

THOMAS M. GIHRING
Curriculum Vitae

Education

Ph.D.	Florida State University (Biogeochemical Oceanography)	Expected 2009
M.S.	University of Wisconsin - Madison (Geology)	2001
B.S.	University of Wisconsin - Madison (Geology)	1998

Research Experience

Graduate Research Assistant	Florida State University Supervisor: Dr. Joel Kostka	2004 -
Graduate Research Fellow	NOAA National Estuarine Research Reserve System	2005 - 2008
Scientist	Pacific Northwest National Laboratory Supervisor: Dr. Jim Fredrickson	2003 - 2004
Post-Graduate Researcher	Pacific Northwest National Laboratory Mentor: Dr. Jim Fredrickson	2001 - 2003
Graduate Research Assistant	The University of Wisconsin - Madison Supervisor: Dr. Jill Banfield	1999 - 2001
Senior Thesis Independent Research Student	The University of Wisconsin - Madison Supervisor: Dr. Jill Banfield	1997 - 1998

Manuscripts in Preparation or Submission

1. **Gihring TM**, Humphrys M, Mills HJ, Huettel M, Kostka JE. Identification of phytodetritus degrading microbial communities in sublittoral Gulf of Mexico sands. *Limnol. Oceanogr.* (submitted)
2. **Gihring TM**, Lavik G, Kuypers MM, Kostka JE. Rates and mechanisms of nitrogen removal from Arctic marine sediments. (in prep.)
3. **Gihring TM**, Alexander CR, Riggs AA, Huettel M, Dittmar T, Chanton JP, Kostka JE. Denitrification, nitrogen burial, and tidal nitrogen exchange in an oligohaline marsh, Apalachicola, Florida. (in prep.)
4. **Gihring TM**, Riggs AA, Huettel M, Kostka JE. Rates and controls of benthic nitrogen cycling in sublittoral Gulf of Mexico permeable sediments. (in prep.)
5. Prakash O, Green SJ, **Gihring TM**, Jardine P, Watson DB, Kostka JE. Denitrification activity and novel denitrifying bacteria isolated from a terrestrial subsurface aquifer exposed to mixed contamination. (in prep.)

Peer-Reviewed Publications

1. Chivian D, Brodie EL, Alm EJ, Culley DE, Dehal PS, DeSantis TZ, **Gihring TM**, Lapidus A, Lin L-H, Lowry SR, Moser DP, Richardson P, Southam G, Wanger G, Pratt LM, Andersen GL, Hazen TC, Brockman FJ, Arkin AP, Onstott TC. (2008) Environmental Genomics Reveals a Single-Species Ecosystem Deep Within the Earth. *Science* 322:275.
2. Akob DM, Mills HJ, **Gihring TM**, Kerkhof L, Stucki JW, Anastacio AS, Chin K-J, Kuesel K, Palumbo AV, Watson DB, Kostka JE. (2008) Functional Diversity and Electron Donor Dependence of Microbial Populations Capable of U(VI) Reduction in Radionuclide-Contaminated Subsurface Sediments. *Appl. Environ. Microbiol.* 74:3159.
3. **Gihring TM**, Moser DP, Lin L-H, Davidson M, Onstott TC, Morgan L, Milleson M, Kieft TL, Trimarco E, Balkwill DL, Dollhopf ME. (2006) The distribution of microbial taxa in the subsurface water of the Kalahari Shield, South Africa. *Geomicrobiol. J.* 23:415.
4. Lin L-H, Hall JM, Onstott TC, **Gihring TM**, Lollar B, Boice E, Pratt LM, Lippmann-Pipke J, Bellamy RES. (2006) Planktonic Microbial Communities Associated with Fracture-Derived Groundwater in a Deep Gold Mine of South Africa. *Geomicrobiol. J.* 23:475.
5. Onstott TC, Lin L-H, Davidson M, Mislouack B, Borcsik M, Hall J, Slater G, Ward J, Sherwood Lollar B, Lippmann-Pipke J, Boice E, Pratt LM, Piffner S, Moser DP, **Gihring TM**, Kieft T, Phelps TJ, van Heerden E, Litthaur D, DeFlaun M, Rothmel R. (2006) The origin and age of biogeochemical trends in deep fracture water of the Witwatersrand Basin, South Africa. *Geomicrobiol. J.* 23:369.
6. Sherwood-Lollar B, Lacrampe-Couloume G, Slater GF, Ward J, Moser DP, **Gihring TM**, Lin L-H, Onstott TC. (2006) Unravelling abiogenic and biogenic sources of methane in the Earth's deep subsurface. *Chemical Geology* 226:328.
7. Moser DP, **Gihring TM**, Brockman FJ, Fredrickson JK, Balkwill DL, Dollhopf ME, Sherwood Lollar B, Pratt LM, Boice E, Southam G, Wanger G, Welty AT, Baker BJ, Piffner SM, Onstott TC. (2005) *Desulfotomaculum* spp. and *Methanobacterium* spp. Dominate a 4-5 km Deep Fault. *Appl. Environ. Microbiol.* 71:8773.
8. Kieft T, McCuddy S, Onstott TC, Davidson M, Lin L-H, Mislouack B, Pratt L, Boice E, Lollar B, Lippmann-Pipke J, Piffner S, Phelps T, **Gihring TM**, Moser D, Heerden A. (2005) Geochemically Generated, Energy-Rich Substrates and Indigenous Microorganisms in Deep, Ancient Groundwater. *Geomicrobiol. J.* 22:325.
9. Lin L-H, Hall J, Lippmann-Pipke J, Ward JA, Sherwood Lollar B, DeFlaun M, Rothmel R, Moser D, **Gihring TM**, Mislouack B, Onstott TC. (2005). Radiolytic

