CURRICULUM VITAE OF CRAIG LEE MOYER

Business Address: Biology Department
Western Washington University
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Education:

Ph.D. in Oceanography, 1995. Emphasis in Biological Oceanography and Microbial Ecology.
Thesis title: Microbial Diversity and Community Structure Determinations through Analyses of SSU rRNA Gene Distributions and Phylogeny.
University of Hawaii, Honolulu, Hawaii.

M.S. in Microbiology, 1988. Emphasis in Marine Microbiology.
Thesis title: Growth Rate Effects During Starvation-Survival of a Marine Psychrophilic *Vibrio*.
Oregon State University, Corvallis, Oregon.

B.S. in Biology, 1986. Emphasis in Marine Biology.
Graduated with High Scholarship, OSU Honors Program.
Oregon State University, Corvallis, Oregon.

Honors and Awards:

Paul J. Olscamp Research Award, WWU, 2018
Fouts Foundation, Innovative Research Acknowledgment Award, 2016/21
Distinguished Lecturer, Consortium for Ocean Leadership, 2012/13
Professional Leave Award, WWU, 2003/04, 2010/11, 2018/19 & 2024
Project Development Award, WWU, 2006
Exceptional Performance in Research Merit Award, WWU, 1999

Professional Experience:

2008-	Professor	Western Washington University
2002-08	Associate Professor	Western Washington University
1997-02	Assistant Professor	Western Washington University
1995-97	Post-Doctoral Research Associate	Michigan State University
1990-95	Graduate Research Assistant	University of Hawaii
1986-90	Graduate Research & Teaching Assistant	Oregon State University

Participated in over 60 oceanographic expeditions (six as chief scientist) and acted as scientific observer and/or advisor on over 300 dives using submersibles, remotely operated vehicles (ROVs), and autonomous underwater vehicles (AUVs).

Professional Societies Member:

International Society for Microbial Ecology
American Society for Microbiology
American Geophysical Union
Geological Society of America

Refereed Scientific Publications:

Campbell, K. L., J. B. Sylvan, **C. L. Moyer,** H. Fullerton, and J. M. Labonté. 2026. Virus-host interactions in iron-oxidizing mats of the East Pacific Rise. PLoS ONE, under review.

Fullerton, H., N. Patel, D. D. Syverson, **C.L. Moyer** and J.B. Sylvan. 2026. Establishing community structure and diversity within hydrothermal vent bacterial communities of the East Pacific Rise at 9º50'N. Microbiol. Spectr. Accepted for publication.

Smith, L., H. Fullerton, and **C. L. Moyer.** 2024. Complex hydrothermal vent microbial mat communities used to assess primer selection for targeted amplicon surveys from Kama‘ehuakanaloa Seamount. PeerJ 12:e18099. doi: 10.7717/peerj.18099.

Murray, L., H. Fullerton, and **C. L. Moyer.** 2024. Microbial metabolic potential of hydrothermal vent chimneys along the submarine ring of fire. Front. Microbiol. 15:1399422. doi: 10.3389/fmicb.2024.1399422.

Fullerton, H., L. Smith, A. Enriquez, D. Butterfield, C. G. Wheat, and **C. L. Moyer.** 2024. Seafloor incubation experiments at deep-sea hydrothermal vents reveal distinct biogeographic signatures of autotrophic communities. FEMS Microbiol. Ecol. 100:1-14. doi: 10.1093/femsec/fiae001.

Stromecki, A., L. Murray, H. Fullerton, and **C. L. Moyer.** 2022. Unexpected diversity found within benthic microbial mats at hydrothermal springs in Crater Lake, Oregon. Front. Microbiol. 13:876044. doi:10.3389/fmicb.2022.876044.

Fryer, P., C.G. Wheat, T. Williams, C. Kelley, K. Johnson, J. Ryan, W. Kurz, J. Shervais, E. Albers, B. Bekins, B. Debret, J. Deng, Y. Dong, P. Eichenbusch, E. Frery, Y. Ichiyama, R. Johnson, R. Kevorkian, V. Magalhaes, S. Mantovanelli, W. Menpace, C. Menzies, K. Michibaysashi, **C. Moyer,** K. Mullane, J.-W. Park, R. Price, O. Sissmann, S. Suzuki, K. Takai, B. Walter, R. Zhang, D. Amon, D. Glickson, and S. Pomponi. 2020. Mariana serpentinite mud volcanism exhumes subducted seamount materials: implications for the origin of life. Phil. Trans. R. Soc. A 378:20180425. doi: 10.1098/rsta.2018.0425.

Duchinski, K., **C. L. Moyer,** K. Hager, and H. Fullerton. 2019. Fine-scale biogeography and the inference of ecological interactions among neutrophilic iron-oxidizing Zetaproteobacteria as determined by a rule-based microbial network. Front. Microbiol. 10:2389. doi:10.3389/fmicb.2019.02389.

Clague, D. A., J. B. Paduan, J. B., D. W. Caress, **C. L. Moyer,** B. T. Glazer, and D. R. Yoerger. 2019. Structure of Lō’ihi Seamount, Hawai’i and lava flow morphology from high-resolution mapping. Front. Earth Sci. 7:58. doi: 10.3389/feart.2019.00058.

