CURRICULUM VITAE OF CRAIG LEE MOYER

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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:

Project Development Award, WWU, 2006
Professional Leave Award, WWU, 2003/04.
Exceptional Performance in Research Merit Award, WWU, 1999.
NATO ASI Travel Award, NSF, 1994.
ARCS Hawaii Scholarship, SOEST, UH, 1994.

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 40 oceanographic expeditions and acted as scientific observer and/or advisor on over 200 dives using DSVs and ROVs.

Professional Societies Member:

International Society for Microbial Ecology
American Society for Microbiology
American Society of Limnology and Oceanography
American Geophysical Union

Refereed Scientific Publications and Book Chapters:

Rassa, A. C., and **C. L. Moyer**. 2008. Zeta-*Proteobacteria* dominate the formation of microbial mats in low-temperature hydrothermal vents at Loihi, Seamount, Hawaii. J. Geomicrobiol. In review.

Davis, R. E., D. S. Stakes, C. G. Wheat, and **C. L. Moyer**. 2008. Microbial spatial variability within an iron-silica-manganese-rich hydrothermal mound located off-axis at the Cleft Segment, Juan de Fuca Ridge. J. Geomicrobiol. In review.

Curtis, A. C., C. G. Wheat, P. Fryer, and **C. L. Moyer**. 2008. Mariana forearc serpentine mud volcanos harbor novel communities of extremophilic *Archaea*. ISME J. In review.

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.

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.

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.

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. Astrobiol. 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, p. 917-924. *In* S. A. Levin, R. Colwell, G. Daily, J. Lubchenco, H. A. Mooney, E.-D. Schulze, G. D. Tilman (eds.), Encyclopedia of biodiversity, Vol. 4. Academic Press, San Diego.

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. II. 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.

Moyer, C. L., J. M. Tiedje, F. C. Dobbs, and D. M. Karl. 1996. A computer-simulated restriction fragment length polymorphism analysis of bacterial small subunit rRNA genes: Efficacy of selected tetrameric restriction enzymes for studies of microbial diversity in nature. Appl. Environ. Microbiol. 62:2501-2507.

Moyer, C. L., F. C. Dobbs, and D. M. Karl. 1995. Phylogenetic diversity of the bacterial community from a microbial mat at an active, hydrothermal vent system, Loihi Seamount, Hawaii. Appl. Environ. Microbiol. 61:1555-1562.

Moyer, C. L., F. C. Dobbs, and D. M. Karl. 1994. Estimation of diversity and community structure through restriction fragment length polymorphism distribution analysis of bacterial 16S rRNA genes from a microbial mat at an active, hydrothermal vent system, Loihi Seamount, Hawaii. Appl. Environ. Microbiol. 60:871-879.

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

Moyer, C. L., C. W. Mordy, D. J. Carlson, and R. Y. Morita. 1990. Ethidium homodimer used for the sensitive measurement of DNA and RNA of a psychrophilic marine bacterium grown at different growth rates during starvation-survival. J. Microbiol. Meth. 12:75-81.

Griffiths, R. P., **C. L. Moyer**, B. A. Caldwell, C. Ye, and R. Y. Morita. 1990. Long-term starvation-induced loss of antibiotic resistance in bacteria. Microb. Ecol. 19:251-257.

Morita, R. Y., and **C. L. Moyer**. 1989. Bioavailability of energy and the starvation state, p. 75-79. *In* T. Hattori, Y. Ishida, Y. Maruyama, R. Y. Morita, and A. Uchida (eds.), Recent Advances in Microbial Ecology. Proceedings of the 5th International Symposium on Microbial Ecology. Japan Scientific Societies Press, Tokyo, Japan.

Moyer, C. L., and R. Y. Morita. 1989. Effect of growth rate and starvation-survival on cellular DNA, RNA, and protein of a psychrophilic marine bacterium. Appl. Environ. Microbiol. 55:2710-2716.

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.

Moyer, C. L., and R. Y. Morita. 1989. Effect of growth rate and starvation-survival on the viability and stability of a psychrophilic marine bacterium. Appl. Environ. Microbiol. 55:1122-1127.

