

CURRICULUM VITAE

Name: Tamar Barkay

Address: Department of Biochemistry and Microbiology
Cook College, Rutgers University
76 Lipman Drive
New Brunswick, NJ 08901-8525

Telephone: 732 932-9763

E-mail: barkay@aesop.rutgers.edu

Education:

B.Sc. School of Agronomy, The Hebrew University, Rehovot; June 1974
(Undergraduate degree in Agronomy, Major in Microbiology)

M.Sc. Hebrew University, Jerusalem; June 1976
(Masters in Environmental Health)

Ph.D. The University of Maryland; December 1980
(Major in Microbiology, Minor in Biochemistry)

Academic positions

Associate Professor Dept. of Biochemistry and Microbiology, Rutgers University, 2003 – present

Assistant Professor Dept. of Biochemistry and Microbiology, Rutgers University, 1999 - 2003

Other positions held

Visiting Associate Professor Center for Environmental Diagnostics and Bioremediation,
University of West Florida, 1998 – 1999

Visiting Scientist Dept. of Molecular Microbiology and Biotechnology, Tel Aviv
University, 1997 – 1998

Research Microbiologist Environmental Research Laboratory, Environmental Protection
Agency, 1984 – 1996

Honors and Awards:

Charles H. Revson Postdoctoral Fellowship Award, Weizmann Institute, Rehovot, Israel, 1981-1982.
University of California, Irvine, Career Development Award, 1983.
National Research Council Residence Associateship, 1985 (declined).
The Environmental Protection Agency Scientific and Technological Achievement Award in the Category of Ecology - Level II, 1988.
Research Excellence Award, Cook College, Rutgers University, 2004
Honorary Lectureship Award, Theobald Smith Society, 2005

Grants and Contracts:

Intercampus Activities Fund, University of California, Irvine, Co-principal Investigator. 1983-1984
National Science Foundation. Population Biology and Physiological Ecology. "An assessment of stressor induced gene occurrence in Soil Bacterial Communities". Co-Principal Investigator 1985-1986.
EPA Region IV, RARE study on "Investigation on specific rates of mercury transformations as a source of methylmercury contamination in the Everglades drainage Basin". Oct. 1991 - Sept. 1992. \$50,000
Electric Power Research Institution, Palo Alto, CA. "Bioremediation of mercury contaminated sites". Jan. 1992 - December 1993. \$215,487.
Parks Service, Everglades National Park. "Methylation and demethylation Rrtes in Everglades soils". Oct. 1991 - Sept. 1993. \$86,000.
Electric Power Research Institution, Palo Alto, CA. "Genomic Characterization of environmental Isolates of *Pseudomonas cepacia*". Co-principle investigator with T.G. Lessie. July 1995 - June 1998. \$225,000.
National Science Foundation. Environmental Geochemistry/Biogeochemistry Program. "Mercury biogeochemistry in a semi-arid aquatic ecosystem: Processes controlling methylation and demethylation" Co-principle investigator (1 of 5). Sept. 1995 - Aug. 1998. \$583,179.
National Science Foundation. International Division. "Mercury biogeochemistry in the Idrija river system, Slovenia: Processes controlling methylation and demethylation" .Co-principle investigator (1 of 5). June 1997 - July 2000. \$51,515.
Israel Ministry of Science. Infrastructure Research. "Center for bioremediation of pollutants from industrial, urban and agricultural origin" Co-principle investigator (1 of 7). Jan. 98
Dec. 2000. IS 8,886,380 (\$2.5 M).
Fisheries and Oceans, Canada. "The preparation of *mer-gfp* bioassessors for Hg(II)". Dec. 1998 - March, 2000.
Aluminum Company of America, Inc., "The development of bioassessors for determination of mercury that is bioavailable to mercury methylating bacteria in anaerobic sediments". Jan. 1999 - Dec. 2001. \$150,000
National Science Foundation. Environmental Geochemistry/Biogeochemistry Program. "Collaborative study: Mercury cycling in soils: Dynamic sources for aquatic environments". Sept. 1999 - Aug. 2002. \$138,000.
Department of Energy. NABIR Program. "Molecular and microcosm analyses of the potential

- for gene transfer in radionuclei and metal-contaminated subsurface environments". Sept. 1999 - Aug. 2002. \$809,000.
- National Science Foundation. International Division. "Mercury biogeochemistry in the Idrija river system, Slovenia: Processes controlling methylation and demethylation". Co-principle investigator (1 of 4). Sept. 1999 - Aug. 2002. \$64,000.
- New Jersey Water Resources Research Institute. "Factors controlling methylmercury degradation in Pine Barrens lakes". March 2000 – Feb. 2002. \$55,000.
- Cook College, Research Equipment Grant. "An optical thermocycler module to allow the quantitative analysis of specific genes and mRNA transcripts". Dec. 2000. \$35,000
- Rutgers University, Research Council Grant. "Factors controlling methylmercury accumulation in New Jersey's freshwater streams". 2001/2002. \$1,500.
- Rutgers Undergraduate Research Fellow Program. "Identification of *mer* genes in microorganisms from deep sea hydrothermal vents of the East Pacific Rise". (for Yein Chew) 2001 – 2002. \$1,500.
- Meadowlands Environmental Research Institute. "Factors controlling mercury contamination in Berry's Creek and downstream ecosystems". 2002 – 2003. \$63,602
- Rutgers Undergraduate Research Fellow Program. "Microbial diversity of *mer* genes in bacteria isolated from mercury contaminated environments". (for Christopher Asakiewicz) 2002 – 2003. \$1,500.
- Rutgers Undergraduate Research Fellow Program. "The isolation and characterization of new organomercury degrading enzymes". (for Rachel Kaletzky) 2002 – 2003. \$1,500.
- Department of Energy. NABIR Program. "Lateral gene transfer among subsurface bacteria". Lead PI (with P. Sobecky, GA Technical U.). Sept. 2002 - Aug. 2006. \$818,476.
- National Science Foundation. Biocomplexity Program. "Atmospheric deposition, transport, transformations and bioavailability of mercury across a northern forest landscape". Co-principle investigator (Lead PI: C. Driscoll, Syracuse U.). Aug. 2003 - July 2008. \$294,696.
- Department of Energy. NABIR Program. "Importance of mobile genetic elements and conjugal gene transfer for subsurface community adaptation to biotransformation of metals". Co-principle investigator (Lead PI: S. Sørensen, U. of Copenhagen). Sept. 2003 - Aug. 2006. \$149,251.
- Rutgers Undergraduate Research Fellow Program. "Mercury resistance among bacteria from mercury and sulfur enriched geothermal springs". (for Raul Singh) 2003 – 2005. \$1,500.
- Grants to Enhance the Undergraduate Curriculum and Teaching. "Experiences in applied and environmental molecular microbiology". Rutgers University. 2004. \$5,000.
- National Science Foundation and Dept. of Energy. "A workshop on horizontal gene flow in microbial communities". Co-PI (with B. smets, Uconn). ~\$100,000.
- Rutgers Undergraduate Research Fellow Program. "Isolation and characterization of novel *merA* sequences from anaerobic mercury resistant microorganisms". (for Rita Theofanopoulos) 2004 – 2005. \$1,500.
- National Science Foundation. Biogeoscience Program. "Collaborative research: Mercury isotope fractionation during microbial and abiotic redox transformations". Co-PI (with Joel Blum, U. of Michigan) Sept. 2004 – Aug. 2008. \$226,846.
- Department of Energy. NABIR Program. "Microbial pathways for the reduction of mercury in saturated subsurface sediments". Lead PI (with Lily Young and Gerben Zylstra, RU).

