

Curriculum Vitae

Thomas Mitchell Schmidt

Current Position Professor
Departments of Ecology and Evolutionary Biology, Internal Medicine, Civil and Environmental Engineering, and Microbiology and Immunology
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Primary Research Interests

- Patterns of diversity, resource utilization and spatial organization in microbial communities
- Relationships between genome evolution and microbial life histories
- Microbial metabolism and competition in low-oxygen environments

Education

1987-90 Post doctoral fellow, Indiana University, Bloomington, IN
1985-87 Post doctoral researcher. Scripps Institute of Oceanography; San Diego, CA.
1985 Ph.D. Ohio State University; Columbus, OH Research Area: Microbiology
1981 M.S. Ohio State University; Columbus, OH Research Area: Environmental Biology
1978 B.S. University of Michigan; Ann Arbor, MI Biology/Chemistry

Selected Awards, Recognition and Professional Position

- Plenary Speaker, ASM annual meeting, 2014
- Professor, Michigan State University, 1993 – 2012
- Graduate Teaching Award, American Society for Microbiology 2010
- Plenary Speaker, 12th International Symposium on Microbial Ecology, 2010
- Plenary Speaker, ASM Conference for Undergraduate Educators, 2009
- Adjunct Faculty Member, Kellogg Biological Station, 2009 - current
- Distinguished Alumni Lecturer, Marine Biological Laboratory 2008
- Co-Director, MBL Microbial Diversity Course, Woods Hole, MA 2003 – 2008
- Faculty member, USC Geobiology Course, Catalina Island, 2002-2003
- Teacher-Scholar Award (University-Wide) MSU, 2000
- Article (Relman, Schmidt et al. NEJM 1990 323:1573) selected by ASM as one of the 50 most important articles in microbiology in the past century
- Teacher-Scholar Award, College of Natural Sciences, MSU 1999
- Assistant Professor, Miami University, Oxford, OH 1990-1993
- Invited researcher at The Hebrew University of Israel, Jerusalem, Israel
Laboratories of Yehuda Cohen and Etana Padan, 1983

Professional Memberships and Societies

- American Academy of Microbiology
- American Society for Microbiology
- Ecological Society of America
- International Society for Microbial Ecology
- Sigma Xi
- Society for Applied Microbiology

Selected Advisory, Editorial, and Administrative Activities

- Scientific Advisory Board, Max Planck Institute for Terrestrial Microbiology 2012 - 2018
- Scientific Advisory Board, Genome Canada Environmental Genomics Project, 2011 - current
- Michigan BioTrust Scientific Advisory Board Members, 2010 – current
- Corporate Board Member, Marine Biological Laboratory, 2009 - current
- External Advisor, Pacific Northwest National Laboratories “Microbial Communities Initiative”, 2009 - current
- Editorial Committee, Annual Reviews of Microbiology 2012 – current
- Strategic Program Committee, Marine Biological Laboratory 2012
- Grand Challenges Task Force, American Academy for Microbiology, 2012
- Crohn’s and Colitis Foundation of America, Research Challenges Microbiome Committee, 2012
- ASM General Meeting Program Committee, 2011 - current
- Thrust group leader, BEACON NSF Center for Evolution in Action, 2010 - 2012
- American Academy for Microbiology, Committee on Awards, 2010 – 2013
- Chair, MMG Faculty Advisory Committee, 2010, member - 2013
- Editorial Board Member:
 - Microbiome 2012 - present
 - The ISME Journal 2007 - present
 - Environmental Microbiology 1999 - present
 - Microbial Ecology 2000 - 2007
 - Molecular Ecology 1999 - 2005
- Co-Convenor of American Academy of Microbiology Workshop “The Rare Biosphere”, 2009
- NIH Panelist for Grand Opportunities (GO) grants, 2009
- DOE Panelist for Science Focus Area Panel Review of Biological Systems Science Division, 2009
- Participant, NIH Human Microbiome Project Research Network Meeting, 2009
- DOE Microbial Communities Initiative Review Team Member, 2009
- Participant, NIH conference on Dynamics of Host-Associated Microbial Communities 2008
- Marine Biological Laboratory Loeb Design Team, 2008
- DOE Carbon Sequestration Workshop, 2008
- Pacific Northwest National Laboratory Cultivation Workshop 2008

Recent Teaching Activities

Microbial Metagenomics (MMG 890): I developed this course to provide an opportunity for students to design and implement experiments incorporating technological and computational advances in metagenomics. This is an intensive, 2-week immersion course that has been offered on main campus and at MSU’s Kellogg Biological Station (<http://www.kbs.msu.edu/education/summer-courses>).