Non-Refereed Scientific Publications:

Shipboard Scientific Party. 2002. Site 1200, p. 1-173. *In* M. H. Salisbury, M. Shinohara, C. Richter, E. Araki, S. R. Barr, M. D'Antonio, S. M. Dean, B. Diekmann, K. M. Edwards, P. B. Fryer, P. J. Gaillot, W. S. Hammond III, D. Hart, N. Janszczak, S. C. Komor, M. B. Kristensen, J. P. Lockwood, M. J. Mottl, **C. L. Moyer**, K. Nakahigashi, I. P. Savov, X. Su, K.-Y. Wei, and T. Yamada, Proc. ODP, Initial Reports, 195. Ocean Drilling Program, Texas A&M University, College Station, TX.

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.

Published Presentations and Abstracts:

C. Moyer and R. Davis. 2008. Extreme spatial and temporal variability of hydrothermal microbial mat communities along the Mariana Island Arc and southern Mariana Backarc system. Abstr. 12th International Symposium on Microbial Ecology.

C. Moyer, R. Davis, D. Stakes, and G. Wheat. 2008. Microbial spatial variability within an iron-silica-manganese-rich hydrothermal mound located off-axis at the Cleft Segment, Juan de Fuca Ridge. Abstr. 12th International Symposium on Microbial Ecology.

Davis, R., **C. Moyer**, A. Curtis, A. Han, H. Staudigel, and B. Tebo. 2008. Microbial diversity in an ultra-think Mn-Fe oxide encrusted microbial mat from the 5000 meter-deep off-axis hydrothermal vent 'Ula Nui', Hawaii. Abstr. 12th International Symposium on Microbial Ecology.

Moyer, C. L., R. E. Davis, A. C. Curtis, and A. C. Rassa. 2007. Spatial and temporal variability in microbial communities from pre- and post-eruption microbial mats collected from Loihi Seamount, Hawaii: an update. Abstr. Fall Mtg. Eos. Trans. AGU 88: B23G-02.

Rassa, A. C., S. M. McAllister, S. A. Safran, and **C. L. Moyer**. 2007. Zeta-*Proteobacteria* dominate the formation of microbial mats in low-temperature hydrothermal vents at Loihi Seamount. Abstr. Fall Mtg. Eos. Trans. AGU 88: B33A-0846.

Davis, R. E., **C. L. Moyer**, A. C. Curtis, H. Staudigel, and B. M. Tebo. 2007. Bacterial diversity and spatial variability found in a Mn-Fe oxide encrusted microbial mat from the 5000 meter-deep hydrothermal vent 'Ula Nui, Hawaii. Abstr. Fall Mtg. Eos. Trans. AGU 88: B33A-0847.

Rouxel, O. J., K. J. Edwards, **C. L. Moyer**, and C. G. Wheat. 2007. Biogeochemical cycling of iron isotopes at Loihi Seamount. Abstr. Fall Mtg. Eos. Trans. AGU 88: B23G-04.

Edwards, K. J., **C. L. Moyer**, C. Chan, D. Emerson, and G. Horn. 2007. The Loihi Seamount microbial observatory: An extremely common deep-sea habitat for Fe-oxidizing bacteria. Abstr. Goldschmidt conference.

Glazer, B. T., R. A. Briggs, D. B. Nuzzio, Z. Heshiki, K. J. Edwards, **C. L. Moyer**, D. Emerson, B. M. Tebo, and H. Staudigel. 2007. *In situ* redox chemistry of hydrothermal fluids at the Loihi Seamount microbial observatory. Abstr. Goldschmidt conference.

Bailey, B., L. Sudek, A. Templeton, H. Staudigel, B. Tebo, **C. Moyer**, and R. Davis. 2006. Basaltic substrate composition affects microbial community development and acts as a source of nutrients in the deep biosphere. Abstr. Fall Mtg. Eos. Trans. AGU 87: V13A-0648.

Moyer, C. L. 2006. Spatial and temporal variability in microbial mat communities from pre- and post-eruption Loihi Volcano: A microbial observatory for the study of neutrophilic iron-oxidizing bacteria. Abstr. Northwest Branch Amer. Soc. Microbiol. (Invited).