\$694,769. Jan. 2005 – Dec. 2008.

National Science Foundation. Research Experience for Undergraduates supplement to
“Collaborative research: Mercury isotope fractionation during microbial and abiotic
redox

transformations”, June 2005 – Aug. 2005. \$10,400

Rutgers University Research Infrastructure Award. ”Upgrading temperature controlled
incubation rooms in Lipman Hall”, 2006, \$35,000

Review boards and committees:

Advisor. Mercury Accumulation Pathways and Processes. Bureau of Research, Wisconsin
Department of Natural Resources. 1989

Member of the Editorial Board, Applied and Environmental Microbiology: Jan. 1990 - July
1996.

Member of the Editorial Board, Journal of Industrial Microbiology: Jan. 1996 - Dec. 1998.
Electric Power Research Institute review committee on "Genetic and Microbial Ecology of
Biofilms". 1991

Florida Mercury Technical Committee - Advisory committee to Florida DER regarding mercury
in fish and wildlife. 1991.

Dept. of Energy, NABIR program, Proposal review panel. 2000

Dept. of Energy, Microbial Genome Program, Proposal review panel. 2001

Dept. of Energy, Science Advisory Board, Sub-committee for the NABIR program. 2003

Dept. of Energy, Genome to Life Program, Proposal review panel. 2003

Rice University, NSF Center of Excellence on Nano-biotechnology. Reviewer, 2003

Nat. Inst. Health. General Medical Sciences. Minority Biomedical Research Support Program.
Review panel (by teleconferencing), 2004

Dept. of Energy, Microbial Genome Program, Proposal review panel. June 2004

National Science Foundation, MIP Program, proposal review panel, Nov. 2004

Dept. of Energy, Microbial Genome Program, Proposal review panel. May 2005

National Science Foundation, MIP Program, proposal review panel, Feb. 2006

Professional Organizations:

American Society for Microbiology

American Association for the Advancement of Science

American Academy of Microbiology

International Society for Microbial Ecology

International Association of Geochemistry

Professional publications:

Olson, B.H., T. Barkay, D. Nies, M. Bellama and R.R. Colwell. 1979. Plasmid mediation of
mercury volatilization and methylation by estuarine bacteria. Develop. Ind. Microbiol. **20**:275-
284.

Olson, B.H., T. Barkay, and R.R. Colwell. 1979. The role of plasmids in mercury
transformations by bacteria isolated from the aquatic environment. Appl. Environ. Microbiol.
38:278-285.

Barkay, T., B. Olson, and R. R. Colwell. 1979. Heavy metal biotransformations mediated by estuarine bacteria. *Manage. Control Heavy Met. Environ. Int. Conf.* 1979, pp. 356-363.

McNicol, L.A., T. Barkay, M. J. Voll and R. R. Colwell. 1982. Plasmid carriage in *Aeromonas hydrophila* and other bacteria isolated from the aquatic environment. *J. Wash. Acad. Sci.* **72**:6066.

Barkay, T., and A. Goldfarb. 1982. Processing of bacteriophage T4 primary transcripts with ribonuclease III. *J. Molec. Biol.* **162**:299-315.

Barkay, T., S. Tripp, and B. H. Olson. 1983. The effect of sewage Sludge application on cadmium resistance in soil bacterial populations. *Manag. Control Heavy Met. Environ. Int. Conf.* 1983, pp. 309-313.

Barkay, T., and R. R. Colwell. 1983. Cell wall alteration responsible for increased resistance to mercurials in *Pseudomonas fluorescens* B69. *J. Gen. Microbiol.* **129**:2945-2950.

Barkay, T., D. L. Johnson, and B. H. Olson. 1984. Use of genetic adaptation to assess pollution in natural environments. *Environ. Manag. Int. Conf.* London 10-13 July 1984.

Barkay, T., S. Tripp, and B. H. Olson. 1985. The effects of metal rich sewage sludge application on the bacterial communities of grasslands. *Appl. Environ. Microbiol.* **49**:333-337.

Barkay, T., D. Fouts, and B. Olson. 1985. Preparation of a DNA gene probe for detection of mercury resistance genes in gram negative bacterial communities. *Appl. Environ. Microbiol.* **49**:686-692.

Colwell, R.R., D. Allen-Austin, T. Barkay, J. Barja, and J. D. Nelson, Jr. 1986. Antibiotic resistance associated with heavy metal mineralization. in: *Mineral Exploration Biological Systems and Organic Matter*. Carlisle, W., J. Berry, J. Watterson, and I. Kaplen (eds). Vol. 5. Princeton Hall, Inc. Englewood Cliffs, NJ p. 171-177.

Olson, B. H., and T. Barkay. 1986. The feasibility of using bacterial resistance to metals in mineral exploration. in: *Mineral Exploration Biological Systems and Organic Matter*. Carlisle, W., J. Berry, J. Watterson, and I. Kaplen (eds). Vol. 5. Princeton Hall, Inc. Englewood Cliffs, NJ p. 171-177.

Barkay, T., D. F. Shearer, and B. H. Olson. 1986. Toxicity testing in soil using microorganisms, in: *Toxicity Testing Using Microorganisms Vol. II*, Dutka, B. J., and G. Bitton (eds), CRC Press, Boca Raton, FL. p. 133-155.

Barkay, T., and B. H. Olson. 1986. Phenotypic and genotypic adaptation of aerobic heterotrophic sediment bacterial communities to mercury stress. *Appl. Environ. Microbiol.* **52**:403-406.

Levin, M.A., R. Seidler, A.W. Bourquin, J.R. Fowle III, and T. Barkay. 1987. EPA developing methods to assess environmental release. *Bio/technology* **5**:38-45.

Trevors, J.T., T. Barkay, and A.W. Bourquin. 1987. Bacterial gene transfer in soil and aquatic environments. A review. *Can. J. Microbiol.* **33**:191-198.

Barkay, T. 1987. Adaptation of aquatic microbial communities to Hg²⁺ stress. *Appl. Environ. Microbiol.* **53**:2725-2732.

Ogram, A., G.S. Sayler, and T. Barkay. 1987. The extraction and purification of microbial DNA from sediments. *J. Microbiol. Meth.* **7**:57-66.

Genthner F.J., P. Chatterjee, T. Barkay, and A.W. Bourquin. 1988. Capacity of aquatic bacteria to act as recipients for plasmid DNA. *Appl. Environ. Microbiol.* **54**:115-117

Barkay, T., and G.S. Sayler. 1988. Gene probes as a tool for the detection of specific genomes in the environment. in: *Aquatic Toxicology and Hazard Assessment: 10th Volume ASTM STP 971*, Adams, W.J., G.A. Chapman, and W.G. Landis, (eds), American Society for Testing and Materials, Philadelphia, pp. 29-36.

Barkay, T., and P. Pritchard. 1988. Adaptation of aquatic microbial communities to pollutant stress. *Microbiol. Sci.* **5**:165-169.

Liebert C., and T. Barkay. 1988. A direct viable counting method for measuring tolerance of aquatic microbial communities to Hg²⁺. *Can. J. Microbiol.* **34**:1090-1095.

Barkay, T., D. Chatterjee, S. Cuskey, R. Walter, F. Genthner, and A. Bourquin. 1989. Bacteria and the environment. in: *A Revolution in Biotechnology*. J. Marx (ed). Cambridge University Press, Cambridge, New Rochelle, Melbourne, Sydney. pp. 94 - 102.