- H₂ in continental crust: Nuclear power for deep subsurface microbial communities. *Geochem. Geophys. Geosyst.* 6, Q07003.
10. Druschel GK, Baker BJ, **Gihring TM**, Banfield JF. (2004) Acid mine drainage biogeochemistry at Iron Mountain, California. *Geochem. Trans.* 5:13.
 11. **Gihring TM**, Bond PL, Peters SC, Banfield JF. (2003) Arsenic resistance in the archaeon "*Ferroplasma acidarmanus*": new insights into the structure and evolution of the *ars* genes. *Extremophiles* 7:123.
 12. **Gihring TM** and Banfield JF. (2001) Arsenite oxidation and arsenate respiration by a new *Thermus* isolate. *FEMS Microbiology Letters* 204:335.
 13. **Gihring TM**, Druschel GK, McKlesky RB, Hamers RJ, Banfield JF. (2001) Rapid arsenite oxidation by *Thermus aquaticus* and *Thermus thermophilus*: field and laboratory investigations. *Environ. Sci. Technol.* 35:3857.
 14. Edwards KJ, Bond PL, **Gihring TM**, Banfield JF. (2000) An archaeal iron-oxidizing extreme acidophile important in acid mine drainage. *Science* 287:1796.
 15. Edwards KJ, **Gihring TM**, Banfield JF. (1999) Interdependence of microbial populations and environmental conditions at an extreme acid mine drainage environment. *Appl. Environ. Microbiol.* 65:3627.
 16. Edwards KJ, Goebel BM, Rodgers TR, Schrenk MO, **Gihring TM**, Cardona MC, Hu B, McGuire MM, Hamers RJ, Pace NR, Banfield JF. (1999) Geomicrobiology of pyrite (FeS₂) dissolution: A case study at Iron Mountain, California. *Geomicrobiol. J.* 16:155.

Teaching and Mentoring Experience

- Guest lectures in *Elementary Oceanography* and *Current Issues in Environmental Science*. Florida State University (2007-2008)
- Instructor to undergraduate laboratory assistants. Florida State University (2006 - 2008)
- Mentor, National Science Foundation Research Experiences for Undergraduates workshop: "Biogeochemical Educational Experiences - South Africa" (2004)
- Co-advisor to a Senior Integrative Thesis student at Carleton College (2003)
- Instructor to high school and undergraduate interns, Pacific Northwest National Laboratory (2002 - 2003)
- Teaching Assistant, The University of Wisconsin - Madison (2000 - 2001)