Emerson, D., J. Rentz, R. Davis, and **C. Moyer.** 2006. Role of a unique population of lithotrophic, Fe-oxidizing bacteria in forming microbial Fe-mats at the Loihi Seamount. Abstr. AbSciCon. Astrobiol. 6:148-149.

Moyer, C. L. 2005. FeMO: A microbial observatory for the study of neutrophilic iron-oxidizing bacteria and the microbial iron cycle. Abstr. Fall Mtg. Eos. Trans. AGU 86:V44A-08 (Invited).

Bailey, B., A. Templeton, L. Haucke, H. Staudigel, B. M. Tebo, and **C. L. Moyer**. 2005. Iron oxidizing and reducing bacteria as contributors to basaltic glass colonization and subsequent weathering in active hydrothermal systems on Loihi and Vailulu'u Seamounts. Abstr. Fall Mtg. Eos. Trans. AGU 86:V51C-1505.

Davis, R. E., T. Carney, K. Leal, and **C. L. Moyer**. 2005. Spatial and temporal variability in microbial communities from pre- and post-eruption microbial mats collected from Loihi Seamount, Hawaii. Abstr. Fall Mtg. Eos. Trans. AGU 86:V51C-1508.

Emerson, D., J.A. Rentz, and **C. Moyer**. 2005. Role of a unique population of lithotrophic, Fe-oxidizing bacteria in forming microbial Fe-mats at the Loihi Seamount. Abstr. Fall Mtg. Eos. Trans. AGU 86:V51C-1501.

Davis, R. E., and **C. L. Moyer**. 2005. Extreme spatial variability in microbial mat communities from submarine hydrothermal vents located at multiple volcanos along the Mariana Island Arc. Abstr. Fall Mtg. Eos. Trans. AGU 86:V51C-1509.

Curtis, A. C., and **C. L. Moyer**. 2005. Mariana forearc serpentine mud volcanos harbor novel communities of extremophilic *Archaea*. Abstr. Fall Mtg. Eos. Trans. AGU 86:V51C-1510.

Emerson, D., J.A. Rentz, and **C. Moyer**. 2005. Microbial iron oxidation at the Loihi Seamount: Parallels with a late Archaean ocean? Abstr. Gordon Research Conference, Origins of Life, Ventura, CA (Invited).

Davis, R. E., and **C. L. Moyer**. 2004. Epsilon-proteobacterial dominance in microbial mats located at the Champagne hydrothermal vent site on NW Eifuku Volcano, Mariana Arc. Abstr. Fall Mtg. Eos. Trans. AGU 85:V41B-1388.

Moyer, C. L. 2004. Microbial mats from the southern most portion of the Mariana Backarc spreading center at 12.57°N. Abstr. RIDGE 2000-InterRidge Joint Theoretical Inst. (Invited).

Wheat, C. G., P. Fryer, S. Hulme, N. Becker, A. Curtis, and **C. L. Moyer.** 2003. Hydrothermal venting in the southern most portion of the Mariana Backarc spreading center at 12.57°N. Abstr. Fall Mtg. Eos. Trans. AGU 84:T32A-0920.

Moyer, C. L. 2003. Spatial and temporal transitions between iron- and sulfur-oxidizing bacteria in response to seismic activity and volcanic eruptions at two different vent systems. Abstr. Ann. ASLO Aquatic Sciences Mtg. p. 96 (Invited).

Moyer, C. L., and J. J. Engebretson. 2002. Colonization by pioneer populations of ε-*Proteobacteria* and community succession at mid-ocean ridge hydrothermal vents as determined by T-RFLP analysis. Abstr. Fall Mtg. Eos. Trans. AGU 83:V11C-12 (Invited).

Embley, R. W., E. T. Baker; J. Baross, A. E. Bates, Y. C. Beaudoin, A. M. Bradley, D. A. Butterfield, W. W. Chadwick Jr., B. L. Cousens, K. M. Gillis, M. Jakuba, K. Juniper, R. J. Leveille; M. Lilley, J. E. Lupton, S. G. Merle, K. Nakamura, A. Metaxas, **C. L. Moyer**, J. E. Resing, S. D. Scott, M. A. Tivey, V. Tunnicliffe, A. Williams-Jones, and D. R. Yoerger. 2002. Rediscovery and Exploration of Magic Mountain, Explorer Ridge, NE Pacific. Abstr. Fall Mtg. Eos. Trans. AGU 83:T11C-1264.