Barkay, T., C. Liebert, and M. Gillman. 1989. The environmental significance of the potential for *mer*(Tn21) mediated reduction of Hg²⁺ to Hg⁰ in natural waters. *Appl. Environ. Microbiol.* **55**:1196-1202.

Barkay, T., C. Liebert, and M. Gillman. 1989. Hybridization of DNA probes with whole community genome for detection of genes that encode microbial responses to pollutants: *mer* genes and Hg²⁺ resistance. *Appl. Environ. Microbiol.* **55**:1574-1577.

Summers, A.O., and T. Barkay. 1989. Metal resistance genes in the environment. in: *Gene Transfer in the Environment*. S. Levy, and R. Miller (Eds), McGraw-Hill Publishing Co. New York. pp. 287-308

Barkay, T., and R. Turner. 1989. Gene probes to predict responses of aquatic microbial communities to toxic metals. *Manag. Control Heavy Met. Environ. Int. Conf.* 1989, pp. 57.

Turner, R., A.J. VandenBrook, T. Barkay, and J.W. Elwood. 1989. Volatilization, methylation and demethylation of mercury in a mercury-contaminated stream. *Manag. Control Heavy Met. Environ. Int. Conf.* 1989, pp. 353.

Barkay, T., M. Gillman, and C. Liebert. 1990. Genes encoding mercuric reductases from selected gram negative aquatic bacteria have a low degree of homology with *merA* of transposon 501. *Appl. Environ. Microbiol.* **56**:1695-1701.

Liebert, C., T. Barkay, and R. Turner. 1991. Microbial acclimation to CH_3Hg^+ and Hg^{2+} in a mercury polluted freshwater pond. *Microb. Ecol.* **21**:139-149.

Barkay, T., R. Turner, A. VandenBrook, and C. Liebert. 1991. The relationships of Hg(II) volatilization from a freshwater pond to abundance of *mer* genes in the gene pool of the indigenous microbial community. *Microb. Ecol.* **21**:151-161.

Barkay, T., and C. Liebert. 1991. Distribution of metal-resistant microorganisms in the environment, p. 663-682. in: Levin, M.A., R.J. Seidler, and M. Rogul (eds). *Microbial Ecology: Principles, Methods, and Applications*. McGraw-Hill, Inc., New York.

Barkay, T. The mercury cycle. 1992. *Encyclopedia of Microbiology*. Vol. 3 p. 65-74. Academic Press, Inc., San Diego.

Barkay, T., R. Turner, E. Saouter, and J. Horn. 1992. Mercury biotransformations and their potential for remediation of mercury contamination. *Biodegradation*. **3**:147-159.

Barkay, T., C. Liebert, and M. Gillman. 1993. Conjugal gene transfer to aquatic bacteria detected by the generation of a new phenotype. *Appl. Environ. Microbiol.* **59**:807-814.

Selifonova, O., R. Burlage, and T. Barkay. 1993. Preparation of bioluminescent sensors for detection of Hg(II) in the environment. *Appl. Environ. Microbiol.* **59**:3083-3090.

Saouter, E., R. Turner, and T. Barkay. 1994. Mercury microbial transformations and their potential for the remediation of a mercury-contaminated site. In: Means, J.L., and R.E. Hinchee (eds), *Emerging Technology for Bioremediation of Metals*, Lewis Publishers, Boca Raton, FL. pp. 99-104.

Saouter, E., R. Turner, and T. Barkay. 1994. Microbial reduction of ionic mercury for the removal of mercury from contaminated environments. *Proceedings of the Symposium on "Recombinant DNA technology II"*. *Ann. NY Acad. Sci.* **721**:423-427.

Devereux, R., T. Barkay, and J. Harvey. 1994. Application of microbial ecology research to environmental problems. *Water Report: Quality, Resources and Technology* **4**:8-11.

Selifonova, O., and T. Barkay. 1994. Role of sodium in transport of mercuric ions and induction of the Tn21 *mer* operon. *Appl. Environ. Microbiol.* **60**:3503-3507.

Nazaret, S., W.H. Jeffrey, E. Saouter, R. Von Haven, and T. Barkay. 1994. *merA* gene expression in aquatic environments measured by mRNA production and Hg(II) volatilization. *Appl. Environ. Microbiol.* **60**:4059-4065.

Saouter, E., M. Gillman, R. Turner, and T. Barkay. 1995. Development and field validation of a microcosm to simulate the mercury cycle in a contaminated pond. *J. Environ. Toxicol. Chem.* **14**:69-77.

Barkay, T., N. Kroer, L.D. Rasmussen, and S. J. Sorensen. 1995. Conjugal transfer at natural population densities in a microcosm simulating an estuarine environment. *FEMS Microbiol. Ecol.* **16**:43-54.

Barkay, T., S. Nazaret, and W. Jeffrey. 1995. Biodegradative genes in the environment. in: *Transformation and Degradation of Toxic Organic Chemicals*, Young, L. and C. Cerniglia (eds), J. Wiley Sons, Inc. pp. 545-577.

Saouter, E., M. Gillman, and T. Barkay. 1995. An evaluation of *mer* specified reduction of ionic mercury as a remedial tool of a mercury contaminated freshwater pond. *J. Ind. Microbiol.* **14**:343-348.

Oremland, R.S., L.G. Miller, P. Dowdle, T. Connell, and T. Barkay. 1995. Methylmercury oxidative degradation potentials in contaminated and pristine sediments of the Carson River, Nevada. *Appl. Environ. Microbiol.* **61**:2745-2753.

Vaithyanathan, P., R.G. Kavanaugh, , C.B. Craft, C. J. Richardson, and T. Barkay. 1996. The role of eutrophication in the distribution and potential net methylation of mercury in the peat soils of the Everglade. *Env. Sci. Technol.* **30**:2591-2597.

Jeffrey, W.H., S. Nazaret, and T. Barkay. 1996. Detection of the *merA* gene and its expression in the environment. *Microb. Ecol.* **32**:293-303.

Sørensen, S.J., N. Kroer, E. Sørensen, G. Sengeløv, and T. Barkay. 1996. Conjugation in aquatic environments. in: *Molecular Microbial Ecology Manual*, Akkermans, A.D.L., J.D. van Elsas, and F.J. de Bruijn (eds.), Kluwer Academic Publishers.

Rasmussen, L.D., R.R. Turner, and T. Barkay. 1997. Cell-density dependent sensitivity of a *mer-lux* bioassay. *Appl. Environ. Microbiol.* **63**:3291-3293.

Barkay, T., M. Gillman, and R.R. Turner. 1997. Effects of dissolved organic carbon and speciation of Hg(II) on bioavailability of mercury. *Appl. Environ. Microbiol.* **63**:4267-4271.

Barkay, T. 1997. A *mer-lux* reporter system to study factors that determine mercury availability to bacteria. in: *Progress in Microbial Ecology*, Martins, M.T. M.I.Z. Sato, J.M. Tiedje, L.C.N. Hagler, J. Döbereiner, and P.S. Sanchez (eds), SBM - Brazilian Society for Microbiology, São Paulo, Brazil, pp. 551-557.

Kroer, N., T. Barkay, S.J. Sørensen, and D. Weber. 1998. Effects of root exudates and bacterial metabolic activity on conjugal gene transfer in the rhizosphere of a marsh plant. *FEMS Microbiol. Ecol.* **25**:375-384.

Barkay, T., R.R. Turner, L.D. Rasmussen, C. Kelly, and J.Rudd. 1998. Lux-facilitated detection of mercury in natural waters. in: Bioluminescent Protocols, LaRossa, R. (ed). Humana Press, Inc. Totowa, NJ. pp. 231-246.