Hager, K. W., H. Fullerton, D. A. Butterfield, and **C. L. Moyer.** 2017. Community structure of lithotrophically-driven microbial mats from the Mariana Arc and back-arc. Front. Microbiol. 8:1578. doi:10.3389/fmicb.2017.01578.

Mori, J. F., J. J. Scott, K. W. Hager, **C. L. Moyer,** K. Kusel, and D. Emerson. 2017. Physiological and ecological implications of an iron- or hydrogen-oxidizing member of the Zetaproteobacteria, *Ghiorsea bivora*, gen. nov., sp. nov. ISME J. 11:2624-2636. doi:10.1038/ismej.2017.132.

Emerson, D., J. J. Scott, A. Leavitt, E. Fleming, and **C. L. Moyer.** 2017. In situ estimates of iron-oxidation and accretion rates for iron-oxidizing bacterial mats at Lō'ihi Seamount. Deep Sea Res. Part I Oceanogr. Res. Pap. 126:31-39. doi:10.1016/j.dsr.2017.05.011.

Fullerton, H., K. W. Hager, S. M. McAllister, and **C. L. Moyer.** 2017. Hidden diversity revealed by genome-resolved metagenomics of iron-oxidizing microbial mats from Lō'ihi Seamount, Hawai'i. ISME J. 11:1900-1914. doi:10.1038/ismej.2017.40.

Sylvan, J. B., S. D. Wankel, D. E. LaRowe, C. N. Charoenpong, J. A. Huber, **C. L. Moyer,** and K. J. Edwards. 2017. Evidence for microbial mediation of subseafloor nitrogen redox processes at Loihi Seamount, Hawaii. Geochim. Cosmochim. Acta 198:131-150. doi:10.1016/j.gca.2016.10.029.

Moyer, C. L., R. E. Collins and R.Y. Morita. 2017. Psychrophiles and psychrotrophs. In Reference Module of Life Sciences. Elsevier, Amsterdam. doi:10.1016/B978-0-12-809633-8.02282-2.

Smythe, W. F., S. M. McAllister, K. W. Hager, K. R. Hager, B. M. Tebo, and **C. L. Moyer**. 2016. Silica biomineralization of Calothrix-dominated biofacies from Queen's Laundry hot-spring, Yellowstone National Park, USA. Front. Environ. Sci. 4:40. doi: 10.3389/fenvs.2016.00040.

Fullerton, H. and **C. L. Moyer**. 2016. Comparative single-cell genomics of *Chloroflexi* from the Okinawa Trough deep subsurface biosphere. Appl. Environ. Microbiol. 82:3000-3008. doi:10.1128/AEM.00624-16.

Carey, S., R. Olsen, K. L.C. Bell, R. Ballard, F. Dondin, C. Roman, C. Smart, M. Lilley, J. Lupton, B. Seibel, W. Cornell, and **C. L. Moyer**. 2016. Hydrothermal venting and mineralization in the crater of Kick'em Jenny submarine volcano, Grenada (Lesser Antilles). Geochem. Geophys. Geosyst. 17:1000-1019. doi:10.1002/2015GC006060.

Fullerton, H., K. W. Hager, and **C. L. Moyer**. 2015. Draft genome sequence of *Mariprofundus ferrooxydans* strain JV-1, isolated from Lō'ihi Seamount, Hawaii. Genome Announc. 3(5):e01118-15. doi:10.1128/genomeA.01118-15.

Price, M. T., H. Fullerton, and **C. L. Moyer**. 2015. Biogeography and evolution of *Thermococcus* isolates from hydrothermal vent systems of the Pacific. Front. Microbiol. 6:968. doi: 10.3389/fmicb.2015.00968.

Jesser, K. J., H. Fullerton, K. W. Hager, and **C. L. Moyer**. 2015. Quantitative PCR analysis of functional genes in iron-rich microbial mats at an active hydrothermal vent system (Lō'ihi Seamount, Hawai'i). Appl. Environ. Microbiol. 81:2976-2984. doi: 10.1128/AEM.03608-14.

Siu, N., J. K. Apple, and **C. L. Moyer**. 2014. The effects of ocean acidity and elevated temperature on bacterioplankton community structure and metabolism. Open J. Ecol. 4:434-455 (Special Issue – Microbial Ecology Research). doi: 10.4236/oje.2014.48038.

Yanagawa, K., T. Nunoura, S. M. McAllister, M. Hirai, A. Breuker, L. Brandt, C. House, **C. L. Moyer**, J.-L. Birrien, K. Aoike, M. Sunamura, T. Urabe, M. J. Mottl and K. Takai. 2013. The first microbiological contamination assessment by deep-sea drilling and coring by the D/V Chikyu at the Iheya North hydrothermal field in the Mid-Okinawa Trough (IODP Expedition 331). Front. Microbiol. 4:327. doi:10.3389/fmicb.2013.00327.

Fleming, E.J., R. E. Davis, S. M. McAllister, C. S. Chan, **C. L. Moyer**, B. M. Tebo, and D. Emerson. 2013. Hidden in plain sight: discovery of sheath-forming, iron-oxidizing *Zetaproteobacteria* at Loihi Seamount, Hawaii, USA. FEMS Microbiol. Ecol. 85:116-127. doi: 10.1111/1574-6941.12104.

