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EDUCATION:

B.Sc., 1983, Univ. of CA, Berkeley, Marine Science/Biochemistry, Berkeley, CA
Ph. D., 1991, Univ. of CA, San Diego/Scripps Institution of Oceanography, La Jolla, CA.
Marine Biology

PROFESSIONAL EXPERIENCE:

Professor, Marine Microbiology, Institute of Marine and Coastal Sciences, Rutgers University, 2008-Present
Associate Professor, Marine Microbiology, Institute of Marine and Coastal Sciences, Rutgers University, 2001-2008
Assistant Professor, Marine Microbiology, Institute of Marine and Coastal Sciences, Rutgers University, 1994-2001

FUNDED PROJECTS (7 of 27):

NSF-International Polar Year- Microbial subzero activity and its impact on biogeochemical processes in frozen tundra and permafrost. \$539K RU portion. 2008-2011. (PI-collaborative research).
DOE- Integrated Field-Scale Subsurface Research. Microbiological, Geochemical and Hydrologic Processes Controlling Uranium Mobility: An Integrated Field-Scale Subsurface Research Challenge Site at Rifle, Colorado. \$1000K. RU portion 2007-2012. (PI-collaborative research).
DOE-ERSP. Structure and function of Subsurface Microbial Communities Affecting Radionuclide Transport and Bio-Immobilization. \$360K. Rutgers portion. 2007-2010. (PI- of collaborative research).
DOE-BIOMP. Active Bacteria in the Orinoco River Plume. \$1,287 K. 2006-2009. (PI)
DOD-SERDP. Quantifying Enhanced Microbial Dehalogenation Impacting the Fate and Transport of Organohalide Mixtures in Contaminated Sediments. \$1,883K. 2006-2010 (co-PI).
NSF-Microbially mediated cycling of organohalides in marine sponges. \$610 K. 2005-2008. (co-PI).
NIH/USDA/NSF. Building New Pharmaceutical Capabilities in Central Asia. \$2,970K. 2003-2008. (co-PI).

PUBLICATIONS (10 of 51):

Nelson, J. D., Boehme, S. E., Reimers, C. E., Sherrell, R. M., and **L. J. Kerkhof**. 2008. Temporal patterns of microbial community structure in the Mid-Atlantic Bight. *FEMS Micro. Ecol.* 65: 484-493
Mills, H. J., Hunter, E., Humphrys, M., **Kerkhof, L.**, McGuinness, L., Huettel, M. and J. E. Kostka. 2008. Characterization of Nitrifying, Denitrifying, and Overall Bacterial Communities in Permeable Marine Sediments of the Northeastern Gulf of Mexico. *Appl. Environ. Microbiol.* 74: 4440-4453
Kerkhof, L. J. and M. M Häggblom. 2007. Detecting Active Bacteria Involved in Biodegradation in the Environment. In: Diaz, E. (eds). *Microbial Biodegradation: Genomics and Molecular Biology*. Caister Academic Press. Norfolk, UK, pp. 55-71
Wawrik, B., D. Kutliev, U. Abdivasievna, J. Kukor, G. Zylstra, and **L. Kerkhof**. 2007. Biogeography of Actinomycete Communities and Type II Polyketide Synthase Genes in Soils Collected in New Jersey and Central Asia. *Appl. Environ. Microbiol.* 73: 2982-2989

- McGuinness, L. M., Salganik, M., Vega, L., Pickering, K. D. and **Lee J. Kerkhof**. 2006. Replicability of Bacterial Communities in Denitrifying Bioreactors as Measured by PCR/TRFLP Analysis. *Env. Science and Tech.* 40: 509-515.
- Gallagher, E. L. McGuinness, C. Phelps, L. Y. Young, and **L. J. Kerkhof**. 2005. ¹³C-carrier DNA shortens the incubation time needed to detect benzoate utilizing, denitrifying bacteria using stable isotope probing (SIP). *Appl. Environ. Microbiol.* 71: 5192–5196
- Perez-Jimenez, J. R. and **L. J. Kerkhof**. 2005. Phylogeography of sulfate-reducing bacteria among disturbed sediments disclosed by analysis of the dissimilatory sulfite reductase genes (*dsrAB*). *Appl. Environ. Microbiol.* 71: 1004-1011
- Fennell, D. E., S. K. Rhee, Y. B. Ahn, M. M. Häggblom, and **L. J. Kerkhof**. 2004. Detection and Characterization of a Dehalogenating Microorganism by Terminal Restriction Fragment Length Polymorphism Fingerprinting of 16S rRNA in a Sulfidogenic, 2-Bromophenol-Utilizing Enrichment. *Appl. Environ. Microbiol.* 70: 1169-1175
- Vetriani, C., Tran, H. V., and **L. Kerkhof**. 2003. Fingerprinting Microbial Assemblages from the Oxic/Anoxic Chemocline of the Black Sea. *Appl. Environ. Microbiol.* 2003. 69: 6481-6488
- Scala, D. and **L. Kerkhof**. 2000. Horizontal Heterogeneity in Denitrifying Bacterial Assemblages in Marine Sediments Using TRFLP Analysis. *Appl. Environ. Microbiol.* 66: 1980-1986