Kurtz, J.C., R. Devereux, T. Barkay, and R.B. Jonas. 1998. Evaluation of sediment slurry microcosms for modeling microbial communities in estuarine sediments. Environ. Toxicol. Chem. **17**:1274-1281.

de Liphthay, J.R., T. Barkay, J. Vekova, and S.J. Sørensen. 1999. Utilization of phenoxyacetic acid by strains using either the *ortho* or *meta* cleavage of catechol during phenol degradation after conjugal transfer of *tfdA*, the gene encoding a 2,4-dichlorophenoxyacetic acid/2-oxoglutarate dioxygenase. Appl. Microbiol. Biotechnol. **51**:207-214.

Rosenberg, E., T. Barkay, S. Navon-Venezia, and E.Z. Ron. 1999. Role of *Acinetobacter* bioemulsans in petroleum degradation. In: Novel Approaches for Bioremediation of Organic Pollution. Fass, R., Y. Flashner, and S. Reuveny (eds) Kluwer Academic/Plenum Publishers, New York, pp/ 171-180.

Barkay, T., S. Navon-Venezia, E.Z. Ron, and E. Rosenberg. 1999. Enhanced solubilization and biodegradation of polyaromatic hydrocarbons by the bioemulsifier alasan. Appl. Environ. Microbiol. **65**:2697-2702.

Barkay, T. The mercury cycle. 2000. Encyclopedia of Microbiology. 2nd edition. Academic Press, Inc., San Diego. pp. 171-181.

Rasmussen, L.D., S.J. Sørensen, T.R. Turner, and T. Barkay. 2000. Application of a *mer-lux* biosensor for estimating bioavailable mercury in soil and its utility in relating the response of soil microbial communities to bioavailable mercury. Soil Biol. Biochem. **32**:639-646.

Hines, M.E., M. Horvat, J. Faganeli, J.-C. Bonzongo, T. Barkay, E.B. Major, K.J. Scott, E.A. Bailey, J.J. Warwick, and W.B. Lyons. 2000. Mercury biogeochemistry in the Idrija River, Slovenia from above the mine into the Gulf of Trieste. Environ. Res. **83**:129-139.

de Liphthay, R.J., T. Barkay, and S.J. Sørensen. 2001. Enhanced degradation of phenoxyacetic acid in soil by horizontal transfer of the *tfdA* gene encoding a 2,4-dichlorophenoxyacetic acid dioxygenase. FEMS Microbiol. Ecol. **35**:75-84.

Barkay, T., and J. Schaefer. 2001. Metal and radionuclide bioremediation: Issues, considerations, and potentials. Curr. Opin. Microbiol. **4**:318-323.

Barkay, T. 2001. Molecular and biochemical investigation of the potential for microbial mercury volatilisation in the Idrijca River – Gulf of Trieste ecosystem. Materials Geoenviron. **48**:109-115.

Schaefer, J.K., R. Dorn, and T. Barkay. 2001. Microbial factors controlling methylmercury accumulation in freshwater ecosystems in New Jersey, USA. Materials Geoenviron. **48**:219-225.

Sørensen, S.J., J. Radnoti de Liphay, A.K. Müller, T. Barkay, L.H. Hansen, and L.D. Rasmussen. 2002. Molecular methods for assessing and manipulating the diversity of microbial populations and processes. In: *Enzymes in the Environment*. Burns, R.G. (ed). Marcel Dekker. pp. 363 – 389.

Schaefer, J.K., J. Letowski, and T. Barkay. 2002. *mer*-mediated resistance and volatilization of Hg(II) under anaerobic conditions. *Geomicrobiol. J.* **19**:87-102.

de Liphay, J.R. , J. Aamand , and T. Barkay. 2002. Expression of the *tfdA* gene in aquatic microbial communities during degradation of 2,4-dichlorophenoxyacetic acid. *FEMS Microbiol. Ecol.* **40**:205-214.

Golding G.R., C.A Kelly, R. Sparling, P.C. Loewen, J.W.M. Rudd, and T. Barkay. 2002. Demonstration of facilitated uptake of Hg(II) by *Vibrio anguillarum* and *Escherichia coli* under anaerobic and aerobic conditions. *Limnol. Oceanog.* **47**:967-975.

Benyehuda, G., J. Coombs, P.M. Ward, D. Balkwill, and T. Barkay. 2003. Metal resistance among aerobic chemoheterotrophic bacteria from the deep terrestrial subsurface. *Can. J. microbiol.* **49**:151-156.

Barkay, T., S. Miller, and A.O. Summers. 2003. Bacterial mercury resistance from atoms to ecosystems. *FEMS Microbiol. Rev.* **27**:355-384.

Coombs, J.M., and T. Barkay. 2004. Molecular evidence for the evolution of metal homeostasis genes by lateral gene transfer in bacteria from the deep terrestrial subsurface. *Appl. Environ. Microbiol.* **70**:1698-1707.

Schaefer, J.K., J. Yagi, J. Reinfelder, T. Cardona, K. Ellickson, S. Tel-Or, and T. Barkay. 2004. The role of the bacterial organomercury lyase (MerB) in controlling methylmercury accumulation in mercury contaminated natural waters. *Env. Sci. Technol.* **38**:4304-4311.

Poulain, A., M. Amyot, D. Findlay, S. Telor, T. Barkay, and H. Hintelmann. 2004. Biological and photochemical production of dissolved gaseous mercury in a boreal lake. *Limnol. Oceanog.* **49**:2265-2275.

Vetriani, C., Y.S., Chew, S.M. Miller, J. Yagi, R.A. Lutz, and T. Barkay. 2005. Mercury adaptation among bacteria from a deep-sea hydrothermal vent. *Appl. Environ. Microbiol.* **71**:220-226.

Barkay, T., and I. Wagner-Döbler. 2005. Microbial transformations of mercury: potentials, challenges, and achievements in controlling mercury toxicity in the environment. *Adv. Appl. Microbiol.* **57**:1-52

Wiatrowski, H.A., and T. Barkay. 2005. Monitoring of microbial metal transformations in the environment. *Curr. Opin. Biotechnol.* **16**:261-268

Barkay, T., and B.F. Smets. 2005. Horizontal gene flow in microbial communities. *ASM News* **71**:412-419

Smets B.F., and T. Barkay. 2005. Horizontal gene transfer: Perspectives at a crossroads of scientific disciplines. *Nat. Rev. Microbiol.* **3**:675-678

Coombs, J.M., and T. Barkay. 2005. Horizontal gene transfer of metal homeostasis genes and its role in microbial communities of the deep terrestrial subsurface. Sixty-fifth Symposium of the Society of General Microbiology “Micro-organisms and Earth Systems – Advances in Geomicrobiology”. pp. 109–129. Cambridge University Press, New York.

Coombs, J.M., and T. Barkay. 2005. New findings on evolution of metal homeostasis genes: Evidence from comparative genome analysis of bacteria and archaea. *Appl. Environ. Microbiol.* **71**:7083-7091

Martinez, R.J. Y. Wang, M.A. Raimondo, J.M. Coombs, T. Barkay, and P.A. Sobecky. 2006. Horizontal gene transfer of P_{1B}-type ATPases among bacteria isolated from radionuclide- and metal contaminated subsurface soils. *Appl. Environ. Microbiol.* **72**:3111-3118

Ní Chadhain, S., J.K. Schaefer, S. Crane, G.J. Zylstra, and T. Barkay. Analysis of mercuric reductase (*merA*) gene diversity in an anaerobic mercury–contaminated sediment enrichment. *Environ. Microbiol.* In press

Nemergut, D.R., T. Barkay, and J. Coombs. Mobile gene elements in environmental microbial communities. *Manual of Environmental Microbiology*, 3rd edition, ASM Press, Washington, DC, in press.