Curtis, A. C., C. G. Wheat, P. Fryer, and **C. L. Moyer**. 2013. Mariana forearc serpentine mud volcanoes harbor novel communities of extremophilic *Archaea*. Geomicrobiol. J. 30:430-441. doi: 10.1080/01490451.2012.705226.

Takai, K., M. J. Mottl, S. H. Nielsen, J. -L. Birrien, S. Bowden, L. Brandt, A. Breuker, J. C. Corona, S. Eckert, H. Hartnett, S. P. Hollis, C. H. House, A. Ijiri, J. Ishibashi, Y. Masaki, S. McAllister, J. McManus, **C. Moyer**, M. Nishizawa, T. Noguchi, T. Nunoura, G. Southam, K. Yanagawa, S. Yang, and C. Yeats. 2012. IODP Expedition 331: Strong and expansive subseafloor hydrothermal activities in the Okinawa Trough. Sci. Drill. 13:19-26. doi: 10.2204/iodp.sd.13.03.2011.

Biddle, J. F., J. B. Sylvan, W. J. Brazelton, B. J. Tully, K. J. Edwards, **C. L. Moyer**, J. F. Heidelberg, and W. C. Nelson. 2012. Prospects for the study of evolution in the deep biosphere. Front. Microbiol. 2:285. doi: 10.3389/fmicb.2011.00285.

Emerson, D., W. Bellows, J. K. Keller, **C. L. Moyer**, A. Sutton-Grier, and J. P. Megonigal. 2012. Anaerobic metabolism in tidal freshwater wetlands: III. Effects of plant removal on Archaeal microbial communities. Estuaries and Coasts. doi: 10.1007/s12237-012-9496-9.

Edwards, K. J., B. T. Glazer, O. J. Rouxel, W. Bach, D. Emerson, R. E. Davis, B. M. Toner, C. S. Chan, B. M. Tebo, H. Staudigel, and **C. L. Moyer**. 2011. Ultra-diffuse hydrothermal venting supports Fe-oxidizing Bacteria and massive umber deposition at 5000 m off Hawaii. ISME J. 5:1748-1758. doi: 10.1038/ismej.2011.48.

McAllister, S. M., R. E. Davis, J. M. McBeth, B. M. Tebo, D. Emerson, and **C. L. Moyer**. 2011. Biodiversity and emerging biogeography of the neutrophilic iron-oxidizing *Zetaproteobacteria*. Appl. Environ. Microbiol. 77:5445-5457. doi: 10.1128/AEM.00533-11.

Emerson, D., and **C. L. Moyer**. 2010. Microbiology of seamounts: Common patterns observed in community structure. Oceanography 23:148-163. doi: 10.5670/oceanog.2010.67.

Rassa, A. C., S. M. McAllister, S. A. Safran, and **C. L. Moyer**. 2009. Zeta-*Proteobacteria* dominate the colonization and formation of microbial mats in low-temperature hydrothermal vents at Loihi Seamount, Hawaii. Geomicrobiol. J. 26:623-638. doi: 10.1080/01490450903263350.

Davis, R. E., D. S. Stakes, C. G. Wheat, and **C. L. Moyer**. 2009. Bacterial variability within an iron-silica-manganese-rich hydrothermal mound located off-axis at the Cleft Segment, Juan de Fuca Ridge. Geomicrobiol. J. 26:570-580. doi:10.1029/2007JB005413.

Davis, R. E., and **C. L. Moyer**. 2008. Extreme spatial and temporal variability of hydrothermal microbial mat communities along the Mariana Island Arc and southern Mariana back-arc system. J. Geophys. Res. 113:B08S15. doi:10.1029/2007JB005413.

Santelli, C. M., B. N. Orcutt, E. Banning, W. Bach, **C. L. Moyer**, M. L. Sogin, H. Staudigel, and K. J. Edwards. 2008. Abundance and diversity of microbial life in ocean crust. Nature 453:653-656. doi:10.1038/nature06899.

Emerson, D., J. A. Rentz, T. G. Lilburn, R. E. Davis, H. Aldrich, C. Chan, and **C. L. Moyer**. 2007. A novel lineage of *Proteobacteria* involved in formation of marine Fe-oxidizing microbial mat communities. PLoS ONE 2:e667. doi:10.1371/journal.pone.0000667.

Chao, L. S.-L., R. E. Davis, and **C. L. Moyer**. 2007. Characterization of bacterial community structure in vestimentiferan tubeworm *Ridgeia piscesae* trophosomes. Mar. Ecol. 28:1-14. doi:10.1111/j.1439-0485.2007.00151.x.

Moyer, C.L., and R. Y. Morita. 2007. Psychrophiles and psychrotrophs. *In* Encyclopedia of Life Sciences. John Wiley & Sons, Ltd, Chichester. doi:10.1002/9780470015902.a0000402.pub2.

Vishnivetskaya, T. A., M. A. Petrova, J. Urbance, M. Ponder, **C. L. Moyer**, D. A. Gilichinsky, and J. M. Tiedje. 2006. Bacterial community in ancient siberian permafrost as characterized by culture and culture-independent methods. Astrobiology 6:400-414.