Invited Lectures and Outreach

1. The Apalachicola National Estuarine Research Reserve Public Lecture Series sponsored by the Apalachicola Bay & River Keeper Inc. (2008) Invited talk.
2. Florida State University Coastal and Marine Laboratory. (2006) Public Open House laboratory demonstrations.
3. James Rickards High School, Tallahassee, Florida. (2005) Career Day presentation.
4. Florida-Georgia Alliance for Minority Participation Project, Symposium on Diversity in the Earth, Ocean, and Atmospheric Sciences. Florida State University. (2004) Oral presentation.
5. American Society for Microbiology General Meeting, New Orleans, LA. (2004) Invited talk.
6. Thermal Biology Institute, Montana State University. (2004) Invited seminar.

Conference Presentations

1. ASLO/AGU Ocean Sciences Meeting, Orlando, FL. (2008) "Quantification of Nitrogen Removal and Temperature Regulation of Microbial Communities that Mediate Denitrification and Anammox in Permeable Marine Sediments". Oral.
2. Estuarine Research Federation, 19th Biennial Conference, Providence, RI. (2007) "Microbial Populations Mediating Phytodetritus Degradation and Denitrification in Shallow Marine Permeable Sediments". Oral.
3. Gordon Research Conference on Permeable Sediments, Colby College, ME. (2006) "Direct rate measurements of inorganic nitrogen flux at the sediment-water interface in shallow marine permeable sediments". Poster.
4. American Society for Microbiology General Meeting, Atlanta, GA. (2005) "The Isolation and Characterization of Novel, Metal-Reducing Microorganisms From Uranium- and Nitrate-Contaminated Subsurface Sediments". Poster.
5. American Society for Microbiology General Meeting, Washington D.C. (2003) "Isolation of a Deeply-Branching Iron-Reducing Bacterium from Ancient Deep-Subsurface Fluids". Poster.
6. American Geophysical Union Fall Meeting, San Francisco, CA. (2002) "Subsurface Microbial Communities and Geochemistry Within a Vertical Transect of a Uranium-Contaminated Aquifer". Poster.
7. American Geophysical Union Fall Meeting, San Francisco, CA. (2001) "Genomic Analysis of the Archeon *Ferroplasma acidarmanus*. New Insights into the Evolution of Arsenic Resistance". Oral.

8. American Geophysical Union Fall Meeting, San Francisco, CA. (2000)
"Rapid Arsenite Oxidation by *Thermus aquaticus*". Oral.
9. Geological Society of America Annual Meeting, Denver, CO. (1999)
"Microbial Interactions with Arsenopyrite During Oxidative Dissolution".
Oral.
10. V.M. Goldschmidt Conference, Cambridge, MA." (1999)
"Hyperthermophilic Microorganisms in Arsenic-rich Hot Springs". Poster.
11. Geological Society of America Annual Meeting, Toronto, Ontario. (1998)
"Microbial Populations and Geochemical Conditions at an Extreme Acid
Mine Drainage Environment". Oral.

Awards, Professional Membership, and Service

- National Oceanic and Atmospheric Administration National Estuarine Research Reserve System Graduate Fellowship (2005 - 2008)
- Ph.D. research featured in Council of Florida Graduate Deans newsletter (2008)
- US-EU Task Force on Biotechnology Research Transatlantic Fellowship, to fund 9-week visit to the Max Planck Institute for Marine Microbiology (2007)
- Florida State University 'Featured Student' - selected as 1 of 22 graduate students for website biographical profiles of top FSU students (2006)
- Outstanding Performance Award, Pacific Northwest National Laboratory (2003)
- Best Student Research Paper Award (shared with K. Edwards), Department of Geology & Geophysics, The University of Wisconsin – Madison (2000)
- Wasatch-Uinta Field Camp Scholarship, Department of Geology & Geophysics, The University of Wisconsin – Madison (1998)
- US Patents Nos. 6764847 and 6589772
- Member: American Society for Limnology and Oceanography, American Society for Microbiology, and The Coastal and Estuarine Research Federation
- Peer reviewer for *Archaea*, *Environ Sci Technol*, *FEMS Microbiol Ecol*, *JGR-Biogeosciences*, *Mar Freshwater Res*, and *Microb Ecol*