

**CURRICULUM VITAE  
JOHN J. KELLY**

Loyola University Chicago  
Department of Biology  
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**PROFESSIONAL INTERESTS**

- Microbial Ecology
- Soil Microbiology
- Molecular Biotechnology

**EDUCATION**

- Ph.D. (1998) Rutgers, The State University of New Jersey, New Brunswick, NJ  
Department of Environmental Sciences
- M.S. (1995) Rutgers, The State University of New Jersey, New Brunswick, NJ  
Department of Environmental Sciences
- B.A. (1990) Dartmouth College, Hanover, NH  
Major: Biology

**PRINCIPAL POSITIONS HELD**

- 2007 – current Associate Professor  
Loyola University Chicago, Chicago, IL  
Department of Biology
- 2001 – 2007 Assistant Professor  
Loyola University Chicago, Chicago, IL  
Department of Biology
- 1998 – 2001 Post Doctoral Fellow  
Northwestern University, Evanston, IL  
Department of Civil and Environmental Engineering  
Supervisor: Dr. David A. Stahl
- 1993 – 1998 Graduate Research Assistant  
Rutgers, The State University of New Jersey, New Brunswick, NJ  
Department of Environmental Sciences

## PROFESSIONAL APPOINTMENTS

- 2004 – current Editorial Board  
*Applied and Environmental Microbiology*
- 2003 – current Adjunct Faculty  
Department of Microbiology and Immunology  
Loyola University Medical Center, Maywood, IL
- 2001 – current Adjunct Faculty  
Department of Civil and Environmental Engineering  
Northwestern University, Evanston, IL

## AWARDS AND HONORS

- CAURS Award for Support of Undergraduate Research 2006
- Sujack Award for Teaching Excellence Nomination 2006
- Sujack Award for Teaching Excellence Nomination 2003

## PROFESSIONAL AFFILIATIONS

- American Association for the Advancement of Science
- American Society for Microbiology
- International Society for Microbial Ecology
- Soil Science Society of America

## RESEARCH FUNDING

- 6/1/09-8/31/11 Illinois Sustainable Technology Center (ISTC)  
PI: John Kelly. Co-PIs: Emma Rosi Marshall (Loyola University Chicago) and Teresa Chow (ISTC)  
Title: Ecotoxicology of Antimicrobial Pharmaceutical and Personal Care Products in Illinois Rivers and Streams.  
Funds Awarded: \$107,636
- 8/1/07-7/31/10 National Science Foundation (NSF)  
PI: Christopher Peterson (Loyola University Chicago), Co-PIs: John Kelly and Kimberly Gray (Northwestern University)  
Title: Mediation of Denitrification by Algal/Bacterial Interactions in Stream Periphyton.  
Funds Awarded: \$687,320 (Total), \$226,958 (Kelly)

9/1/05-8/31/09 US Department of Agriculture (USDA)  
 PI: John Kelly  
 Title: Development of Microarray-Based PCR for Analysis of Nitrogen Cycling Functional Guilds in Soil.  
 Funds Awarded: \$100,000

5/1/06-6/30/07 Illinois Department of Natural Resources (IL-DNR)  
 PI: John Kelly.  
 Title: Impact of Time Since Application on Development of Soil Microbial Communities in Surface Applied River Sediment.  
 Funds Awarded: \$5,000

5/1/05-6/30/06 Illinois Department of Natural Resources (IL-DNR)  
 PI: John Kelly.  
 Title: Assessment of Soil Microbial Communities in Surface Applied River Sediment.  
 Funds Awarded: \$5,000

9/17/03-8/31/04 National Science Foundation (NSF)  
 PI: Nancy Tuchman (Loyola University Chicago). Co-PIs: James Teeri (University of Michigan).  
 John Kelly (Co-PI on Supplemental Funding Request)  
 Title: Elevated Atmospheric CO<sub>2</sub> Alters Plant Detritus Nutritional Quality: Effects on Microbial and Detritivore Food Webs in Aquatic Ecosystems.  
 Supplemental Funds Awarded (Kelly): \$27,000