Integrative Microbial Biology (MMG 801) In this course, I worked with several other faculty members to develop and teach a course where fundamental principles from microbial physiology, ecology and evolution are woven together to provide an integrated view of the microbial world.

Microbial Diversity Course: As co-director of this internationally acclaimed summer course (<http://www.mbl.edu/education/courses/summer>), I helped incorporate ecological and genomic perspectives with classic culture-based approaches. Competitively awarded grants (listed above) helped us to provide hands on experience and to host scientists who joined us in a contemporary exploration of the microbial world.

Academic Mentoring

<u>Graduate students</u>	<u>Degree/Awards</u>	<u>Current Position</u>
Byron Smith		Ph.D. candidate - Univ. Michigan

Dishari Mukareesh		Ph.D. student - Univ. Michigan
Brendan Neil		Ph.D. candidate – Michigan State Univ.
Benjamin Roller		Ph.D. candidate – Michigan State Univ.
Keara Towery	M.S. 2012	Research Technician, MSU
Zarraz May Ping Lee	Ph.D. 2011	Post Doctoral Fellow, Arizona State Univ.
Uri Levine	Ph.D. 2009 EPA Star fellowship	Post Doctoral Fellow, USDA
Dana Gerken	M.S. 2009	Research Technician, Auburn University
Stephanie Eichorst	Ph.D. 2007 Rudolph Hugh Award	Research Scientist, University of Vienna
Kristin Huizinga	Ph.D. 2006	Research Scientist, Monsanto
Les Dethlefsen	Ph.D. 2004 EPA Star fellowship DuVall Award	Postdoctoral Fellow, Stanford University
Joel Klappenbach	Ph.D. 2001 Hugh Award	Research Scientist, Rosetta Inpharmatics, WA
Daniel Buckley	Ph.D. 2000 DuVall Award	Associate Professor, Cornell University
Bradley Stevenson	Ph.D. 2000 DuVall Award	Associate Professor, Oklahoma State University
Joel Hashimoto	M.S. 2000	Research Associate, Oregon Health and Sciences
Paul Lepp	Ph.D. 1997	Associate Professor, Minot University

I have served as a committee member for over 40 graduate students from the following departments: Microbiology and Molecular Genetics, Zoology, Computer Science, Entomology, Plant and Soil Science, Animal Sciences and Genetics. Approximately 35 undergraduate students have conducted research projects in my laboratory.

<u>Post Doctoral Fellows</u>	<u>Dates</u>	<u>Current Position</u>
Brian Gray	2013 - current	
Arvind Venkatarraman	2012 - current	
Rachel Morris	2012 - 2013	
Kevin Theis	2008 - current	
Dongjuan Dai	2011 – 2012	Research Associate, Stanford University
Tracy Teal	2008 – 2012	Research Associate, MSU
Bjorn Ostman	2010 – 2012	Post Doc, BEACON, MSU
Vicente Alvarez-Gomez	2008 – 2010	Scientist, US Environmental Protection Agency
Heli Juottonen	2009 – 2010	Post Doc, University of Helsinki, Finland
Russell Grant	2008 – 2009	Lecturer, Newcastle University
Dionysius Antonopolous	2004 – 2007	Research Scientist, Argonne National Laboratories
Jorge Rodrigues	2003 – 2005	Assistant Professor, University of Texas, Arlington
Bradley Stevenson	2001 – 2004	Associate Professor, Oklahoma State University
John Urbance	2000	Assistant Research Scientist, MSU

Tim Lilburn	1997-1998	Scientist, American Type Culture Collection
Jorge Santo Domingo	1993	Scientist, US Environmental Protection Agency
Bonnie Jo Bratina	1992-1996	Associate Professor, Univ. Wisconsin, La Crosse

<u>Sabbaticals Hosted</u>	<u>Semester/Year</u>	<u>Home Institution</u>
Eric Tornø	Fall 2005	Michigan State University (Dept. Computer Science)
Jeanne Poindexter	Spring 2000	Columbia University, Barnard College
John Breznak	Fall 1999	Michigan State University
Randall Hicks	Fall/Spring 1994	University of Minnesota, Duluth