Moyer, C. L., and K. S. Lynch. 2002. Bacterial community structure and phylogenetic diversity of hydrothermal vents at Axial Volcano, Juan de Fuca Ridge. Abstr. Ocean Sciences Mtg. Eos. Trans. AGU 83:OS41L-06 (Invited).

Wheat, C. G., H. Jannasch, J. Plant, D. Butterfield, J. Lupton, **C. Moyer**, M. Tivey, and R. Embley. 2001. Continuous monitoring of hydrothermal vent chemistry: A window to subseafloor processes. Abstr. Fall Mtg. Eos. Trans. AGU 82:OS21B-0448.

Moyer, C. L. 2000. Patterns in molecular evolution as seen at hydrothermal vents. Abstr. Ann. Mtg. Geol. Soc. Amer. p. A-5 (Invited).

Kleinkauf, P. S., and **C. L. Moyer**. 2000. Bacterial community structure and diversity of hydrothermal vents at Guaymas Basin, Mexico. Abstr. Ann. Mtg. Amer. Soc. Microbiol. p. 454.

Emerson, D., C. Bradburne, and **C. Moyer**. 2000. Abundant Fe-oxidizing bacteria at the Loihi hydrothermal vent ecosystem. Abstr. Ann. Mtg. Amer. Soc. Microbiol. p. 388.

Rademaker, J. L. W., R. R. Fulthorpe, **C. L. Moyer**, M. H. Schultz, F. J. de Bruijn, and J. M. Tiedje. 2000. Taxonomic characterization of strains from a microbial endemism study of 3-chlorobenzoate mineralizers. Abstr. Voorjaarsvergadering NVMM/NVvM, Veldhoven, The Netherlands.

Embley, R. W., D. Butterfield, K. Roe, M. Stapp, W. W. Chadwick, L. Evans, S. Merle, J. Baross, J. Kaye, J. Huber, G. Massoth, J. Gendron, S. Maenner, V. Tunnicliffe, M. Tsurimi, J. Marcus, K. Juniper, D. Grelon, C. Levasque, **C. Moyer**, K. Pelletreau, G. Wheat, S. Scott, J. Chadwick, M. Perfet, E. Guenther, B. McLaughin-West, J. Getsiv, and E. Williamson. 1998. Time series investigations of an active volcano: NeMO project. Abstr. Fall Mtg. Eos. Trans. AGU 79:V71A-06.

Torres, M. E., K. Brown, S. Colbert, R. W. Collier, M. A. deAngelis, D. E. Hammond, K. Heeschen, D. Hubbard, J. McManus, **C. Moyer**, G. Rehder, A. Trehu, M. Tryon, P. Whaling. 1998. Active gas discharge resulting from decomposition of gas hydrates on Hydrate Ridge, Cascadia Margin. Abstr. Fall Mtg. Eos. Trans. AGU 79:OS22B-03.

Sansone, F. J., B. P. Midson, C. G. Wheat, J. A. Resing, **C. L. Moyer**, H. W. Jannasch. 1998. Geochemical evolution of Loihi following the 1996 seismic event. Abstr. Fall Mtg. Eos. Trans. AGU 79:V42E-05.

Emerson, D., and **C. L. Moyer**. 1998. Isolation and characterization of lithotrophic neutralophilic Fe-oxidizing bacteria from Pacific Ocean hydrothermal vents. Abstr. 8th International Symposium on Microbial Ecology. p. 146.

Tiedje, J. M., M. A. Petrova, and **C. L. Moyer**. 1998. Phylogenetic diversity of *Archaea* from ancient Siberian permafrost. Abstr. 8th International Symposium on Microbial Ecology. p. 323.

Triplett, E. W., M. A. Newton, **C. L. Moyer**, M. K. Chelius, and A. D. Kent. 1998. Merging statistical and molecular analyses for the estimation of the SSU rRNA sequence of the last common ancestor of the tree domains of life on earth. Abstr. 8th International Symposium on Microbial Ecology. p. 327.