12/1/02-11/30/03 Defense Advanced Research Projects Agency (DARPA)  
 PI: Darrell Chandler (Argonne National Lab). Co-PI: John Kelly.  
 Title: Design and Development of Oligonucleotide Probes and PCR Primers for Toxin genes.  
 Funds Awarded (Kelly): \$75,000

1/1/02-11/30/03 Defense Advanced Research Projects Agency (DARPA)  
 PI: Joany Jackman (Johns Hopkins Univ.). Co-PI: John Kelly.  
 Title: Iterative Testing and Development of Field Portable Biochip Assay.  
 Funds Awarded (Kelly): \$125,000

7/1/01-6/30/02 Defense Advanced Research Projects Agency (DARPA)  
 PI: Darrell Chandler (Argonne National Lab). Co-PI: John Kelly.  
 Project Title: MAGIChip Biosensor Program: Bacterial chip expansion.  
 Funds Awarded (Kelly): \$100,000

## PUBLICATIONS

### **Peer Reviewed Publications**

- Kominoski, J.S., T.J. Hoellein, **J.J. Kelly**, C.M. Pringle. 2009. Does mixing litter of different qualities alter stream microbial diversity and functioning on individual litter species? *Oikos* 118: 457-463.
- Baniulyte, D., E. Favila, and **J.J. Kelly**. 2009. Shifts in microbial community composition following surface application of dredged river sediments. *Microb. Ecol.* 57: 160–169.
- **Kelly, J.J.** 2009. Application of DNA microarrays to microbial ecology research: history, challenges, and recent developments. *Env. Res. J.* 3: 357-384.
- Ishida, C.K., S. Arnon, C.G. Peterson, **J.J. Kelly**, and K.A. Gray. 2008. Influence of algal community structure on denitrification rates in periphyton cultivated on artificial substrates. *Microb. Ecol.* 56: 140–152.
- Bavykin, S.G., V.M. Mikhailovich, V.M. Zakharyev, Y.P. Lysov, **J.J. Kelly**, O.S. Alferov, I.M. Gavin, A.V. Kukhtin, J. Jackman, D.A. Stahl, D. Chandler, and A.D. Mirzabekov. 2008. Discrimination of *Bacillus anthracis* and Closely Related Microorganisms by Analysis of 16S and 23S rRNA with Oligonucleotide Microarray. *Chem. Bio. Interact.* 171: 212-235.
- **Kelly, J.J.**, E. Favila, L.S. Hundal, and J.C. Marlin. 2007. Assessment of soil microbial communities in surface applied mixtures of Illinois River sediments and biosolids. *Appl. Soil Ecol.* 36: 176-183.
- Ishida, C.K., **J.J. Kelly**, and K.A. Gray. 2006. Effects of variable hydroperiods and water level fluctuations on denitrification capacity, nitrate removal, and benthic microbial community structure in constructed wetlands. *Ecol. Eng.* 28: 363-373.
- Angeloni, N.L., K.J. Jankowski, N.C. Tuchman, and **J.J. Kelly**. 2006. Effects of an invasive cattail species (*Typha x glauca*) on sediment nitrogen and microbial community composition in a freshwater wetland. *FEMS Microbiol. Lett.* 263: 86-92.
- Siripong, S., **J.J. Kelly**, D.A. Stahl, and B.E. Rittmann. 2006. Impact of pre-hybridization PCR amplification on microarray detection of nitrifying bacteria in wastewater treatment plant samples. *Env. Microbiol.* 8: 1564–1574.
- Janus, L.R., N.L. Angeloni, J. McCormack, S.T. Rier, N.C. Tuchman, and **J.J. Kelly**. 2005. Elevated atmospheric CO<sub>2</sub> alters soil microbial communities associated with trembling aspen (*Populus tremuloides*) roots. *Microb. Ecol.* 50: 102-109.
- **Kelly, J.J.**, S. Siripong, J. McCormack, L.R. Janus, H. Urakawa, S. El Fantroussi, P.A. Noble, L. Sappelsa, B.E. Rittmann, and D.A. Stahl. 2005. DNA microarray detection of nitrifying bacterial 16S rRNA in wastewater treatment plant samples. *Water Res.* 39: 3229-3238.
- Bavykin, S. G. , Y. P. Lysov, V. Zakhariyev, **J. J. Kelly**, J. Jackman, D. A. Stahl, A. Cherni. 2004. Use of 16S rRNA, 23S rRNA, and gyrB gene sequence analysis to determine phylogenetic relationships of *Bacillus cereus* group microorganisms *J. Clin. Microbiol.* 42:3711-3730.
- **Kelly, J. J.** 2003. Molecular techniques for the analysis of soil microbial processes: functional gene analysis and the utility of DNA microarrays. *Soil Sci.* 168:597-605.
- **Kelly, J. J.**, M. Haggblom, and R. L. Tate. 2003. Effects of heavy metal contamination and remediation on soil microbial communities in the vicinity of a zinc