PRESENTED PAPERS/POSTERS (last 3 yrs) :

2008

1. Conference Presentation— **Lee J. Kerkhof**, Jorge E. Corredor , Julio Morell , and Lora McGuinness; Stable Isotope Probing of Active Bacteria in the Orinoco River Plume using ¹³C and ¹⁵N Substrates. ISME General Meeting. Cairns, Australia, Aug 18-22, 2008
2. Conference Presentation— M.M. Häggblom, **L.J. Kerkhof**, Y.-B. Ahn, I. Gray, N. Lopez, and K. Parisi; Anaerobic Reductive Debrominating Bacteria form Stable Populations in Organohalide-Containing Marine Sponges, ISME General Meeting. Cairns, Australia, Aug 18-22, 2008
3. Conference Presentation— **Lee Kerkhof**, Lora McGuinness, Ken Williams, Aaron Peacock, Phil Long; Stable Isotope Probing of Acetate-Utilizing Bacteria in the Subsurface at the Rifle, CO Integrated Field Challenge Site, ASM general meeting. Boston, MA, June 1-5, 2008
4. Conference Presentation— Nora Lopez, Young-Beom Ahn, Katherine Parisi, Max M. Häggblom, **Lee J. Kerkhof**; TRFLP Analysis of Anaerobic Debrominating Enrichments from Coastal Sponges, Tunicates and Sediment, ASM general meeting. Boston, MA, June 1-5, 2008
5. Conference Presentation— D. M. Akob, **L. Kerkhof**, K-J. Chin, K. Kuesel, D. B. Watson, A. V. Palumbo, J. E. Kostka; Characterization of the Metabolically Active Iron(III)- and Sulfate-Reducing Bacteria in Uranium(VI) Contaminated Subsurface Sediments Using DNA-SIP Analysis, ASM general meeting. Boston, MA, June 1-5, 2008
6. Conference Presentation— Valdis Krumins, Joong-Wook Park, Lisa A. Rodenburg, Max M. Häggblom, **Lee J. Kerkhof**, and Donna E. Fennell; Biostimulation of Reductive Dechlorination in PCB-Contaminated Sediment, ASM general meeting. Boston, MA, June 1-5, 2008
7. Conference Presentation— Y-B. Ahn, N. Lopez, I. Gray, P.J. McCarthy, **L. J. Kerkhof**, M. M. Häggblom; Widespread Distribution of Reductive Debrominating Microorganisms in the Marine Sponges, ASM general meeting. Boston, MA, June 1-5, 2008
8. Conference Presentation— W-M. Wu, J. Carley, J. Van Nostrand, S. D. Kelly, P. Waldron, G. Zhang, E. Cardenas, S. Carroll, J. Luo, L. Wu, T. Mehlhorn, K. M. Kemner, C. Schadt , J. Zhou, P. Kitaniadis, T. L. Marsh, J. Tiedje, J. Kostka, **L. Kerkhof**, D. Watson, P. M. Jardine, C. S. Criddle; Field Tests on Reoxidation of Bioreduced Uranium by Dissolved Oxygen and Nitrate and Restoration of Reduced Conditions, ASM general meeting. Boston, MA, June 1-5, 2008
9. Conference Presentation— C.A. Fraser, J.E. Corredor, J.M. Morell, L. McGuinness, **L.J. Kerkhof**. Active Microbes in the Orinoco River Plume. ASLO General Meeting. Orlando, FL, Mar 2-6, 2008
10. Conference Presentation— L. McGuinness, J.E. Corredor, J.M. Morell, **L.J. Kerkhof**. Stable Isotope Probing using ¹³C and ¹⁵N in the Orinoco River Plume. ASLO General Meeting. Orlando, FL, Mar 2-6, 2008