Moyer, C. L., J. M. Tiedje, F. C. Dobbs, and D. M. Karl. 1998. Diversity of deep-sea hydrothermal vent *Archaea* from Loihi Seamount, Hawaii. Abstr. Ocean Sciences Mtg. OS12C-11 (Invited).

Tiedje, J. M., **C. L. Moyer**, M. A. Petrova, D. Emerson, and D. L. Gilichinski. 1997. Microorganisms of ancient Siberian permafrost sediments and Pacific hydrothermal vents: Common and novel features. Abstr. SPIE International Symposium on Optical Science, Engineering, and Instrumentation, SD97.

Moyer, C. L., N. K. Hobbs, and D. Emerson. 1997. Isolation and molecular phylogeny of cosmopolitan iron-oxidizing bacteria from several aquatic habitats. Abstr. Ann. Mtg. Amer. Soc. Microbiol. p. 384.

Petrova, M. A., **C. L. Moyer**, and J. M. Tiedje. 1997. Microbial community structure and diversity of ancient Siberian permafrost sediments. Abstr. Ann. Mtg. Amer. Soc. Microbiol. p. 414.

Clement, S. L., **C. L. Moyer**, J. L. W. Rademaker, M. H. Schultz, and F. J. DeBruijn. 1997. Microbial endemism among populations of 3-chlorobenzoate mineralizers. Abstr. Ann. Mtg. Amer. Soc. Microbiol. p. 414.

Tiedje, J. M., K. Nüsslein, J. -Z. Zhou, B. Xia, **C. L. Moyer**, and F. Dazzo. 1997. The vast world of microbial diversity. Abstr. 5th JST International Symposium, New Frontiers in Microbiology. p. 9-11.

Lutz, R., R. Vrijenhoek, G. Levai, T. Shank, E. Suess, P. Linke, G. Bohrmann, H. Sahling, N. v Mirbach, J. Greinert, D. Orange, N. Maher, and **C. Moyer**. 1996. Biological communities and geological features associated with methane/sulfide seepage at 4960 m in the Aleutian subduction zone: a video presentation. Abstr. Fall Mtg. Eos. Trans. AGU 77:OS21B-10.

Orange, D. L., N. Maher, G. Bohrmann, E. Suess, P. Linke, H. Sahling, N. v. Mirbach, A. Daehlmann, J. Greinert, R. Lutz, G. Levai, and **C. Moyer**. 1996. Fluid seepage at the toe of the Aleutian accretionary complex - Observations from the longest and deepest ROPOS dive yet. Abstr. Fall Mtg. Eos. Trans. AGU 77:OG31C-10.

Petrova, M. A., **C. L. Moyer**, and J. M. Tiedje. 1996. Characterizations of SSU rRNA clones from DNA of ancient buried permafrost sediments of Siberia. Abstr. Microbial Ecol. Forum, Center for Microbial Ecology. p. 132-133.

Moyer, C. L., S. J. Flynn, S. Jones, K. Santiago, and J. M. Tiedje. 1996. Characterizations of bacterial 3-chlorobenzoate degrading isolates from pristine soils of South Africa. Abstr. Microbial Ecol. Forum, Center for Microbial Ecology. p. 122-123.

Mottl, M. J., G. Wheat, D. Kadko, F. Sansone, G. Massoth, A. Grehan, **C. Moyer**, E. Davis, E. Baker, R. Feely, M. Lilley, J. Gendron, G. Lebon, E. Olsen, S. Walker, and N. Becker. 1995. Warm springs discovered on 3.4 Ma-old crust, Baby Bare Outcrop, eastern flank of the Juan de Fuca Ridge; FlankFlux 95. Abstr. Fall Mtg. Eos. Trans. AGU 76:S42B-01.

Grehan, A. J., **C. Moyer**, and K. Juniper. 1995. Enhanced biological production on Baby Bare, a basalt escarpment on the flank of Juan de Fuca Ridge. Abstr. Fall Mtg. Eos. Trans. AGU 76:S42B-05.