Wiatrowski, H.A., P.M. Ward, and T. Barkay. Novel reduction of mercury(II) by mercury-sensitive dissimilatory metal reducing bacteria. *Env. Sci. Technol.* Accepted

Barkay, T., and A.J. Poulain. Mercury (micro)biogeochemistry in polar environments. *FEMS Microbiol. Ecol.* submitted

Meredith, M., T. Barkay, and F. Fekete. Concomitant antibiotic and mercury resistance among gastrointestinal microflora of feral brook trout, *Salvelinus fontinalis*. *Environ. Microbiol.* submitted

Kritee K., J. Blum, M. Johnson, B. Bergquist, and T. Barkay. Mercury stable isotope fractionation during reduction of Hg(II) to Hg(0) by mercury resistant microorganisms. *Env. Sci. & Technol.* Submitted

Chatziefthimiou, A., M. Crespo-Medina, Y. Wang, C. Vetriani, and T. Barkay. The isolation and initial characterization of mercury resistant chemolithotrophic thermophilic bacteria from mercury rich geothermal springs. *Extremophiles*, Submitted

Marek-Cardona, T., J. K. Schaefer, T. Barkay, and J.R. Reinfelder. Mercury cycling and transformations in Berry’s Creek: a point-source contaminated estuary in the New Jersey Meadowlands. *Env. Sci. & Technol.* Submitted

Poulain, A.J. S.M. Ní Chadhain, P.A. Ariya, M. Amyot, E. Garcia, P.G.C. Campbell, G.J. Zylstra, and T. Barkay. Microbes express mercury resistance in the High Arctic: Implications for mercury toxicity in remote polar regions. In preparation

Crespo-Medina, M., N. Bloom, J. Reinfelder, C. Vetriani, and T. Barkay. Interactions of chemolithoautotrophic bacteria with mercury at diffuse flow deep-sea vents. In preparation

Coombs, J.M., A. Chatziefthimiou, P.A. Sobecky, and T. Barkay. A DNA hybridization array for the analysis of the genetic linkage of metal resistance genes on bacterial plasmids. In preparation

Yu, R.-Q, I. Adato, T. Barkay and M. Hines. Biochemical and molecular characterizations of mercury methylating microorganisms in an Adirondacks wetland ecosystem. In preparation

Professional presentations:

Barkay, T., B. H. Olson, and R. R. Colwell. Plasmid mediation of mercury transformations by estuarine and marine bacteria. 78th Annu. Meet. Am. Soc. Microbiol. Las Vegas, May 14-19, 1978.

Colwell, R. R., and T. Barkay. The ecology of plasmids in the aquatic environment. Conference on Taxonomical Computer Identification of Bacteria and Diagnostic Methods. Liblice Castle, Czechoslovakia, May 58, 1980.

Colwell, R.R., T. Barkay, and S. Berk. Microbiol mobilization of mercury in aquatic systems. Fifth International Symposium on Environmental Biogeochemistry. Stockholm, June 15, 1981.

Goldfarb, A., T. Barkay and V. Daniel. An *E. coli* endonuclease responsible for primary cleavage of in vitro transcripts of bacteriophage T4 tRNA gene cluster. Cold Spring Harbor, August 20-24, 1981.

Goldfarb, A., T. Barkay and V. Daniel. Endonucleases involved in processing of transcripts of bacteriophage T4 tRNA gene cluster. UCLA Symposia on Gene Regulation. March 28 - April 4, 1982.

Olson, B. H., T. Barkay, and I. Thornton. Can metal resistance patterns of soil bacteria be used to identify potential mineral deposits? Organic Matter, Biological Systems, and Mineral Exploration. A Colloquium. UCLA, February 14-18, 1983.

Colwell, R. R., T. Barkay, and D. Allen. Antibiotic resistance associated with heavy metal mineralization. Organic Matter, Biological Systems, and Mineral Exploration. A Colloquium. UCLA, February 14-18, 1983.

Tripp, S., T. Barkay, and B. H. Olson. The relationship between heavy metal contamination and soil bacteria. Organic Matter, Biological Systems, and Mineral Exploration. A Colloquium. UCLA, February 14-18, 1983.

Tripp, S., T. Barkay, and B. H. Olson. The effect of cadmium on the community structure of soil bacteria. 83rd Annu. Meet. Am. Soc. Microbiol. New Orleans, March 6-11, 1983.

Barkay, T., S. Tripp, and B. H. Olson. The ecology of cadmium resistant bacteria in the soil environment. 3rd International Symposium on Microbial Ecology. Michigan State University. Aug. 7-12, 1983.

Colwell, R. R., T. Barkay, and D. Allen. Plasmid mediated heavy metals and antibiotic resistance as a factor in microbial transformations in the environment. 5th International Conference on Heavy Metals in the Environment. Heidelberg, Sept. 6-9, 1983.

Tripp, S., T. Barkay, and B. Olson. Coselection of heavy metal and antibiotic resistances in soil bacterial communities. 84th Annu. Meet. Am. Soc. Microbiol. St. Louis, March 4-9, 1984.

Barkay, T., and B. Olson. Genetic probes for tracking specific genes within microbial communities of natural ecosystems. Invited Seminar. 85th Annu. Meet. Am. Soc. Microbiol. Las Vegas, March 3-7, 1985.

Barkay, T., M. Stewart, J. Watterson, and B. Olson. Heterotrophic bacterial communities of mercury enriched soils. 85th Annu. Meet. Am. Soc. Microbiol. Las Vegas, March 3-7, 1985.

Barkay, T., and A.W. Bourquin. Adaptation to Hg²⁺ in estuarine microbial communities. 86th Annu. Meet. Am. Soc. Microbiol. Washington, DC., March 23-28, 1986.

Barkay, T., S. Cuskey, D. Chatterjee, F. Genthner and A. Bourquin. Risk assessment of the deliberate release of genetically engineered microorganisms (GEMs) to aquatic environments. 7th Annu. Meet. SETAC. Washington, D.C., Nov. 2-4, 1986.

Barkay, T., D. Walter, D. Chatterjee, F. Genthner, S. Cuskey, R. Devereux, and A. Bourquin. Use of DNA gene probes for the detection of genetically engineered organisms in aquatic environments. Invited symposium talk. 87th Annu. Meet. Soc. Microbiol. Atlanta, March 1-6, 1987.

Barkay, T., and A. Bourquin. Adaptation to Hg²⁺ stress by aquatic microbial communities. 87th Annu. Meet. Am. Soc. Microbiol. Atlanta, March 1-6, 1987.

Barkay, T., M. Gillman, and C. Liebert. The role of the *mer* gene in the response of aquatic microbial communities to mercury. 88th Annu. Meet. Am. Soc. Microbiol. Miami Beach, May 8-13, 1988.

Devereux, R., M. Delaney, and T. Barkay. Detection of sulfate-reducing bacteria in aquatic sediments by hybridization with rRNA specific oligonucleotide probes. 88th Annu. Meet. Am. Soc. Microbiol. Miami Beach, May 8-13, 1988.

Barkay, T., C. Liebert, and R. Turner. Adaptation of freshwater microbial communities to Hg²⁺. 9th Annu. Meet. SETAC. Arlington, Virginia, Nov. 13-17, 1988.

Liebert, C., M. Gillman, and T. Barkay. Relative abundance of *mer* genes in microbial gene pools. 89th Annu. Meet. Am. Soc. Microbiol. New Orleans, La, May 14-18, 1989.