Takai, K., **C. L. Moyer**, M. Miyazaki, Y. Nogi, H. Hirayama, K. H. Nealson, and K. Horikoshi. 2005. *Marinobacter alkaliphilus* sp. nov., a novel alkaliphilic bacterium isolated from subseafloor alkaline serpentine mud from Ocean Drilling Program Site 1200 at South Chamorro Seamount, Mariana Forearc. Extremophiles 9:17-27.

Stapleton, R. D., Z. L. Sabree, A. V. Palumbo, **C. L. Moyer**, A. Devol, Y. Roh, and J. Zhou. 2005. Metal reduction at cold temperatures by *Shewanella* isolates from various marine environments. Aquat. Microb. Ecol. 38:81-91.

Mottl, M. J., S. C. Komor, P. Fryer, and **C. L. Moyer**. 2003. Deep-slab fluids fuel extremophilic *Archaea* on a Mariana forearc serpentine mud volcano: Ocean Drilling Program Leg 195. Geochem. Geophys. Geosyst. 4(11):9009. doi:10.1029/2003GC000588.

Engebretson, J. J., and **C. L. Moyer**. 2003. Fidelity of select restriction endonucleases in determining microbial diversity by terminal-restriction fragment length polymorphism. Appl. Environ. Microbiol. 69:4823-4829.

Emerson, D., and **C. L. Moyer**. 2002. Neutrophilic Fe-oxidizing bacteria are abundant at the Loihi Seamount hydrothermal vents and play a major role in Fe oxide deposition. Appl. Environ. Microbiol. 68:3085-3093.

Moyer, C. L. 2001. Molecular phylogeny: Applications and implications for marine microbiology. Methods Microbiol. 30:375-394.

Morita, R. Y., and **C. L. Moyer**. 2001. Origin of psychrophiles. *In* S. A. Levin, R. Colwell, G. Daily, J. Lubchenco, H. A. Mooney, E.-D. Schulze, G. D. Tilman (eds.), Encyclopedia of biodiversity, 4: 917-924.

Wheat, C. G., H. W. Jannasch, J. N. Plant, **C. L. Moyer**, F. J. Sansone, and G. M. McMurtry. 2000. Continuous sampling of hydrothermal fluids from Loihi Seamount after the 1996 event. J. Geophys. Res. 105:19353-19367.

Murray, A. E., K. Y. Wu, **C. L. Moyer**, D. M. Karl, and E. F. DeLong. 1999. Evidence for circumpolar distribution of planktonic *Archaea* in the Southern Hemisphere. Aquat. Microb. Ecol. 18:263-273.

Moyer, C. L., J. M. Tiedje, F. C. Dobbs, and D. M. Karl. 1998. Diversity of deep-sea hydrothermal vent *Archaea*. Deep Sea Res. Part II Top. Stud. Oceanogr. 45:303-317.

Mottl, M. J., G. Wheat, E. Baker, N. Becker, E. Davis, R. Feely, A. Grehan, D. Kadko, M. Lilley, G. Massoth, **C. Moyer**, and F. Sansone. 1998. Warm springs discovered on 3.5 Ma oceanic crust, eastern flank of the Juan de Fuca Ridge. Geology 26:51-54.

Emerson, D., and **C. L. Moyer**. 1997. Isolation and characterization of novel iron-oxidizing bacteria that grow at circumneutral pH. Appl. Environ. Microbiol. 63:4784-4792.

Tiedje, J. M., J. -Z. Zhou, K. Nüsslein, **C. L. Moyer**, and R. R. Fulthorpe. 1997. Extent and patterns of soil microbial diversity, p. 35-41. *In* M. T. Martins, M. I. Z. Sato, J. M. Tiedje, L. C. N. Hagler, J. Döbereiner, and P. S. Sanchez (eds.), Progress in Microbial Ecology: Proceedings of the 7th International Symposium on Microbial Ecology. Brazilian Society for Microbiology, São Paulo, Brazil.

Duennebier, F. K., N. C. Becker, J. Caplan-Auerbach, D. A. Clague, J. Cowen, M. Cremer, M. Garcia, F. Goff, A. Malahoff, G. M. McMurtry, B. P. Midson, **C. L. Moyer**, M. Norman, P. Okubo, J. A. Resing, J. M. Rhodes, K. Rubin, F. J. Sansone, J. R. Smith, K. Spencer, X. Wen, C. G. Wheat. 1997. Researchers rapidly respond to submarine activity at Loihi volcano, Hawaii. Eos. Trans. AGU 78 (22): 229-233.

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Giovannoni, S. J., T. B. Britschgi, **C. L. Moyer**, and K. G. Field. 1990. Genetic diversity in Sargasso Sea bacterioplankton. Nature 345:60-63.

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Caldwell, B. A., C. Ye, R. P. Griffiths, **C. L. Moyer**, and R. Y. Morita. 1989. Plasmid expression and maintenance during long-term starvation-survival of bacteria in well water. Appl. Environ. Microbiol. 55:1860-1864.

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Published Presentations and Abstracts:

Holmes, A. S., J. B. Sylvan, **C. L. Moyer,** and H. Fullerton. 2025. Metagenomics of developing complex hydrothermal microbial communities. AGU Fall Mtg. Abstr. # OS51B-1007.