Moyer, C. L., F. C. Dobbs, and D. M. Karl. 1995. The molecular phylogeny of deep-sea hydrothermal vent *Archaea*. Abstr. Ann. Mtg. Amer. Soc. Microbiol. p. 360.

Moyer, C. L., L. Campbell, D. M. Karl, and J. Wilcox. 1993. Restriction fragment length polymorphism (RFLP) and DNA sequence analysis of PCR-generated clones to assess diversity of picoeukaryotic algae in the subtropical central North Pacific ocean (station ALOHA). Abstr. Summer Mtg. Amer. Soc. Limnol. Oceanogr.

Moyer, C. L., F. C. Dobbs, and D. M. Karl. 1993. Estimation of biodiversity and community structure through RFLP distribution analysis of 16S rRNA genes from a bacterial mat at an active, hydrothermal vent system, Loihi Seamount, Hawaii. Abstr. Hawaii Branch Amer. Soc. Microbiol.

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.

Morita, R. Y., and **C. L. Moyer**. 1989. Bioavailability of energy and the starvation state. Abstr. 5th International Symposium on Microbial Ecology. p. 8.

Caldwell, B. A., C. Ye., R. P. Griffiths, **C. L. Moyer**, and R. Y. Morita. 1989. Physiological changes and plasmid expression in *Serratia marcescens* during long-term starvation-survival. Abstr. Ann. Mtg. Amer. Soc. Microbiol. p. 241.

Moyer, C. L., and R. Y. Morita. 1988. Growth rate effects on viability, direct counts, cell volume, and DNA, RNA, or protein per cell during starvation-survival of a marine psychrophilic Vibrio. Abstr. Northwest Branch Amer. Soc. Microbiol. p. 15.

Grants and Contracts Awarded (* indicates currently active):**

*** Collaborative Research: Borehole Studies of ODP Site 1200, South Chamorro Seamount: A Window into Active Serpentinite Mud Volcanism.
Agency: NSF
Active dates: 10/07 to 09/09
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: 07/07 to 06/10
CoPI's: D. Leaf, M. Brodhagen, B. Miner, S. Schulze (WWU).

*** 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 08/09
CoPI's: D. Emerson (Bigelow), K. Edwards (USC), H. Staudigel (SIO) and B. Tebo (OHSU).

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 (ODP)
Active Dates: 05/01 to 02/05

Mariana Convergent Margin: Geochemical, Tectonic and Biological Processes in the Intermediate Depths of an Active Subduction factory.
Agency: Ocean Drilling Program (ODP)
Active Dates: 04/01 to 05/01 (To participate on Leg 195A, drilling S. 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 Taught‡):

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 405/545G	Microbial Ecology‡
Biology 406	General Oceanography with Lab
Biology 432	Evolutionary Biology‡
Biology 445/545V	Molecular Phylogeny & Microbial Diversity‡
Biology 496	Professional Work Experience (Mentor)
Biology 498	Teaching Practicum (Mentor)
Biology 499/494	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 500	Advanced topics in Bioremediation
Biology 571	Advanced topics in Cellular & Molecular Biology
Biology 508	Hydrothermal Vent Biology and Ecology‡

Graduate Student Training:

Sean McAllister, M.S. Candidate, Biology, WWU.

Mark Price, M.S. Candidate, Biology, WWU.

Richard Davis, M.S. Candidate, Biology, WWU.
WWU Biology Dept., Outstanding Teaching Excellence Award.

Allen Rassa, M.S. Biology, WWU, 2008.
Thesis title: 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 title: 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 title: 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 title: 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 title: The Molecular Evolution of two strains of *Helicobacter pylori*.
Nominated by WWU Graduate School for the WAGS/UMI Distinguished Thesis Award.
WWU Biology Dept., Outstanding Graduate Thesis Accomplishment Award.

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

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

Recent Collaborators:

David Emerson (Bigelow), Bradley Tebo (OHSU), Hubert Staudigel (SIO), Katrina Edwards (USC), Patricia Fryer, Mike Mottl and Frank Sansone (UH), Geoffrey Wheat (UAF), Robert Embley (NOAA-Vents), Ken Takai and Fumio Inagaki (JAMSTEC), and John Baross (UW).

Graduate & Postgraduate Advisors:

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