Ongoing Research Support

- *Impacts of Molecular Oxygen on the Structure and Function of the Intestinal Microbiome* (PI)
NIH: 02/01/2013 - 01/31/2017
- *The role of the gut microbiota in ulcerative colitis* (PI)
NIH: 06/24/2010 - 07/31/2014
- *Biodiversity conservation and drug discovery in Madagascar and microbial community assessment in marine microbial field training* (co-I)
NIH: 06/01/2011 - 05/31/2014
- *Expanding the culture collection of microaerobes for screening of probiotics* (PI)
Proctor and Gamble: 12/01/2013 - 11/30/2014
- *The KBS LTER Project: Long-Term Ecological Research in Row-Crop Agriculture* (co-PI)
NSF: 12/01/2010 - 11/30/2016
- *Understanding the lung microbiome in HIV-infected and HIV-uninfected individuals* (Co-I)
NIH: 09/23/2009 - 07/31/2014

Past Funding Support

- *Cultivation and Characterization of Microaerobes from the Human Microbiome* (PI)
NIH: 10/01/2008 - 07/31/2013
- *A Symbiotic Approach to the Study of Animal Behavior* (co-PI)
NSF: 08/01/2009 - 07/31/2013; NSF
- *Microbial ecology of helicobacter-induced colitis* (co-I)
NIH: 07/01/2008 - 06/30/2012
- *Testing Fundamental Tradeoffs between Power and Efficiency in the Translational Machinery of Bacteria* (PI) (7/04 - 6/08); NSF
- *Phylogeny to Function: Genomic Analyses of Dominant, Uncultured Soil Bacteria* (10/01 - 9/04), (PI)
NSF
- *Physiological and Ecological Significance of Multiple rRNA Operons in Bacteria* (4/99 - 3/02) (PI) NSF
- *Ecological and Evolutionary Interrogation of a Verrucomicrobium Genome* (8/05 – 8/06) (PI) DOE
- *Towards an Understanding of the Untapped Microbial Diversity of Soils* (9/00 - 11/03) (PI) USDA
- *Taxonomic Characterization of a Novel Bacterial Genus* (3/97 - 8/99) (PI) Archer, Daniels, and Midland Co.
- *Quantitative Detection of Microorganisms in Environmental Samples* (10/92 - 10/95) (PI) EPA