2007

1. Conference Presentation— Darryl A. Babcock, B. Wawrik, J. H. Paul, L. McGuinness, **L. J. Kerkhof**, Analysis of 30 kb DNA Fragments from Two Dominant Bacteria in the Mid-Atlantic Bight, ASM general meeting. Toronto, CA, May 21-25, 2007
4. Conference Presentation— Isabel Horna Gray, Nora Lopez, Young-Beom Ahn, Katherine Parisi, Brandon Saks, Ute Hentschel, Alexander Siegl, **Lee Kerkhof**, and Max M. Häggblom. Distribution of Anaerobic Dehalogenating Bacteria in Sponge Species from the Atlantic and the Mediterranean, ASM general meeting. Toronto, CA, May 21-25, 2007
3. Conference Presentation— Amita R. Oka, C. D. Phelps, **L. J. Kerkhof**, L.Y. Young, Identification of the Members of a Benzene Degrading Sulfate-Reducing Consortium Using Stable Isotope Probing. ASM general meeting. Toronto, CA, May 21-25, 2007
4. Conference Presentation— M.M. Häggblom, **L.J. Kerkhof**, M.K. Männistö, and J. McCormick, Metabolic Fingerprinting of Dominant Soil Bacteria Active in Arctic Tundra and Forest Soils, ASM general meeting. Toronto, CA, May 21-25, 2007
5. Conference Presentation— Rosa I. León-Zayas, Lora McGuinness and **Lee Kerkhof**. Assessing the Dominant Denitrifying Bacteria in the Mid-Atlantic Bight Sediments ASLO general meeting. Santa Fe, NM, Feb 5-9, 2007

2006

1. Conference Presentation— Jerome J. Kukor, Gerben J. Zylstra, **Lee Kerkhof**, Boris Wawrik, Bio-prospecting for novel antibiotics, ICBG annual meeting. Lake Issikul, Khyrgyzstan, July 25-28, 2006
2. Conference Presentation— Erin M. Gallagher, Safet Marke, **Lee J. Kerkhof**, Lily Y. Young. Identifying Metabolites of 2,4,6-Trinitrotoluene (TNT) Degradation under Anaerobic Conditions. American Society for Microbiology 106th General Meeting, Orlando, FL May 21-25, 2006.
3. Conference Presentation— C. A. Fraser, B. Saks, Y-B. Ahn, **L. J. Kerkhof**, A. Siegl, U. Hentschel, M. M. Häggblom. Reductive Debrominating Microorganisms Associated with Organohalide-Containing Marine Sponges. American Society for Microbiology 106th General Meeting, Orlando, FL May 21-25, 2006.
4. Conference Presentation— Boris Wawrik, Djumaniyaz Kutliev, **Lee Kerkhof**, Gerben J. Zylstra, and Jerome J. Kukor. Analysis of Actinomycete communities and Type II Polyketide Synthase Genes in Soil collected in New Jersey and Central Asia. American Society for Microbiology 106th General Meeting, Orlando, FL May 21-25, 2006.
5. Conference Presentation— M. Teirny, **L. Kerkhof** and L. Y. Young. Resolution of Denitrifying Bacteria Associated with Naphthalene Degradation Using Stable Isotope Probing. American Society for Microbiology 106th General Meeting, Orlando, FL May 21-25, 2006.
6. Conference Presentation— L. Youngster, **L. J. Kerkhof**, M. M. Häggblom Characterization of anaerobic MTBE-degrading bacterial communities. American Society for Microbiology 106th General Meeting, Orlando, FL May 21-25, 2006.
7. Conference Presentation— Y-B. Ahn, J-C. Chae, G. J. Zylstra, **L. J. Kerkhof**, M. M. Häggblom. Isolation and Characterization of a Sulfate Reducing Phenol Degrading Bacterium from Estuarine Sediment. American Society for Microbiology 106th General Meeting, Orlando, FL May 21-25, 2006.
8. Conference Presentation— **L. J. Kerkhof**, D. Watson, J. E. Kostka, L. McGuinness. Active Microorganisms in Groundwater Along a Contamination Plume at the Field Research Center in Oak Ridge, TN, USA American Society for Microbiology 106th General Meeting, Orlando, FL May 21-25, 2006.

Synergistic Activities (last 3 years): Professional Activities

- 2008 Ad Hoc Mail Reviewer for the National Science Foundation, Member of the editorial board for *Applied Environmental Microbiology*, Ad Hoc Mail Reviewer for *FEMS Microbial Ecology and Science* manuscripts. Chair- Div. N (Microbial Ecology) for American Soc. of Microbiology.