C. L. Moyer, H. Fullerton, D. D. Syverson, and J. B. Sylvan. 2024. Using hydrothermal vents to understand the development of complex microbial communities. AGU Fall Mtg. Abstr. # OS44B-05.

Fullerton, H., and **C. L. Moyer.** 2024. Establishing microbial diversity within hydrothermal vent microbial communities. AGU Fall Mtg. Abstr. # B51L-1658.

C. L. Moyer. 2019. Fine-scale biogeography and the inference of ecological interactions among neutrophilic iron-oxidizing Zetaproteobacteria as determined by a rule-based microbial network or "Ecology of the volcano microbiome." Abstr. Northwest Branch Amer. Soc. Microbiol. (Invited).

Strang, L., and **C. L. Moyer.** 2019. Adventures in the New Tree of Life. A scientific review comic book. ComSciCon-PNW, Seattle, WA.

Turner, C., H. Fullerton, and **C. L. Moyer.** 2018. Taxonomic and functional analysis of microbial mat communities of Mariana region hydrothermal vents. Abstr. Ann. Mtg. Amer. Soc. Microbiol.

Turner, C., and **C. L. Moyer.** 2017. Taxonomic and functional analysis of microbial mat communities of Mariana region hydrothermal vents. Abstr. Ann. Mtg. Geol. Soc. Amer.

Strang, L., and **C. L. Moyer.** 2017. Insights into the pangenomics of deep subsurface Thermococcus isolates. Abstr. Ann. Mtg. Geol. Soc. Amer.

D. A. Clague, J. B. Paduan, **C. L. Moyer,** B. T. Glazer, D. W. Caress, D. Yoerger, and C. L. Kaiser. 2016. Structure and evolution of Hawaii's Loihi Seamount from high-resolution mapping. AGU Fall Mtg. Abstr. # OS43D-01.

Fullerton, H., K. W. Hager, and **C. L. Moyer.** 2016. Metagenomics of *Zetaproteobacteria* at Loihi Seamount. Abstr. Gordon Research Conference, Geobiology, Galveston, TX.

K. W. Hager, and H. Fullerton, and **C. L. Moyer.** 2015. Community structure comparisons of hydrothermal vent microbial mats along the Mariana Arc and Back-arc. AGU Fall Mtg. Abstr. # B13C-0630.

Moyer, C. L., K. W. Hager, and H. Fullerton. 2015. Post-eruption colonization and community succession of hydrothermal microbial mats. AGU Fall Mtg. Abstr. # B13C-0631 (Invited).

Chan, C. S., S. M. McAllister, A. Leavitt, D. Emerson, **Moyer, C. L.**, and B. T. Glazer. 2013. Fe-oxidizing microbes are hydrothermal vent ecosystem engineers at the Loihi Seamount. AGU Fall Mtg. Abstr. # B14B-01 (Invited).

Fullerton, H., and **C. L. Moyer**. 2013. Metagenomic assembly of the dominant *Zetaproteobacteria* in an iron-oxidizing hydrothermal microbial mat. AGU Fall Mtg. Abstr. # B14B-03 (Invited).

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Jesser, K. J., H. Fullerton, T. S. Hilton, J. Kimber, K. W. Hager and **C. L. Moyer**. 2013. qPCR analysis of carbon, nitrogen, and arsenic cycling in *Zetaproteobacteria*-dominated microbial mats. AGU Fall Mtg. Abstr. # B11B-0374.

Hager, K. W., T. S. Hilton, J. Kimber, K. J. Jesser, H. Fullerton, S. A. McAllister, C. Chan, D. Emerson, and **C. L. Moyer**. 2013. Using fine-scale high-resolution sampling to link Fe oxide-dominated hydrothermal vent-generated microbial mat morphology with community structure composition at Loihi Seamount, Hawaii. AGU Fall Mtg. Abstr. # B11B-0381.

Fullerton, H., K. Jesser, and **C. L. Moyer**. 2013. Metagenomics and high-resolution sampling of an iron dominated microbial mat at Loihi Seamount. Abstr. Ann. Mtg. Amer. Soc. Microbiol.

Moyer, C.L., and S. M. McAllister. 2012. Hydrothermal fluid flow affects the dispersal of subsurface *Zetaproteobacteria*. Abstr. 14th International Symposium on Microbial Ecology.

McAllister, S. M., N. Siu, R. E. Davis, B. M. Tebo, and **C. L. Moyer**. 2012. A novel fine-scale approach for sampling deep-sea Fe oxide-dominated hydrothermal vent microbial mats at Loihi Seamount. Abstr. 14th International Symposium on Microbial Ecology.

Price, M. T., and **C. L. Moyer**. 2012. Biogeography and evolution of *Thermococcus* isolates from hydrothermal vent systems of the Pacific. Abstr. 62nd Ann. Conference, Canadian Society of Microbiologists.

Moyer, C. L. 2012. Graduate student participation is key to research success at WWU. WWU Graduate Research Conference (Invited, keynote).

McAllister, S. M., and **C. L. Moyer**. 2012. Hydrothermal vent ecology in the deep sea: macro- and microcosm revelations from Fe-oxidizing bacterial communities at Loihi Seamount, Hawaii. WWU Graduate Research Conference. Abstr. # BIO1206.