Temple, K.A., R.R. Turner, and T. Barkay. Volatilization of divalent mercury and demethylation of methylmercury: Microbial adaptation in a mercury-contaminated site. 89th Annu. Meet. Am. Soc. Microbiol. New Orleans, La, May 14-18, 1989.

Barkay, T. Adaptation of microbial communities to mercury. Invited talk. Gordon Conference on Applied and Environmental Microbiology. July, 1989.

Barkay, T. Gene probes to predict responses of aquatic microbial communities to toxic metals. 7th International Conference on Heavy Metals in the Environment. Geneva, Sept. 12-15, 1989.

Liebert, C., T. Barkay, R. Turner, and N. Bloom. Acclimation to CH_3Hg^+ and Hg^{2+} of aquatic microbial communities from a mercury polluted pond. 90th Annu. Meet. Am. Soc. Microbiol. Anaheim, CA, May 13-17, 1990.

Turner, R.R., T. Barkay, and A.J. VandenBrook. Biotransformations of mercury in contaminated and control streams in relation to the abundance of microbial gene sequences encoding mercury resistance. International Conference on Mercury as an Environmental Pollutant. Gavle, Sweden, June 11-13, 1990.

Kurtz, J.C., R.B. Jonas, T. Barkay, and R. Devereux. Sediment microcosm systems for investigations of microbial community structure and function. 11th Annu. Meet. SETAC. Arlington, Virginia, Nov. 11-15, 1990.

Devereux, R., C. Liebert, T. Barkay, and D.A. Stahl. Hybridization of fluorescent dye-labeled rRNA probes to bacteria extracted from sandy marine sediment. 91th Annu. Meet. Am. Soc. Microbiol. Dallas, TX, May 5-9, 1991.

Sørensen, S.J., and T. Barkay. Experimental approach for the detection of gene transfer from GEM's to bacteria indigenous to aquatic environments. 3rd Symposium on Bacterial Genetics and Ecology. Villerfranche sur Mer, France, Nov. 20-22, 1991.

Barkay, T., and R. Turner. Biological removal of Hg(II) from a contaminated freshwater pond. 203th Am. Chem. Soc. Nat. Meet. San Francisco, CA. Apr. 5-10, 1992.

Barkay, T. Mercury bioremediation. A symposium on the "Use of Natural and Genetically Engineered Microorganisms to Combat Pollution". Kiriat Anavim, Israel. May 9-19, 1992.

Barkay, T., and R. Turner. Use of microbial activity to remove mercury from contaminated water. 92th Annu. Meet. Am. Soc. Microbiol. New Orleans, LA. May 26-30, 1992.

Barkay, T., C. Liebert, and M. Gillman. Gene transfer from GEMs to aquatic bacteria. 92th Annu. Meet. Am. Soc. Microbiol. New Orleans, LA. May 26-30, 1992.

Kurtz, J., T. Barkay, R. Devereux, and R.B. Jonas. Pentachlorophenol effects on microbial community function in estuarine sediment microcosms. 92th Annu. Meet. Am. Soc. Microbiol. New Orleans, LA. May 26-30, 1992.

Turner, R., E. Saouter, and T. Barkay. The role of biotic and abiotic mercury reduction and volatilization in the removal of mercury from a contaminated stream and pond. Mercury as a Global Pollutant - Toward Integration and Synthesis. International Conference. Monterey, CA. May 31-June 4, 1992.

Nazaret, S., W.H. Jeffrey, R. Von Haven, E. Saouter, and T. Barkay. *mer* gene expression in aquatic environments. 93th Annu. Meet. Am. Soc. Microbiol. Atlanta, May 16-20, 1993.

Selifonova, O., R. Burlage, and T. Barkay. *mer-lux* based biosensors for detection of Hg(II) in contaminated water. 93th Annu. Meet. Am. Soc. Microbiol. Atlanta, May 16-20, 1993

Barkay, T., C. Liebert, N. Kroer, and S. Sørensen. Failure to detect conjugal transfer to indigenous bacteria in estuarine microcosms. 93th Annu. Meet. Am. Soc. Microbiol. Atlanta, May 16-20, 1993

Selifonova, O., and T. Barkay. The effect of sodium on mercury uptake by *E. coli*. 94th Annu. Meet. Am. Soc. Microbiol. Las Vegas, May 23-27, 1994.

Kurtz, J., T. Barkay, R. Devereux, and R.B. Jonas. Effects of pentachlorophenol on microbial community processes in estuarine sediment microcosms. 94th Annu. Meet. Am. Soc. Microbiol. Las Vegas, May 23-27, 1994.

Barkay, T., P. Vaithyanathan, R. Kavanaugh, E. Saouter, and C.J. Richardson. Is there a role for eutrophication in methylmercury accumulation in the Florida Everglades? ASLO/PSA Conference, Miami, FL. June 12-16, 1994.

Barkay, T. Molecular mechanisms of adaptation of microbial communities to stress. International Workshop on New Approaches in Microbial Ecology. Aug. 21-24, 1994. Helsingor, Denmark.

Oremland, R.S., L.G. Miller, P. Dowdle, T. Connell, and T. Barkay. Oxidative mercury demethylation potentials in sediments from the Carson River, Nevada. 95th Annu. Meet. Am. Soc. Microbiol. Washington DC, May 21-25, 1995.

Kroer, N., T. Barkay, S.J. Sørensen, and D. Weber. Influence of root exudates and bacterial metabolic activity on apparent conjugal gene transfer frequencies in the rhizosphere of water grass (*Echinocolora crusgali*). 95th Annu. Meet. Am. Soc. Microbiol. Washington DC, May 21-25, 1995.

Barkay, T. Invited presentation. Factors determining availability of mercury to bacteria. 95th Annu. Meet. Am. Soc. Microbiol. Washington DC, May 21-25, 1995.

Barkay T. Invited presentation. Factors determining availability of mercury to bacteria. The 7th International Symposium on Microbial Ecology. Santos, Brazil, Aug. 27-Sept. 1, 1995.

Sørensen, S.J., L.E., Jensen, N. Kroer, A. Petersen, and T. Barkay. Gene transfer in interfaces in aquatic and terrestrial environments. The 7th International Symposium on Microbial Ecology. Santos, Brazil, Aug. 27-Sept. 1, 1995.

Sørensen, S.J., J. Vekova, and T. Barkay. Assembly of catabolic pathways by horizontal gene transfer from GEMs to indigenous bacteria. International Seminar on Biosorption and Bioremediation. Prague, Czech Republic, Oct. 1-4, 1995.

Barkay, T., E. Saouter, and R.R. Turner. Microbial activities for the bioremediation of mercury contamination. Second SETAC World Congress. Vancouver, Canada, Nov. 5-9, 1995.

Turner, R.R., T. Barkay, and L.D. Rasmussen. Recovery of mercury-contaminated sites: Role of mercury-resistant bacteria. 4th International Conference on Mercury as a Global Contaminant, Hamburg, Germany, Aug. 4-8, 1996.

Turner, R.R., T. Barkay, and L.D. Rasmussen. Development and application of an indicator of the bioavailability of mercury to microorganisms. An EPA/DOE Workshop on Mercury Speciation and Bioavailability, Denver, Colorado, Sept. 17-19, 1996.

Bonzongo, J.C., W.B. Lyons, J.J. Warwick, M.E. Hines and T. Barkay. 1997. Levels, speciation and fate of mercury in the Carson River system. Presented at the Geol. Soc. Amer. Annual Meeting, Salt Lake.