smelter as indicated by analysis of microbial community phospholipid fatty acid profiles. *Biol. Fertil. Soils* 38:65–71.

- Urakawa, H., S. El Fantroussi, H. Smidt, J. C. Smoot, E. H. Tribou, **J. J. Kelly**, P. A. Noble, and D. A. Stahl. 2003. Optimization of single-base-pair mismatch discrimination in oligonucleotide microarrays. *Appl. Environ. Microbiol.* 69: 2848-2856.
- El Fantroussi, S., H. Urakawa, A. E. Bernhard, **J. J. Kelly**, P. A. Noble, H. Smidt, G. M. Yershov, and D. A. Stahl. 2003. Direct profiling of environmental microbial populations by thermal dissociation analysis of native ribosomal RNAs hybridized to oligonucleotide microarrays. *Appl. Environ. Microbiol.* 69: 2377-2382.
- **Kelly, J. J.**, B. K. Chernov, I. Tovstanovsky, A. D. Mirzabekov, and S. G. Bavykin. 2002. Radical generating coordination complexes as tools for rapid and effective fragmentation and fluorescent labeling of nucleic acids for microchip hybridization. *Analyt. Biochem.* 311: 103-118.
- Koizumi, Y., **J. J. Kelly**, T. Nakagawa, H. Urakawa, S. El-Fantroussi, S. Al-Muzaini, M. Fukui, Y. Urushigawa, and D.A. Stahl. 2002. Parallel Characterization of Anaerobic Toluene- and Ethylbenzene-Degrading Microbial Consortia by PCR-Denaturing Gradient Gel Electrophoresis, RNA-DNA Membrane Hybridization, and DNA Microarray Technology. *Appl. Environ. Microbiol.* 68: 3215-3225.
- Urakawa, H., P. A. Noble, S. El Fantroussi, **J. J. Kelly**, D. A. Stahl. 2002. Single-base-pair discrimination of terminal mismatches by using oligonucleotide microarrays and neural network analyses. *Appl. Environ. Microbiol.* 68: 235-244.
- **Kelly, J. J.**, M. Haggblom, and R. L. Tate. 1999. Changes in soil microbial communities over time resulting from one time application of zinc: a laboratory microcosm study. *Soil Biol. Biochem.* 31: (10) 1455-1465.
- **Kelly, J. J.**, M. Haggblom, and R. L. Tate. 1999. Effects of the land application of sewage sludge on soil heavy metal concentrations and soil microbial communities. *Soil Biol. Biochem.* 31: (10) 1467-1470.
- **Kelly, J. J.**, and R. L. Tate. 1998. Effects of heavy metal contamination and remediation on soil microbial communities in the vicinity of a zinc smelter. *J. Environ. Qual.* 27: 609-617.
- **Kelly, J. J.**, and R. L. Tate. 1998. Use of BIOLOG for the analysis of microbial communities from zinc contaminated soils. *J. Environ. Qual.* 27: 600-608.