McAllister, S. M., W. F. Smythe, R. E. Davis, B. M. Tebo, and **C. L. Moyer**. 2012. Concurrent habitation of freshwater and marine Fe-oxidizing Bacteria in the Soda Bay Creek estuary, Alaska. WWU Graduate Research Conference. Abstr. # BIO1207.

Siu, N., J. K. Apple, and **C. L. Moyer**. 2012. Consequences of increased temperature and ocean acidity on heterotrophic bacterioplankton composition and metabolism. WWU Graduate Research Conference. Abstr. # BIO1209.

Moyer, C.L., R. E. Davis, and S. M. McAllister. 2012. Extreme biodiversity and ecology of microbial mat communities from Mariana Island Arc hydrothermal vents. Mariana Vent Larvae (MarVeL) workshop, Okinawa, Japan (Invited, keynote).

Siu, N., J. K. Apple, **C. L. Moyer**. 2012. Consequences of increased temperature and ocean acidity on heterotrophic bacterioplankton composition and metabolism. Abstr. Ocean Sciences Mtg. Session #046:A0202.

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Britschgi, T. B., **C. L. Moyer**, K. G. Field, and S. J. Giovannoni. 1990. Analysis of Sargasso Sea picoplankton diversity by 16S ribosomal RNA gene amplification and cloning. Abstr. 4th Ann. Oreg. State Univ. Biology Graduate Symposium. p. 12.

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Non-Refereed Scientific Publications:

Fryer, P., Wheat, G., Williams, T., and the Expedition 366 Scientists, 2017. Expedition 366 Preliminary Report: Mariana Convergent Margin and South Chamorro Seamount. International Ocean Discovery Program. doi: 10.14379/iodp.pr.366.2017.

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Expedition 331 Scientists. 2010. Deep hot biosphere. IODP Prel. Rept., 331. doi:10.2204/iodp.pr.331.2010.

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Wheat, C. G., H. W. Jannasch, **C. L. Moyer**, F. J. Sansone, and J. N. Plant. 1998. A new continuous water sampler for monitoring hydrothermal fluids: Data from Loihi Seamount after the 1996 event. RIDGE Newsletter 9:6-10.

Grants and Contracts Awarded:

Archaeal Diversity Revealed by SSU-Amplicon Sequencing and Genome-Resolved Metagenomics from Mariana Forearc Serpentinite Mud Volcanoes.
Agency: Consortium for Ocean Leadership
Active Dates: 04/17 to 02/19 (Post-expedition award)

Participation on IODP Expedition 366.
Agency: Consortium for Ocean Leadership
Active Dates: 12/16 to 02/18

RUI: Iron-oxidizing Bacteria from the Okinawa Trough Deep Subsurface Biosphere.
Agency: NSF
Active Dates: 04/13 to 12/17

Collaborative Research: Ecology of Microbial Mats at Seamount Associated Fe-rich Hydrothermal Vent Systems.
Agency: NSF
Active Dates: 07/12 to 12/17
CoPI's: D. Emerson (Bigelow), C. Chan (UDE).

EAGER: Collaborative Research: Iron and Manganese Depositing Cold-Seeps: Mineral Formation Along A Freshwater To Marine Ecosystem.
Agency: NSF
Active Dates: 04/14 to 03/16
CoPI's: B. Tebo (OHSU).

Zetaproteobacteria and Associated Microbial Communities from the Okinawa Trough Subsurface.
Agency: Center for Dark Energy Biosphere Investigations (CDEBI)
Active Dates: 02/12 to 01/14

Ecology of *Zetaproteobacteria*.
Agency: Murdock Foundation
Active Dates: 06/12 to 09/13

Expedition 331: Microbial Community Structure and Diversity of the Deep Hot Biosphere.
Agency: Integrated Ocean Drilling Program - US Science Support Program (IODP - USSSP)
Active Dates: 03/11 to 08/13 (Post-expedition award)

Expedition 331: Deep Subsurface Iron-Oxidizing Bacterial Communities from the Iheya North Hydrothermal Field.
Agency: Integrated Ocean Drilling Program - US Science Support Program (IODP - USSSP)
Active Dates: 03/11 to 08/13 (Post-expedition award)

Massively Parallel DNA Sequencing of Organic Aggregates.
Agency: Old Dominion University
Active Dates: 06/10 to 06/12

Using Molecular Microbiology to Identify the Source of Contaminating *E. coli* in the Silver Beach Creek Watershed.
Agency: City of Bellingham and Whatcom County
Active Dates: 06/10 to 09/11

Collaborative Research: Loihi Seamount as an Observatory for the Study of Neutrophilic Iron-oxidizing Bacteria and the Microbial Iron Cycle.
Agency: NSF
Active Dates: 09/04 to 08/10
CoPI's: D. Emerson (Bigelow), K. Edwards (USC), H. Staudigel (SIO) and B. Tebo (OHSU).

Collaborative Research: Borehole Studies of ODP Site 1200, South Chamorro Seamount: A Window into Active Serpentinite Mud Volcanism.
Agency: NSF
Active dates: 09/07 to 08/10
CoPI's: P. Fryer (UH), G. Wheat (UAF), J. Seewald (WHOI).