Refereed Publications

- Lee, Z.M. and **T.M. Schmidt** (2014) Bacterial growth efficiency varies in soils under different land management practices. *Soil Biology and Biochemistry*. 69:282–290.
- Blasiak, L.C., A.W. Schmidt, H. Andriamiarinoro, T. Mulaw, R. Rasolomampianina, W.L. Applequist, C. Birkinshaw, F. Rejo-Fienena, P.P. Lowry II, **T.M. Schmidt**, R.T. Hill (2014) Bacterial communities in Malagasy soils with differing levels of disturbance affecting botanical diversity. *PlosOne*. 9(1): e85097. doi: 10.1371/journal.pone.0085097
- Robertson, G. P., K. Gross, S. Hamilton, D. Landis, **T. Schmidt**, S. Snapp and S. Swinton (2014) Farming for Services: An Ecological Approach to Production Agriculture. *BioScience*. *In Press*
- Werling, B.P., T.L. Dickson, R. Isaacs, H. Gaines, C. Gratton, K.L. Gross, H. Liere, C.M. Malmstrom, T.D. Meehan, L. Ruan, B.A. Robertson, G.P. Robertson, **T.M. Schmidt**, A.C. Schrotenboer, T.K. Teal, J.K. Wilson, D.A. Landis (2014) Perennial grasslands increase multiple ecosystem services in bioenergy landscapes. *PNAS*. 111(4):1652-7.
- Theis, K.R., A. Venkataraman, J.A. Dycus, K.D. Koonter, E.N. Schmitt-Matzen, A.P. Wagner, K.E. Holekamp and **T.M. Schmidt** (2013) Symbiotic bacteria appear to mediate hyena social odors. *PNAS* 110:19832-19837.
- Isapong, J., W. Sealy Hambricht, A.G. Willis, A. Boonmee, S.J. Callister, K.E. Burnum, L. Paša-Tolić, C.D. Nicora, J.T. Wertz, T.M. Schmidt, J.L.M. Rodrigues (2013) Development of an ecophysiological model for *Diplosphaera colotermitum* TAV2, a member of the termite hindgut *Verrucomicrobia*. *The ISME Journal*, doi: 10.1038/ismej.2013.74.
- Morris, RL and **T.M. Schmidt**. Shallow Breathing: Bacterial Life at Low O₂. (2013) *Nature Microbiology Reviews*. 11: 205 – 212.
- Young, V.B., L.H. Raffals, S.W. Huse, M. Vital, D. Dai, P.D. Schloss, J.M. Brulc, D.A. Antonopoulos, R.L. Arrieta, J.H. Kwon, K.G. Reddy, N. Hubert, S.L. Grimm, J.H. Vineis, S. Dalal, H.G. Morrison, A.M. Eren, F. Meyer, **T.M. Schmidt**, J.M. Tiedje, E.B. Chang and M.L. Sogin (2013) Multiphasic Analysis of the Temporal Development of the Distal Gut Microbiota in Patients Following Ileal Pouch Anal Anastomosis. *Microbiome*. *Microbiome*. 2013, 1:9 doi:10.1186/2049-2618-1-9
- Vital, M. C.R. Penton, Q. Wang, V.B. Young, D.A. Antonopoulos, M.L. Sogin, H.G. Morrison, L.H. Raffals, E.B. Chang, G.B. Huffnagle, **T.M. Schmidt**, J.R. Cole, J.M. Tiedje (2013) A gene-targeted approach to investigate the intestinal butyrate-producing bacterial community. *Microbiome* 1:8
- Morris, A., J.M. Beck, P. Schloss, T.B. Campbell, K. Crothers, J.L. Curtis, S.C. Flores, A.P. Fontenot, E. Ghedin, L. Huang, K. Jablonski, E. Kleeup, S.V. Lynch, E. Sodergren, H. Twigg, V.B. Young, A. Venkataraman, **T.M. Schmidt** and G. Weinstock (2013) Comparison of the respiratory microbiome in healthy non-smokers and smokers. *Am. J. Respir. Crit. Care Med*. 187(10):1067-75.
- Xue, K., L. Wu, Y. Deng, Z. He, J. Van Nostrand, R.P. Robertson, **T.M. Schmidt** and J. Zhou (2013) Functional gene differences in soil microbial communities from conventional, low-input and organic farmlands. *Applied and Environmental Microbiology* 79:1284-92.

Refereed Publications (con.)

- Shade, A., H. Peter, S.D. Allison, D. Baho, M. Berga, H. Bürgmann, D.H. Huber, S. Langenheder, J.T. Lennon, J.B.H. Martiny, K. Matulich, **T.M. Schmidt** and J. Handelsman (2012) Fundamentals of microbial community resistance and resilience. *Frontiers in Microbiology*. 3:417 doi: 10.3389/fmicb.2012.0041
- Wertz, J.T., E. Kim, J.A. Breznak, **T.M. Schmidt** and J.L.M. Rodrigues (2012) Genomic and Physiological Characterization of the *Verrucomicrobia* Isolate *Diplosphaera colotermitum* gen. nov., sp. nov. Reveals Microaerophily and Nitrogen Fixation Genes. *Applied and Environ. Microbiol*. 78:1544-1555.
- Evidence for a bacterial mechanism for group-specific social odors among hyenas (2012) Theis, K.R. **T.M. Schmidt** and K.E. Holekamp. *Nature Scientific Reports* 2:615. doi: 10.1038/srep00615