### ***Proceedings Papers***

- Stahl, D.A., El Fantroussi, S., Urakawa, H., Noble, P., Smidt, H., Smoot, J., **Kelly, J.J.** 2002. DNA Microchip Based Microbial Monitoring of Environmental Systems. *Proceedings of the International Conference on Environmental Systems.*
- Berardesco, G., **Kelly, J.J.**, Sappelsa, L., Stahl, D.A. 1999. DNA microchip-based microbial monitoring. *Proceedings of the International Conference on Environmental Systems.*

### ***Abstracts***

- Winkelman, J., T. Walter, M. Sullivan, J. Gil, N. Tuchman and **J.J. Kelly**. 2009. Effect of Elevated Atmospheric CO<sub>2</sub> on Terrestrial Nitrogen-Cycling Microbial Communities. *American Society for Microbiology Abstracts.*

- Hell, S.M., A. Daley, K. Kalscheur, J. Saliba, M. Sullivan, R. Bednarczyk, S. Kufra, S. Bigley, K. Gray, C. Peterson, **J. J. Kelly**. 2009. The Development of Denitrifying Biofilms in Urban Streams. American Society for Microbiology Abstracts.
- Grancharova, T., P. Geddes, **J.J. Kelly**. 2009. Impact of Invasive Plant Species on Nitrogen Cycling Bacterial Communities in Freshwater Wetland Sediments. American Society for Microbiology Abstracts.
- Policht, K., T. Grancharova, L.S. Hundal, K. Kumar, and **J.J. Kelly**. 2009. Impacts of Biosolids Application on Nitrogen Cycling in Agricultural Soil. American Society for Microbiology Abstracts.
- Bansal, A., A.P. Taber, M. Wencel, P. Belt, L.R. Janus, S.T. Rier, N.C. Tuchman, and **J.J. Kelly**. 2008. Impacts of Leaves Grown Under Elevated Carbon Dioxide on Detritivore Bacterial and Fungal Communities in a Temperate Woodland Stream. American Society for Microbiology Abstracts.
- Lima, B.P., J. Winkelman, J. Gil, and **J.J. Kelly**. 2007. Assessment of Nitrogen Cycle Functional Gene Diversity by Multiplex PCR and Microarray Hybridization. Soil Science Society of America Abstracts.
- Lima, B.P. and **J.J. Kelly**. 2007. Assessment of Nitrogen Cycle Functional Gene Diversity by Multiplex PCR and Microarray Hybridization. American Society for Microbiology Abstracts.
- Baniulyte, D., E. Favila, and **J. J. Kelly**. 2007. Assessment of Soil Microbial Communities in Surface Applied Illinois River Sediments. American Society for Microbiology Abstracts.
- Lima, B.P. and **J.J. Kelly**. 2006. Development of Microarray-Based PCR for Analysis of Nitrogen Cycling Functional Guilds. Soil Science Society of America Abstracts.
- **J.J. Kelly** and E. Favila. 2006. Assessment of Soil Microbial Communities in Surface Applied Mixtures of Illinois River Sediments and Biosolids. Soil Science Society of America Abstracts.
- Taber, A.P., S.T. Rier, L.R. Janus, N.C. Tuchman, and **J.J. Kelly**. 2006. Impacts of Aspen Leaves Grown Under Elevated Carbon Dioxide on Detritivore Bacterial Communities and Fungal Communities. American Society for Microbiology Abstracts.
- Angeloni, N.L., K.J. Jankowski, N.C. Tuchman, and **J.J. Kelly**. 2006. Effects of an Invasive Cattail Species (*Typha x glauca*) on Microbial Community Composition in a Freshwater Wetland. American Society for Microbiology Abstracts.
- Taber, A.P., S.T. Rier, L.R. Janus, N.C. Tuchman, and **J.J. Kelly**. 2005. Impacts of Leaves Grown Under Elevated Carbon Dioxide on Detritivore Bacterial Communities. American Society for Microbiology Abstracts.
- Angeloni, N.L., K.J. Jankowski, N.C. Tuchman, and **J.J. Kelly**. 2005. Effect of an Invasive Cattail Species on Soil Nutrient Levels and Microbial Composition of a Wetland Ecosystem. American Society for Microbiology Abstracts.
- Angeloni, N.L., L.R. Janus, J. McCormack, S.T. Rier, N.C. Tuchman, and **J.J. Kelly**. 2004. Growth of Quaking Aspen Trees (*Populus tremuloides*) under Elevated Atmospheric CO<sub>2</sub> Alters Soil Bacterial and Fungal Communities. American Society for Microbiology Abstracts.
- **Kelly, J.J.**, J. McCormack, L.R. Janus, N. Angeloni, S.T. Rier, and N.C. Tuchman. 2003. Elevated Atmospheric CO<sub>2</sub> Alters Belowground Microbial Communities Associated with Quaking Aspen Roots. American Society for Microbiology Abstracts.