Barkay, T., S. Navon-Venezia, P.A. Willumsen, E.Z. Ron, and E. Rosenberg. Alasan-enhanced solubilization and biodegradation of polyaromatic hydrocarbons. Novel Approaches for Bioremediation of Organic Pollution. 42nd OHOLO Conference, Eilat, Israel, May 3-7, 1998.

Barkay, T., S. Navon-Venezia, P.A. Willumsen, E.Z. Ron, and E. Rosenberg. Alasan-enhanced solubilization and biodegradation of polyaromatic hydrocarbons. 98th Annu. Meet. Am. Soc. Microbiol. Atlanta, May 17-21, 1998.

Hines, M.E., M. Horvat, J. Faganeli, J-C.J. Bonzongo, T. Barkay, E.B. Major, K. Scott, E.A. Bailey, J.J. Warwick, and W.B. Lyons. Mercury biogeochemistry in the Idrija River, Slovenia: From above the mine into the Gulf of Trieste. 5th International Conference on Mercury as a Global Pollutant. Rio de Janeiro, Brazil, May 23-28, 1999.

Barkay, T., M. Hines, J-C. Bonzongo, K. Scott, P. Kringelum, W.B. Lyons, J.J. Warwick, And J. Faganeli. Molecular analysis of a mercury contaminated aquatic ecosystem. 99th Annu. Meet. Am. Soc. Microbiol. Chicago, May 30-June 3, 1999.

Hines, M.E., S. Nadig, T. Barkay, J-C.J. Bonzongo, and E.A. Bailey. Mercury methylation/demethylation and the *mer* operon in the Carson River, Nevada. 99th Annu. Meet. Am. Soc. Microbiol. Chicago, May 30-June 3, 1999.

Barkay, T., C. Kelly, G. Golding, K. Scott, and J. Rudd. Microbial "biosensors" to measure bioavailable mercury in the environment. 11th International Biodeterioration and Biodegradation Symposium, Arlington, VA, Aug. 1-6, 1999.

Kelly, C.A., K.J. Scott, J.W.M. Rudd, T. Barkay, and M. Holoka, M. A new, aquatic “bioreporter” for measurement of bioavailable mercury in aquatic environments. A&WMA International Specialty Conference on Mercury in the Environment. Bloomington, Minnesota, September 15-17, 1999.

Barkay, T., S. Sørensen, and N. Kroer. Molecular and microcosms analyses of the potential for gene transfer in radionuclei and metal-contaminated subsurface environments. DOE-NABIR PI Workshop. Reston VA. Jan. 31–Feb. 2, 2000

Barkay, T. Microbial transformations: A critical factor determining Hg toxicity. Invited talk. 100th Annu. Meet. Am. Soc. Microbiol. Los Angeles, May 21–25, 2000.

Barkay, T. Mercury biosensors. Invited talk. Annu. Meet. Can. Soc. Microbiol. Winnipeg, Manitoba, June 11–14, 2000.

Barkay, T., G. Benyehuda, and D. Balkwill. Metal resistance among bacteria isolated from subsurface cores. DOE-NABIR PI Workshop. Warrenton, VA. March 12-14, 2001.

Golding, G., C.A. Kelly, R. Sparling, P.C. Loewen, J.W.M. Rudd, and T. Barkay. Facilitated uptake of mercury at trace concentrations by *Escherichia coli* and *Vibrio anguillarum*. Workshop on the Fate, Transport, and Transformation of Mercury in Aquatic & Terrestrial Environments. West Palm Beach, FL., May 8-10, 2001.

Lipthay, J.R., J. Aamand, and T. Barkay. Expression of *tfdA* in aquatic microbial communities during degradation of 2,4-dichlorophenoxyacetic acid. 9th International Symposium on Microbial Ecology. Amsterdam, The Netherlands, Aug. 26–31, 2001.

J.K. Schaefer, J. Reinfelder, J. Yagi, and T. Barkay. The potential role of *mer*-mediated resistance in controlling methylmercury accumulation in freshwater ecosystems in New Jersey. 102th Annu. Meet. Am. Soc. Microbiol. Salt Lake City, May 19– 3, 2002, and The 34th Mid-Atlantic Industrial & Hazardous Waste Conference, Rutgers University, New Brunswick, NJ, Sept. 20-21, 2002.

Chew Y. S., C. Vetriani, and T. Barkay. Mercury resistance and *merA* sequences of moderately thermophilic and mesophilic bacteria from hydrothermal vents. 102th Annu. Meet. Am. Soc. Microbiol. Salt Lake City, May 19 – 23, 2002.

Coombs J.M., G. Benyehuda, and T. Barkay. A nested PCR approach to examine the molecular basis of resistance via heavy metal efflux pumps among bacteria of the deep terrestrial subsurface. 102th Annu. Meet. Am. Soc. Microbiol. Salt Lake City, May 19–23, 2002, and Bioremediation and Biodegradation: Current Advances in Reducing Toxicity, Exposure and Environmental Consequences, Asilomar Conference Center, Pacific Grove, California, June 1 – 12, 2002.

Yagi, J.M., and T. Barkay. Determination of mercuric reductase activity of soil microbial communities. 102th Annu. Meet. Am. Soc. Microbiol. Salt Lake City, May 19–23, 2002.

Barkay, T., and J. Schaefer. Microbe-mercury interactions: old paradigms, new frontiers. *Bioremediation and Biodegradation: Current Advances in Reducing Toxicity, Exposure and Environmental Consequences*. Asilomar Conference Center, Pacific Grove, CA, June 9–12, 2002.

Coombs J.M., G. Benyehuda, J. de Liphay, S. Sørensen, and T. Barkay. Lateral gene transfer of genes encoding heavy metal efflux pumps in bacteria of the deep terrestrial subsurface. International Symposium on Subsurface Microbiology, Copenhagen, Denmark, Sept. 8–13, 2002, and The 34th Mid-Atlantic Industrial & Hazardous Waste Conference, Rutgers University, New Brunswick, NJ, Sept. 20-21, 2002.

Barkay, T. The role of microbial transformations in controlling methylmercury accumulation in aquatic environments. The 34th Mid-Atlantic Industrial & Hazardous Waste Conference, Rutgers University, New Brunswick, NJ, Sept. 20-21, 2002. Invited talk.

Yagi, J., J. Schaefer, J.-C. Bonzongo, K. Duddleston, K. Haase, M. Hines, and T. Barkay. Factors controlling methylmercury production in bank soils of the Carson River, Nevada. 103th Annu. Meet. Am. Soc. Microbiol. Washington DC, May 18–22, 2003.

Coombs, J.M., and T. Barkay. Lateral transfer of metal homeostasis genes: a comparison between surface bacteria and isolates from the deep terrestrial subsurface. 103th Annu. Meet. Am. Soc. Microbiol. Washington DC, May 18–22, 2003.

Kaletsy, R., A. Chatziefthimiou, M. Fleming, and T. Barkay. Isolation and initial characterization of novel organomercurial lyases. 103th Annu. Meet. Am. Soc. Microbiol. Washington DC, May 18–22, 2003.

Chatziefthimiou, A. D., C. Vetriani, and T. Barkay. Isolation and characterization of mercury resistant, thermophilic, thiosulfate-oxidizing bacteria from a hot spring in Mount Amiata, Italy. 104th Annu. Meet. Am. Soc. Microbiol. New Orleans, May 19–23, 2004.

Ní Chadhain, S. M., S. Hicks, J. Schaefer, T. Barkay, G. J. Zylstra. Novel mercuric reductase genes found in anaerobic communities of mercury contaminated sediments. 104th Annu. Meet. Am. Soc. Microbiol. New Orleans, May 19–23, 2004.