- The Human Microbiome Project Consortium (2012) Structure, function and diversity of the healthy human microbiome. *Nature* 486:207-214.
- The Human Microbiome Project Consortium (2012) A framework for human microbiome research. *Nature* 486: 215-221.
- Jangid, K., Williams, M.A., Franzluebbers, A.J., **Schmidt, T.M.**, Coleman, D.C., Whitman, W.B. (2011) Land-use history has a stronger impact on soil microbial community composition than aboveground vegetation and soil properties. *Soil Biology & Biochemistry*. 43:2184-2193.
- Young V.B., Kahn S.A., **Schmidt T.M.** and Chang E.B. (2011) Studying the enteric microbiome in inflammatory bowel diseases: getting through the growing pains and moving forward. *Frontiers Microbiology* 2:144. doi:10.3389/fmicb.2011.00144
- Levine, U.Y., T.K. Teal, G.P. Robertson and **T.M. Schmidt** (2011) Agriculture's impact on microbial diversity and associated fluxes of carbon dioxide and methane. *The ISME Journal*. 5:1683–1691.
- Eichorst, S.A., C.R. Kuske and **T.M. Schmidt** (2011) Influence of plant polymers on the distribution and cultivation of bacteria in the phylum Acidobacteria. *Applied and Environmental Microbiology*. 77:586-596.
- Gomez-Alvarez V., T.K. Teal and **T.M. Schmidt** (2009) Systematic artifacts in metagenomes from complex microbial communities. *The ISME Journal* 3: 1314–1317.
- Antonopoulos, D.A., S.M. Huse, H.G. Morrison, **T.M. Schmidt**, M.L. Sogin and V.B. Young (2009) Reproducible community dynamics of the gastrointestinal microbiota following antibiotic perturbation. *Infect. Immun.* 77:2367-2375.
- Lee, Z. M-P., C. Bussema III and **T.M. Schmidt** (2009) *rrnDB*: Documenting the number of rRNA and tRNA genes in Bacteria and Archaea. *Nucleic Acids Research*. 37: D489–D493.
- Rodrigues, J.L.M., M.A. Duffy, A.J. Tessier, D. Ebert, and **T.M. Schmidt** (2008) Phylogenetic characterization of *Spirobacillus cienkowskii*: a red-pigmented, spiral-shaped bacterial pathogen of freshwater populations of *Daphnia*. *Applied and Environmental Microbiology* 74: 1575-1582.
- Jackson, J.H., **T.M. Schmidt**, and P.A. Herring (2008) A systems approach to model natural variation in reactive properties of bacterial ribosomes. *BMC Systems Biology* 2008, 2:62.
- Chang, JY, D.A. Antonopoulos, A. Kalra, A. Tonelli, W.T. Khalife, **T.M. Schmidt** and V.B. Young (2008) Decreased diversity of the fecal microbiome in recurrent *Clostridium difficile*-associated diarrhea. *Journal of Infectious Diseases* 197:435-438.
- San I.G., W. Sheldon, **T. M. Schmidt**,...Michener, W.K. (2008) Defining linkages between the GSC and NSF's LTER program:How the ecological metadata language (EML) relates to GCDML and other outcomes. *OMICS* 12: 151-156.

Refereed Publications (con.)

- Hang, D., E. Torng, C. Ofria and **T.M. Schmidt** (2007) The effect of natural selection on the performance of maximum parsimony. *BMC Evolutionary Biology* 7:94.
- Eichorst, S.A. J. A. Breznak, **T. M. Schmidt** (2007) Taxonomy and ecology of newly isolated soil bacteria that define *Terriglobus* gen. nov., in the phylum Acidobacteria. *Applied and Environmental Microbiology* 70(8): 4748-4755.
- Dethlefsen, L. and **T.M. Schmidt** (2007) Performance of the translational apparatus varies with the ecological strategies of bacteria. *Journal of Bacteriology* 189:3237-3245.
- Schmidt, T.M.** (2006) The maturing of microbial ecology. *International Microbiology* 9:217-223.
- Dethlefsen, L. and **T.M. Schmidt** (2005) Differences in codon bias cannot explain differences in translational power among microbes. *BMC Bioinformatics* 6:3 pp 1-20.