- Siripong, S., **J.J. Kelly**, J. McCormack, P.A. Noble, B.E. Rittmann, and D.A. Stahl. 2003. Detection of Autotrophic Nitrifying Bacteria in Activated Sludge Samples from a Full-scale Wastewater Treatment Plant Using a DNA Oligonucleotide Microarray. American Society for Microbiology Abstracts.
- H. Urakawa, S. El Fantroussi, P. A. Noble, **J.J. Kelly**, D. A. Stahl. 2002. Single-base-pair mismatch discrimination using oligonucleotide DNA microarrays and real-time melting analysis. American Society for Microbiology Abstracts.
- **Kelly, J.J.**, L. Sappelsa, and D. A. Stahl. 2001. Optimized target-group discrimination using a DNA microarray format to identify nitrifying species. American Society for Microbiology Abstracts.
- El Fantroussi, S., H. Urakawa, **J.J. Kelly**, L. Sappelsa, P. A. Noble, and D. A. Stahl. 2001. Optimization of 16S rRNA-based microchip "PhyloChip" for microbial community analysis. American Society for Microbiology Abstracts.
- **Kelly, J.J.**, L. Sappelsa, and D.A. Stahl. 2000. Development of DNA microarray technology for the identification of nitrifying bacteria. American Society for Microbiology Abstracts.
- Bavykin, S. G., V. Mikhailovich, V. Zakharyev, Y. P. Lysov, A. Chernyi, J. Jackman, E. Boulygina, **J.J. Kelly**, I. Taran, , J. Ezzell, D. A. Stahl, and A. D. Mirzabekov. 1999. Biological microchip technology for discrimination of *Bacillus anthracis* and closely related species on the basis of genetic criteria. The 2<sup>nd</sup> International Workshop on the molecular biology of *Bacillus cereus* and *Bacillus anthracis*.
- **Kelly, J.J.**, L. Sappelsa, S. G. Bavykin, A. D. Mirzabekov, and D. A. Stahl. 1999. Optimization of DNA microarrays for the rapid characterization of microbial community population structure. American Society for Microbiology Abstracts.
- **Kelly, J.J.** and R.L. Tate. 1998. Microbial community assessment in zinc contaminated soils: Biolog and phospholipid fatty acid analyses. American Society for Microbiology Abstracts
- **Kelly, J.J.** and R.L. Tate. 1997. Biological measures of remediation of metal contaminated soils. XIII International Symposium on Environmental Biogeochemistry.
- **Kelly, J.J.** and R.L. Tate. 1997. Effects of remediation of heavy metal contaminated soils on the soil microbial communities. Agronomy Abstracts.
- **Kelly, J.J.** and R.L. Tate. 1997. Long term effects of sludge applied heavy metals on soil microbial communities. American Society for Microbiology Abstracts.
- **Kelly, J.J.** and R.L. Tate. 1996. BIOLOG analysis of zinc contaminated soil microbial communities. American Society for Microbiology Abstracts.

