metagenomic strategy
Thermophiles 2005. Gold Coast, Australia
- 2005 Diversity and distribution of key subseafloor hypthermophilic archaea at an active deep-sea volcano
NASA Astrobiology Institute 2005 General Meeting. Boulder, CO
- 2005 Microbial life in ridge flank crustal fluids at Baby Bare Seamount, Juan de Fuca Ridge
American Geophysical Union Fall Meeting. San Francisco, CA
- 2003 Evidence for a subseafloor habitat in a 3.5 MA ridge-flank crustal fluids at Baby Bare Seamount, Eastern flank, Juan de Fuca Ridge
Geological Society of America. Seattle, WA
- 2003 Characterization of novel subseafloor isolates from a deep-sea volcano in the NE Pacific
NASA Astrobiology Institute General Meeting. Tempe, AZ

- 2002 Microbial diversity and geochemistry at an active deep-sea volcano in the NE Pacific: Implications for modeling the subsurface biosphere on Earth and other solar bodies
NATO Advanced Studies Institute Perspectives in Astrobiology. Crete, Greece
- 2002 Temporal changes in microbial diversity and geochemistry at an active deep-sea volcano: Implications for modeling the subsurface biosphere on earth and other solar bodies
Astrobiology Science Conference. Mountain View, CA
- 2002 Changes in seafloor bacterial diversity following the 1998 volcanic eruption at Axial Volcano, Juan de Fuca Ridge
American Geophysical Union Fall Meeting. San Francisco, CA
- 2002 Temporal changes in microbial diversity and chemistry at a diffuse flow vent on Axial Volcano, Juan de Fuca Ridge
Ocean Sciences Meeting. Honolulu, HI
- 2000 Exploring microbial diversity in a diffuse flow vent at Axial Seamount, Juan de Fuca Ridge over a two year period
RIDGE Theoretical Institute: The Subsurface Biosphere at Mid-Ocean Ridges. Big Sky, MT