Schaefer, J. K., J. Yagi, T. Cardona-Marek, K. Ellickson, S. Tel-Or, J. Reinfelder, and T. Barkay. The role of the bacterial enzyme, organomercurial lyase, in controlling methylmercury accumulation in mercury contaminated natural waters. 7th International Conference on Mercury as a Global Pollutant. Ljubljana, Slovenia, June 27–July 2, 2004.

Kritee K., B. Klaue, T. Barkay, and J.D. Blum. Mercury isotopic fractionation observed during the reduction of Hg(II) to Hg(0) by the bacterial mercuric reductase. 7th International Conference on Mercury as a Global Pollutant. Ljubljana, Slovenia, June 27–July 2, 2004.

Crespo-Medina, M. T. Barkay, and C. Vetriani. Mercuric reductase enzymes from mesophilic bacteria are optimally active at a moderately thermophilic to thermophilic temperature range.

Extremophiles 2004. 5th International Conference on Extremophiles. Cambridge, MD, Sept. 19–23, 2004.

Barkay T., Schaefer, J, Poulain, A. and, Amyot M. Microbial transformations in the mercury geochemical cycle. 15th Goldschmidt Conference. Moscow, Idaho, May 20–25, 2005. Invited talk

Kritee, K., B. Klaue, J. Blum, and T. Barkay. Biological mercury (Hg) isotope fractionation. 15th Goldschmidt Conference. Moscow, Idaho, May 20 – 25, 2005.

Raimondo, M.A., H.S. Humphrys, J. Coombs, T. Barkay, and P.A. Sobecky. 2005. heavy metal resistance of aerobic subsurface chemoheterotrophs obtained from the field research center, oak Ridge, Tennessee. 105th Annu. Meet. Am. Soc. Microbiol. Atlanta, June 5–9, 2005

Wiatrowski, H. A., and T. Barkay. A novel mechanism for reduction of mercury (II) by *Shewanella oneidensis* MR-1. 105th Annu. Meet. Am. Soc. Microbiol. Atlanta, June 5–9, 2005.

Coombs, J., G. Oregaard, I. Torres, C.H. Black, P. Sobecky, and T. Barkay. A functional gene microarray for the detection of a genomic linkage between metal resistance and *inc/rep* genes on broad host Range plasmids. 105th Annu. Meet. Am. Soc. Microbiol. Atlanta, June 5–9, 2005.

Schaefer, J., and T. Barkay. Diversity of mercuric reductase (MerA) genes and transcripts in mercury contaminated waters. 105th Annu. Meet. Am. Soc. Microbiol. Atlanta, June 5–9, 2005.

Yu, R., J. K. Schaefer, C. Dipasquale, and T. Barkay. Molecular characterization of bacterial and archaeal communities in a Hg contaminated Adirondack wetland. North East Microbiology, Physiology, and Taxonomy Meeting, Blue Mountain Lake, NY, June 2005.

Barkay, T. Gene transfer in the soil environment. International Union of Microbiological Societies 2005. San Francisco. CA, July 23-28, 2005 - invited

Barkay, T., and J. Coombs. Horizontal gene transfer of metal homeostasis genes and its role in microbial communities of the deep terrestrial subsurface. Society of General Microbiology Symposium on “Micro-organisms in Earth Systems”, Keele, England, Sept. 12–15, 2005 – invited.

Barkay, T., and C. Vetriani. Microbe-mercury interactions in geothermal environments: insights into the evolution and origin of microbial mercury detoxification. Gordon Research Conference on Environmental Bioinorganic Chemistry, Andover, NH, June 18–23, 2006 – invited.

Wiatrowski, H., and T. Barkay. Reduction of Hg(II) to Hg(0) by dissimilatory metal reducing bacteria. 8th International Conference on Mercury as a Global Pollutant. Madison, WI, Aug. 11–Aug 16, 2006.

Kritee, K., J. Blum, M. Johnson, B. Berquist, and T. Barkay. The measurement of microbial mercury stable isotope fractionation and its potential utility for distinguishing between Hg

sources. 8th International Conference on Mercury as a Global Pollutant. Madison, WI, Aug. 11–Aug 16, 2006.

Crespo-Medina, M., N. Bloom, A. Chatziefthimiou, J. Reinfelder, C. Vetriani, and T. Barkay. Interactions of chemosynthetic bacteria with mercury at deep-sea hydrothermal vents. 8th International Conference on Mercury as a Global Pollutant. Madison, WI, Aug. 11–Aug 16, 2006.

Yu, R., C. DiPasquale, and T. Barkay. Molecular characterization of microorganisms in a methylmercury producing Adirondack Wetlands. 8th International Conference on Mercury as a Global Pollutant. Madison, WI, Aug. 11–Aug 16, 2006.

Crane, S., J. Dighton, and T. Barkay. Interactions between mercury and ectomycorrhizal fungi. 8th International Conference on Mercury as a Global Pollutant. Madison, WI, Aug. 11–Aug 16, 2006.

Barkay, T. J. Coombs, and A. Chaziefthimiou. Horizontal gene transfer in microbial communities: Genetic plasticity for coping with environmental change. 4th Okazaki Biology Conference on “Terra Microbiology II”, Okazaki, Japan, Sept. 10–15, 2006 – invited.

Øregaard, G., J.R. de Liphay, T. Barkay, and S.J. Sørensen. High diversity of bacterial mercuric reductase genes from surface and sub-surface soil. 11th International Symposium on Microbial Ecology. Viena, Austria, Aug. 20–25, 2006

Graduate Students:

Søren Sørensen	Ph.D. awarded in 1994 by The University of Copenhagen
Janice Kurts	Ph.D. awarded in 1995 by George Mason University
John Danbar	Ph.D. student, Michingen State University, 1994
Lasse Rasmusan	Ph.D. student, The University of Copenhagen, 1996
Jeffra Scheafer	Ph.D. (2005), Rutgers University
Kritee	Ph.D. student, Rutgers University, present
Aspa Chatziefthimiou	Masters student (2005), Rutgers University
Sharron Hicks Crane	Ph.D. student, Rutgers University, present
Melitza Crespo-Medina	Ph.D. student, Rutgers University, present
Riqing Yu	Ph.D. student, Rutgers University, present
Matt Rodman	Ph.D. student, Rutgers University, present
Zac Friedman	Ph.D. student, Rutgers University, present
Rachel Ward	Ph.D. student, Rutgers University, present
Aspa Chatziefthimiou	Ph.D. student, Rutgers University, present

Potsdoctoral fellows:

Dr. Erwan Saouter - 1992 through 1994
Dr. Sylvie Nazaret - 1992 through 1994
Dr. Rathi Kavanagh - 1992 through 1994
Dr. Jarek Letowski – 2000 - 2001

Dr. Jonna Coombs – 2001 - 2005
Dr. Heather Wiatrowski – 2003 – present
Dr. Yanping Wang – 2005 - present

Technicians:

Ms. Cynthia Liebert - 1987 through 1992
Mr. Mark Gillman - 1989 through 1994
Ms. Olga Selifonova - 1992 through 1993
Ms. Shiyeng Zhang - 1991 through 1992
Ms. Susan Nadig - 1996
Ms. Ruth Dorn – 2000 through 2001
Ms. Gili Benyehuda – 2000 through 2002
Ms. Shoshi Tel-Or – 2001 through 2002
Ms. Jane Yagi – 2001 through 2003
Ms. Patricia Lu-Irving – 2005 - present