- 2007 Ad Hoc Mail Reviewer for the National Science Foundation, Member of the editorial board for *Applied Environmental Microbiology*, Ad Hoc Mail Reviewer for *FEMS Microbial Ecology* manuscripts. Chair-elect Div. N (Microbial Ecology) for American Soc. of Microbiology.
- 2006 Ad Hoc Mail Reviewer/Panel Member for the National Science Foundation, Dept. of Energy; Co-Chair of Palmer Antarctic LTER Site Review Team, Member of the editorial board for *Applied Environmental Microbiology*, Ad Hoc Mail Reviewer for *FEMS Microbial Ecology*, *Science*, and *Aquatic Microbial Ecology* manuscripts.

INVITED TALKS

- The black box is open: Now what?: University of Calgary, Canada. 03/07
- Fingerprinting Microbial Communities in Exotic Places: New Jersey, the Black Sea, and a Mission to Mars. University of Washington. 6/02
- Trying to see the forest for the trees using molecular approaches. Harvard University 1-02, Princeton University, 1-01; Johnson Space Center, NASA 6/00.
- Molecular characterization of bacteria in the oxic/anoxic interface of the Black Sea. Center for Environmental BioInorganic Chemistry (CEBIC). Princeton University 6/00.
- Molecular tools for studying biogeochemical cycling in salt marshes. International Marsh Symposium 4/98. Vineland, NJ (NJ Seagrant and PSE & G/MEARP conveners)
- Molecular Characterization of Bacterial Populations at LEO-15. Temple Univ. 1/98.
- Spatial and Temporal Variability in Bacterial Populations at LEO-15. Univ. of Delaware, Lewes 4/97.
- Developing a Species Specific Growth Rate Assay for a Marine Bacterium. Florida State University 9/93, Rutgers 8-93, SUNY-Stony Brook 4/93, UC Santa Cruz 11/90.
- Non-radioactive methods of nucleic acid detection. Marine Ecology Course, Marine Biological Laboratories, Woods Hole, MA, 7/89.

TEACHING

- General Microbiology (16:681:501) Graduate survey course on the breadth of microbial life and diversity in terrestrial and aquatic environments. Emphasis is placed on the ecological role microbes play in habitats ranging from microbial mats to the human body.
- Marine Microbiology (11:628:418) Undergrad/Grad lab lecture course that discusses the wide range of genetic diversity and metabolic potential of bacteria in the oceanic setting. Particular emphasis is placed on biochemical adaptations to factors unique to the marine environment (e.g. dilute substrate concentrations and high pressures). Lab is a hands-on exercise in molecular techniques to characterize bacteria in a seawater and sediment samples.
- Biochemical Techniques in Marine Science (16:712:698). Grad level course is designed to critically review the application of biochemical techniques in exploring the environment with an emphasis on marine systems. Various biochemical methodologies including enzyme assays, radio-tracer studies, high pressure liquid chromatography (HPLC) analysis, immunological approaches, and recombinant DNA techniques.
- Perspective in Agriculture and the Environment (11:015:101) Undergrad discussion/lecture course that focuses on obtaining a global perspective on environmental issues affecting today's society. Particular emphasis is placed on developing critical thinking and writing skills. Specific topics include burgeoning world populations, water resource issues, collapsing fisheries, risk assessment, aquaculture, and biotechnology.

Post Docs:

Young Beom Ahn (w/ Max Haggblom), Ingeborg Bussmann, Donna Fennell (w/ Max Haggblom), Victoria Knight (w/ Max Haggblom), Naglaa Mohamed, Craig Phelps (w/ Lily Young), Sung Keun Rhee (w/ Max Haggblom), Elise Sullivan (w/ Lily Young), Mary Voytek

Grad Students:

Timeka Whitehead, Nora Lopez, Carrie Fraser, Erin Gallagher (w/Lily Young), Darryl Babcock, (MS; Graduated 12/06), Josh Nelson, (MS; Graduated, 01/03) Jose Perez-Jimenez (Ph. D; Graduated, 10/03), Yuko Sakano (Ph. D; Graduated, 1/01), David Scala (Ph. D.; Graduated 3/99)

Undergrad Students:

Christina Coloda, Susan Ellor, Lauren Junker (w/ Lily Young), Paulette Macrae, Eva Maslak, Nitya Nair, Joshua Nelson, Carmela Palermo (w/ Lily Young), Amanda Pusey, Alexander Rodriguez, Max Salganik, Ann Marie Salvatore, Marc Santoro, Kevin Shanley, Ken Shallop, Johnny Shue, Mark Speck, Jordan Spitzer-London, Elizabeth Stover, and Hiep Tran.