- Kuehl, C.J. H.D. Wood, T.L. Marsh, **T.M. Schmidt** and V.B. Young (2005) Colonization of the cecal mucosa by *Helicobacter hepaticus* impacts the diversity of the indigenous microbiota. *Infection and Immunity* 73:6952–6961.
- Lepp, P.W. and **T.M. Schmidt** (2004) Changes in *Synechococcus* population size and cellular ribosomal RNA content in response to predation and nutrient limitation. *Microbial Ecology* 48:1-9.
- Stevenson, B.S, and **T. M. Schmidt** (2004) Life history implications of ribosomal RNA gene copy number in *Escherichia coli*. *Applied and Environmental Microbiology* 70:6670-6677.
- Stevenson, B.S, S.A. Eichorst, J.T. Wertz, **T. M. Schmidt** and J.A. Breznak (2004) New strategies for cultivation and detection of previously uncultured microbes. *Applied and Environmental Microbiology* 70:4748-4755.
- Young, V.B. and **T. M. Schmidt** (2004) Antibiotic-associated diarrhea accompanied by large-scale alterations in the composition of the fecal microbiota. *Journal of Clinical Microbiology* 42:1203–1206.
- Hang, D. C. Ofria, **T.M. Schmidt** and E. Torng (2003) The effect of natural selection on phylogeny reconstruction algorithms. *Lecture Notes in Computer Science* 2723:13–24.
- Keough, B.P., **T.M. Schmidt** and R.E. Hicks (2003) Archaeal nucleic acids in picoplankton from Great Lakes of the World. *Microbial Ecology* 46:238-248.
- Buckley, D.H. and **T.M. Schmidt** (2003) Diversity and dynamics of microbial communities in soils from agroecosystems. *Environmental Microbiology* 5:441-452.
- Hashimoto, J.G., B. S. Stevenson and **T.M. Schmidt** (2003) Rates and consequences of recombination between ribosomal RNA operons. *Journal of Bacteriology* 185:966-972.
- Do, Y.S., **T.M. Schmidt**, J.A Zahn, E.S. Boyd and A.A. Dispirito (2003) Role of *Rhodobacter* sp. PS9, a purple non-sulfur photosynthetic bacterium isolated from an anaerobic swine waste lagoon, in odor remediation . *Applied and Environmental Microbiology* 69:1710-1720.
- Cole, J.R., B. Chai, T.L. Marsh, R.J. Farris, Q. Wang, S.A. Kulam, S. Chandra, D.M. McGarrell, **T.M. Schmidt**, G.M. Garrity, J.M. Tiedje (2003) The Ribosomal Database Project (RDP-II): Previewing a new autoaligner that allows regular updates and the new prokaryotic taxonomy. *Nucleic Acids Research* 31:442-443.
- Buckley, D.H. and **T.M. Schmidt** (2001) The structure of microbial communities in soil and the lasting impacts of cultivation. *Microbial Ecology*. 42:11-21.
- Kappenbach, J.A., P.R. Saxman, J.R. Cole and **T.M. Schmidt** (2001) *rrndb*: The ribosomal RNA operon copy number database. *Nucleic Acids Research* 29:181-184.
- Buckley, D.H. and **T.M. Schmidt** (2001) Environmental factors influencing the distribution of Verrucomicrobia in soil. *FEMS Microbiology Ecology* 35:105-112.

Refereed Publications (con.)

- Urbance, J.W., B. J. Bratina, S. F. Stoddard and **T. M. Schmidt** (2001) Taxonomic characterization of *Ketogulonigenium vulgare* gen. nov. , sp. nov. and *Ketogulonigenium robustum* sp. nov., which oxidize L-sorbose to 2-keto-L-gulonic acid. *International Journal of Systematic and Evolutionary Microbiology* 51:1059-1070.
- Maidak, B.L., J.R. Cole, T.G. Lilburn, C.T. Parker, P.R. Saxman, R.J. Farris, G.M. Garrity, G.J. Olsen, **T.M. Schmidt**, and J.M. Tiedje (2001) The RDP (Ribosomal Database Project) moves forward. *Nucleic Acids Research* 29:173-174.
- Klappenbach, J., J.M. Dunbar and **T.M. Schmidt** (2000) rRNA gene copy number predicts ecological strategies in bacteria. *Applied and Environmental Microbiology* 66:1328-1333.
- Maidak, B.L., J.R. Cole, T.G. Lilburn, C.T. Parker, P.R. Saxman, J.M. Stredwick, G.M. Garrity, B. Li, G.J. Olsen, S. Pramanik, **T.M. Schmidt**, and J.M. Tiedje (2000) The RDP (Ribosomal Database Project) continues. *Nucleic Acids Research* 28:173-174.