MRI: Acquisition of Instrumentation Supporting Quantitative Spectral and Image Analysis.
Agency: NSF
Active dates: 08/07 to 07/10
CoPI's: D. Leaf, M. Brodhagen, B. Miner, S. Schulze (WWU).

Collaborative Research: Submarine Eruption on the North East Lau Spreading Center, a RAPID Response Effort.
Agency: NSF
Active dates: 05/09 to 04/10
CoPI's: J. Resing (UW).

Improved Detection of *E. coli* O157:H7 and Shiga Toxin-Producing *E. coli* by use of Molecular Phylogeny Techniques.
Agency: FDA
Active Dates: 05/05 to 04/07
CoPI's: M. Grant (FDA).
Exploring Microbial Community Structure and Diversity at Mariana Arc Vents.
Agency: WWU Office of RSP, Project Development Award.
Active Dates: 03/06 to 09/06

Exploring Microbial Interactions and Complexity at Mariana Arc Vents.
Agency: NOAA's Office of Ocean Exploration
Active Dates: 06/04 to 05/05

MRI/RUI: Instrumentation for Sequencing and Genomic Analysis.
Agency: NSF
Active Dates: 06/02 to 05/05
CoPI's: M. Peterson, J. Young (WWU).

Temporal Evolution of Loihi Seamount Following the 1996 Seismic Event.
Agency: NOAA's National Undersea Research Program
Active Dates: 05/04 to 04/05
CoPI's: F. Sansone (UH) and G. Wheat (UAF).

Exploring the Submarine Ring of Fire.
Agency: NOAA's Office of Ocean Exploration
Active Dates: 07/02 to 06/04
CoPI's: R. Embley (NOAA/PMEL).

Microbial Diversity at the Mariana Convergent Margin: A Window into the Ultra-deep Biosphere.
Agency: Ocean Drilling Program - US Science Support Program (ODP - USSSP)
Active Dates: 05/01 to 02/05 (Post-expedition award).

Mariana Convergent Margin: Geochemical, Tectonic and Biological Processes in the Intermediate Depths of an Active Subduction factory.
Agency: Ocean Drilling Program - US Science Support Program (ODP - USSSP)
Active Dates: 04/01 to 05/01 (To participate on Leg 195A, South Chamorro Seamount)
CoPI's: P. Fryer, M. Mottl (UH).

Assessment of Biodiversity and Microbial Processes at an Active, Hydrothermal Vent System, Axial Seamount, Juan de Fuca Ridge.
Agency: NOAA's Washington Sea Grant Program
Active Dates: 01/00 to 09/01

Integrated Physiological and Molecular Phylogenetic Characterization of Microbial Iron- and Sulfur-cycling from Loihi Seamount.
Agency: NOAA's National Undersea Research Program
Active Dates: 01/99 to 12/00
CoPI's: D. Emerson (Bigelow).

Temporal Evolution of Loihi Seamount Following the 1996 Seismic Event.
Agency: NOAA's National Undersea Research Program
Active Dates: 01/99 to 12/00
CoPI's: F. Sansone (UH) and G. Wheat (UAF).

Diversity of Microbial Communities and their Habitats at Axial Volcano, Juan de Fuca Ridge.
Agency: NOAA's Washington Sea Grant Program
Active Dates: 01/98 to 12/99
CoPI's: J. Baross (UW) and D. Butterfield (NOAA/PMEL).

Teaching Experience – Courses Previously Offered (Primary Courses Offered‡):

Biology 101	Introduction to Biology with Lab
Biology 205	Introduction to Cellular & Molecular Biology with Lab‡
Biology 324	**Methods in Molecular Biology Lab‡**
Biology 345/346	**Microbiology & Microbiology Lab‡**
Biology 405/509	**Microbial Ecology‡**
Biology 406	General Oceanography with Lab
Biology 432	**Evolutionary Biology‡**
Biology 436	Molecular Phylogeny & Microbial Diversity
Biology 496	Professional Work Experience (Mentor)
Biology 498	Teaching Practicum (Mentor)
Biology 497X	Current Topics in Microbiology
Biology 494	**Undergraduate Research (Mentor)‡**
Biology 500	Advanced Topics in Molecular Phylogeny
Biology 500	Advanced Topics in Marine Symbiosis
Biology 500	**Advanced Topics in Bioinformatics Resources‡**
Biology 500	Advanced Topics in Benthic Microbial Ecology
Biology 508/400	Hydrothermal Vent Biology and Ecology
Biology 571	Advanced Topics in Cellular & Molecular Biology

Graduate Student Training:

Zachary Poyen, M.S. Candidate, WWU Biology.

Evan Coit, M.S. Biology, WWU, 2025.
Thesis: Composition and Structure of Axial Seamount Microbial Mat Communities Following an Eruptive Event.
WWU Biology Dept., Outstanding Graduate Thesis Accomplishment Award.

Lindsey Smith, M.S. Biology, WWU, 2023.
Thesis: Complex Microbial Mat Communities used to Assess Primer Selection for Targeted Amplicon Surveys.

Laura Murray, M.S. Biology, WWU, 2023.
Thesis: A Metagenomic Analysis of the Microbial Communities Associated with different Hydrothermal Vent Chimneys.

