

Dr. Terry J. Gentry

Current Title: Assistant Professor

Appointment: 70% Research, 30% Teaching

Physical Address:

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Education:

Ph.D., Microbiology & Immunology, University of Arizona, 2003
M.S., Agronomy (Soil Microbiology), University of Arkansas, 1998
B.S., Agronomy, University of Arkansas, 1993

Teaching Focus:

Environmental Soil Science (AGRO 455)

Research & Extension Focus:

The development and use of molecular technologies to enable the detection and remediation of environmental contamination. This includes the detection and identification of microbial pathogens from animal, human, and natural sources and also the characterization of microbial populations and communities contributing to applied remediation processes such as the bioremediation of organic and metal contaminants.

Publications. Refereed journal publications – 16, Book chapters – 3, Other technical publications – 2

Professional Accomplishments (limit to bullet statements):

- Developed a bioremediation functional gene microarray containing over 12,500 probes for microbial genes involved in the degradation of organic contaminants and the resistance to, or reduction of, various metals. This was part of team effort that produced an array containing >23,000 probes for microbial genes involved in C, N, and S cycling, methane oxidation, methanogenesis, organic contaminant degradation, metal resistance, and perchloroate remediation.
- Used microarray technology to correlate microbial community dynamics with geochemical parameters during *in situ* remediation of uranium- and nitrate-contaminated soil and groundwater.
- Used metagenomic approaches to characterize genomes of dominant microbial populations in contaminated groundwater.
- Conducted research investigating the exchange of DNA among soil bacteria following exposure to organic contaminants and the potential application of this process to enhance the remediation of contaminated sites.
- Constructed a mobilizable plasmid containing genes for 2-chlorobenzoate degradation, nickel resistance, and the green fluorescent protein (GFP) for use in horizontal gene transfer experiments.

Recent Publications (limit to 10 most recent):

1. **Gentry, T.J.**, and J. Zhou. 2006. Microarray-based microbial identification and characterization. *In* Y.-W. Tang and C. Stratton (ed.) *Advanced Techniques in Diagnostic Microbiology*. Kluwer Publishers (in press).

2. Hwang, C., W.-M. Wu, **T.J. Gentry**, J. Carley, S.L. Carroll, C. Schadt, D. Watson, P.M. Jardine, J. Zhou, R.F. Hickey, C.S. Criddle, and M.W. Fields. 2006. Changes in microbial community structure correlate with stressed operating conditions during start-up of a field-scale denitrifying fluidized bed reactor. *Appl. Microbiol. Biotech.* (in press).
3. Krutz, L.J., **T.J. Gentry**, S.A. Senseman, I.L. Pepper, and D.P. Tierney. 2006. Mineralization of atrazine, metolachlor, and their respective metabolites in vegetated filter strip and cultivated soil. *Pest Manag. Sci.* (in press).
4. Wu, W., J. Carley, **T.J. Gentry**, M.A. Ginder-Vogel, M. Fienen, T. Mehlhorn, H. Yan, S. Carroll, M.N. Pace, J. Nyman, J. Luo, M.E. Gentile, M.W. Fields, R.F. Hickey, B. Gu, D. Watson, O.A. Cirpka, J. Zhou, S. Fendorf, P. Kitanidis, P.M. Jardine, and C.S. Criddle. 2006. Field-scale bioremediation of uranium in a highly contaminated aquifer II: reduction of U(VI) and geochemical control of U(VI) bioavailability. *Environ. Sci. Technol.* (in press).
5. Krutz, L.J., C.A. Beyrouy, **T.J. Gentry**, D.C. Wolf, and C.M. Reynolds. 2005. Selective enrichment of a pyrene degrader population and enhanced pyrene degradation in Bermuda grass rhizosphere. *Biol. Fert. Soils.* 41:359-364.
6. Schadt, C.W., J. Liebich, S.C. Chong, **T.J. Gentry**, Z. He, H. Pan, and J. Zhou. 2005. Chapter 11, Design and use of functional gene microarrays (FGAs) for the characterization of microbial communities, p. 331-368. *In* T. Savidge and H. Pothulakis (ed.) *Microbial Imaging. Methods in Microbiology.* Vol. 34. Academic Press, Inc., London, UK.
7. **Gentry, T.J.**, K.L. Josephson, and I.L. Pepper. 2004. Functional establishment of introduced chlorobenzoate degraders following bioaugmentation with newly activated soil. *Biodegradation* 15:67-75.
8. **Gentry, T.J.**, C. Rensing, and I.L. Pepper. 2004. New approaches for bioaugmentation as a remediation technology. *Crit. Rev. Environ. Sci. Technol.* 34:447-494.
9. **Gentry, T.J.**, G. Wang, C. Rensing, and I.L. Pepper. 2004. Chlorobenzoate-degrading bacteria in similar pristine soils exhibit different community structures and population dynamics in response to anthropogenic 2-, 3-, and 4-chlorobenzoate levels. *Microb. Ecol.* 48:90-102.
10. Wang, G., **T.J. Gentry**, G. Grass, K.L. Josephson, C. Rensing, and I.L. Pepper. 2004. Real-time PCR quantification of a green fluorescent protein-labeled, genetically engineered *Pseudomonas putida* strain during 2-chlorobenzoate degradation in soil. *FEMS Microbiol. Lett.* 233:307-314.

Professional Memberships, Leadership Roles and Honors:

- American Society for Microbiology
- American Society of Agronomy
- Soil Science Society of America
- Superfund Basic Research Program Graduate Trainee, 2002-2003
- University of Arizona Foundation Outstanding Teaching Associate Award, 2002
- ARCS Foundation Fellowship, 2000-2002
- Graduate Registration Scholarship, University of Arizona, 2000-2002
- College of Medicine Fellowship, University of Arizona, 2000-2002
- Outstanding M.S. Student, Agronomy Department, University of Arkansas, 1997
- First place graduate student slide presentation, Southern Branch ASA Meetings, 1997
- First place graduate student poster presentation, Southern Branch ASA Meetings, 1996