- Leadbetter, J.R., **T.M. Schmidt**, J.R. Graber and J. A. Breznak (1999) Acetogenesis from H₂ plus CO₂ by spirochetes from termite guts. *Science* 283:686-689.
- Lilburn, T.G., **T.M. Schmidt** and J.A. Breznak. (1999) Phylogenetic characterization of termite gut spirochetes. *Environmental Microbiology* 1:331-346.
- Maidak, B.L., J.R. Cole, C.T. Parker, G.M. Garrity, N. Larsen, B. Li, T.G. Lilburn, M.J. McCaughey, G.J. Olsen, R. Overbeek, S. Pramanik, **T.M. Schmidt**, J.M. Tiedje, C.R. Woese (1999) A new version of the RDP (Ribosomal Database Project). *Nucleic Acids Research* 27:171-173.
- Lopez, F.A., J. Manglicmot, **T.M. Schmidt**, C. Yeh, H.V. Smith, D.A. Relman (1999) Molecular characterization of *Cyclospora*-like organisms from baboons. *Journal of Infectious Diseases* 179:670-676.
- Velicer, G., **T.M. Schmidt** and R.E. Lenski (1999) Application of traditional and phylogenetic comparative methods to test for a tradeoff in bacterial growth rates at low versus high substrate concentration. *Microbial Ecology* 73:35-47.
- Stevenson, B. and **T.M. Schmidt** (1998) Growth rate dependent accumulation of RNA from plasmid-borne ribosomal RNA operons. *Journal of Bacteriology* 180:1970-1972.
- Lepp, P.W. and **T.M. Schmidt** (1998) Nucleic acid content of *Synechococcus* spp. during growth in continuous light and light:dark cycles. *Archives of Microbiology* 170:201-207.
- Lenski, R.E., J.A. Mongold, P.D. Sniegowski, M. Travisano, F. Vasi, P.J. Gerrish, and **T.M. Schmidt** (1998) Evolution of competitive fitness in experimental populations of *E. coli*: What makes one genotype a better competitor than another? *Antonie van Leeuwenhoek* 73:35-47.
- Buckley, D.H., J.R. Graber and **T.M. Schmidt** (1998) Phylogenetic analysis of nonthermophilic Crenarchaeota and their diversity and abundance in soils. *Applied and Environmental Microbiology* 64: 3781-3787.
- Button, D.K., B.R. Robertson, L. Pinto, P.W. Lepp and **T.M. Schmidt** (1998) A high affinity, small, dilute, extinction-culture isolate having kinetic constants compatible with growth at ambient concentrations of dissolved nutrients in seawater. *Applied and Environmental Microbiology* 64:4467-4476.
- Bratina, B.J., B. Stevenson, W. J. Green and **T.M. Schmidt** (1998) Manganese reduction by microbes from oxic regions of the Lake Vanda (Antarctica) water column. *Applied and Environmental Microbiology* 64: 3791-3797.
- Bratina, B.J., M. Viebahn, and **T.M. Schmidt**. (1997) Achieving specificity in nucleic acid hybridizations using nuclease S1. *Methods in Molecular and Cellular Biology* 6:107-115.

Refereed Publications (con.)

- Larsen, N., R. Overbeek, S. Pramanik, **T.M. Schmidt**, E.E. Selkov, O. Strunk, J.M. Tiedje, and J.W. Urbance (1997) Towards microbial data integration. *Journal of Industrial Microbiology and Biotechnology* 18:68-72.
- Hogan, D.A., D.H. Buckley, C. Nakatsu, **T.M. Schmidt** and R.P. Hausinger (1997) Distribution of *tfdA* in soil isolates that do not degrade 2,4-dichlorophenoxyacetic acid (2,4-D). *Microbial Ecology* 34:90-96.
- Yanni, Y.G., R.Y. Rizk, V. Corich, A. Squartini, K. Ninke, S. Philip-Hollingsworth, G. Orgambide, F.J. de Bruijn, J. Soltzhus, D. Buckley, **T.M. Schmidt**, P.F. Mateos, J.K. Ladha, and F.B. Dazzo (1997) Natural endophytic association between *Rhizobium leguminosarum* bv. *trifolii* and rice roots and assessment of its potential to promote rice growth. *Plant and Soil* 194:99-114.
- Loneragan, D.J., H.L. Jenter, J.D. Coates, E.J.P. Phillips, **T.M. Schmidt** and D.R. Lovely (1996) Phylogenetic analysis of dissimilatory Fe(III)-reducing bacteria. *Journal of Bacteriology* 178:2402-2408.

- Relman, D.A., **T.M. Schmidt**, A. Gajadhar, M. Sogin, J. Cross, K. Yoder, O. Sethabutr and P. Echeverria (1996) Molecular phylogenetic analysis of the human intestinal pathogen, *Cyclospora*, suggests that it is closely related to *Eimeria*. *Journal of Infectious Diseases* 173:440-445.
- Schmidt, T.M.** (1994) Fingerprinting bacterial genomes using ribosomal RNA genes and operons. *Methods in Molecular and Cellular Biology* 5:3-12.
- Schmidt, T.M.** and D.A. Relman (1994) Phylogenetic identification of uncultured pathogens using ribosomal RNA sequences. *Methods in Enzymology* 235: 205-222.
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