Amanda Stromecki, M.S. Biology, WWU, 2020.
Thesis: Community Structure of Benthic Microbial Mats at Hydrothermal Springs in Crater Lake, Oregon.

Lilja Strang, M.S. Biology, WWU, 2020.
Thesis: Genomic Insights and Ecological Adaptations of Deep-Subsurface and Near Subsurface Thermococcus Isolates.

Christina Turner, M.S. Biology, WWU, 2019.
Thesis: Functional Analysis of Cyc2 in Microbial Mat Communities of Mariana Arc and Back-Arc Hydrothermal Vents.

Kevin Hager, M.S. Biology, WWU, 2016.
Thesis: Bacterial Diversity and Community Structure of Lithotrophically-Driven Microbial Mats from the Mariana Arc and Back-Arc.
WWU Biology Dept., Outstanding Graduate Thesis Accomplishment Award.

Wendy Smythe, Ph.D. Division of Environmental & Biomolecular Systems, OHSU, 2015. (Thesis committee member)
Thesis: Biomineralization in Extreme Iron and Manganese Depositing Environments.

Kelsey Jesser, M.S. Biology, WWU, 2014.
Thesis: QPCR Analysis of Functional Genes in Iron-rich Microbial Mats at an Active Hydrothermal Vent System Lō'ihi Seamount, Hawai'i.
WWU Biology Dept., Outstanding Graduate Thesis Accomplishment Award.

Richard Davis, Ph.D. Division of Environmental & Biomolecular Systems, OHSU, 2014. (Thesis committee member)
Thesis: Microbial Community Dynamics and Carbon Fixation in Dark Oligotrophic Volcanic Ecosystems.

Mark Price, M.S. Biology, WWU, 2013.
Thesis: Biogeography and Evolution of *Thermococcus* Isolates from Hydrothermal Vent Systems of the Pacific.

Nam Siu, M.S., Biology, WWU, 2013.
Thesis: The Effects of Elevated Temperature and Ocean Acidity on Bacterioplankton Community Structure and Metabolism.

Sean McAllister, M.S. Biology, WWU, 2011.
Thesis: Biodiversity and Emerging Biogeography of the Neutrophilic Iron-Oxidizing *Zetaproteobacteria*.
WWU Biology Dept., Outstanding Teaching Excellence Award.
WWU Biology Dept., Outstanding Graduate Thesis Accomplishment Award.

Richard Davis, M.S. Biology, WWU, 2009.
Thesis: Microbial Community Composition and Variability at Active Hydrothermal Vent Sites along the Mariana Island Arc and Off-axis at the Southern Juan de Fuca Ridge.
WWU Biology Dept., Outstanding Teaching Excellence Award.
WWU Biology Dept., Outstanding Graduate Thesis Accomplishment Award.

Allen Rassa, M.S. Biology, WWU, 2008.
Thesis: *Zeta-Proteobacteria* Dominate the Formation of Microbial Mats in Low-Temperature Hydrothermal Vents at Loihi Seamount, Hawaii.

Andrea Curtis, M.S. Biology, WWU, 2007.
Thesis: The Mariana Forearc: Serpentinite Mud Volcanos Harbor a Novel Community of Extremophilic Archaea.
WWU Biology Dept., Outstanding Teaching Excellence Award.

Leslie Chao, M.S., Biology, WWU, 2006.
Thesis: Bacterial Community Structure of Vestimentiferan Tubeworm *Ridgeia piscesae* Trophosomes using Molecular Methods.
WWU Biology Dept., Outstanding Graduate Thesis Accomplishment Award.

Jeff Engebretson, M.S., Biology, WWU, 2002.
Thesis: The Terminal-Restriction Fragment Length Polymorphism Assay and its use in Determining Bacterial Community Succession at Hydrothermal Vents.
WWU Biology Dept., Outstanding Graduate Thesis Accomplishment Award.

Richard Llewellyn, M.S., Biology, WWU, 2001.
Thesis: The Molecular Evolution of two strains of *Helicobacter pylori*.
WAGS/UMI Distinguished Thesis Award *(nominated by WWU Graduate School)*.
WWU Biology Dept., Outstanding Graduate Thesis Accomplishment Award.

Karen Lynch, M.S., Biology, WWU, 2000.
Thesis: Bacterial Community Structure and Phylogenetic Diversity of Hydrothermal Vents at Axial Volcano, Juan de Fuca Ridge.

Scott Bowefield, M.S., Biology, WWU, 2000.
Thesis: Bacterial Community Structure of Hydrothermal Vents at Guaymas Basin, Mexico as Determined by Amplified Ribosomal DNA Restriction Analysis.

Recent Collaborators:

Heather Fullerton (CofC), Jason Sylvan (TX A&M), C. Geoffrey Wheat (UAK Fairbanks), David Butterfield (UW & NOAA), Sean McAllister (NOAA PMEL), Wendy Todd (UAK Juneau), David Emerson (Bigelow Labs), Bill Chadwick (OSU & NOAA PMEL).

Graduate & Postgraduate Advisors:

James M. Tiedje (MSU)
David M. Karl (UH)
Richard Y. Morita (OSU)

Postdoctoral Advisee:

Heather Fullerton (CofC)