## INVITED PRESENTATIONS

- Elevated Atmospheric Carbon Dioxide Alters Terrestrial and Aquatic Microbial Communities in a Temperate Forest. Oral presentation given in the Department of Environmental Sciences at Rutgers University on May 1, 2009.
- Elevated Atmospheric Carbon Dioxide Alters Terrestrial and Aquatic Microbial Communities in a Northern Michigan Watershed. Oral presentation given at the General Meeting of the American Society for Microbiology in Boston, MA on June 3, 2008. My presentation was part of a Colloquium titled: Understanding the Microbiological Aspects of Global Change.

- Ecological Impacts of Pharmaceutical and Personal Care Products in Illinois Rivers and Streams. Oral presentation given at the Symposium on PPCPs in the Illinois Environment hosted by the Illinois Waste Management and Research Center on April 25, 2008.
- Assessment of Soil Microbial Communities in Surface Applied Illinois River Sediments. Oral presentation given at the Illinois River Sediment Conference, hosted by Illinois Waste Management and Research Center, March 1, 2007.
- Development of DNA Microarray Technology for Detection of Bacteria in Environmental Samples. Oral presentation given at the Stritch School of Medicine, Loyola University Medical Center, on May 16, 2006.
- Microbial Ecology in Urban Systems. Oral presentation given at the Loyola Center for Urban Environmental Research and Policy on April 21, 2006.
- Development of DNA Microarrays for the Detection of Nitrifying Bacteria in Wastewater Treatment Systems. Oral presentation given at the Annual Symposium sponsored by the University of Illinois' Center of Advanced Materials for Purification of Water with Systems in Atlanta, GA, on April 14, 2005.
- Impacts of Ecosystem Change Processes on Microbial Communities. Oral presentation given in the Department of Civil and Environmental Engineering at Northwestern University on April 20, 2005.
- Impacts of Heavy Metal Contamination on Soil Microbial Communities. Oral presentation given at the Annual Meeting of the Soil Science Society of America in Seattle, WA, on November 2, 2004.
- Development of DNA Microarray Technology for the Detection of Bacteria in Environmental Samples. Seminar given at the Chemistry Department at Loyola University Chicago on October 21, 2004.
- Impacts of Elevated CO<sub>2</sub> on Soil Microbial Communities. Seminar given at the University of Michigan Biological Station, Pellston, MI. July 29, 2004.
- Development of DNA Microarray Technology for the Detection of Bacteria in Environmental Samples. Seminar given at the Department of Molecular and Cellular Biochemistry, Stritch School of Medicine, Maywood, IL. November 3, 2003.
- Use of DNA Microarrays for the Detection of Bacteria in Environmental Samples. Seminar given at the "Frontiers in Assessment Methods for the Environment" symposium which was held at the University of Minnesota, Minneapolis, MN. August 10-13 2003.
- Development of DNA Microarray Technology for the Detection of Nitrifying Bacteria. Seminar given at the Department of Biology, DePaul University, Chicago, IL. March 21, 2001.
- Development of DNA Microarrays for the Detection of Nitrifying Bacteria. Seminar given at the Department of Civil and Environmental Engineering, Northwestern University, Evanston, IL, October 25, 2000.
- Comparison of DNA Microarrays and Membrane Hybridization as Platforms for the Application of Oligonucleotide Probes Targeting Nitrifying Bacteria. Seminar given at the Midwest Molecular Microbial Ecology Conference. Northern Illinois University, DeKalb, IL. July 17, 2000.
- Development of DNA Microarrays for Microbial Monitoring. Seminar given at the Advanced Environmental Monitoring and Control Project Meeting. Jet Propulsion Laboratory, Arcadia, CA. April 24-26, 2000.
- Soil Heavy Metal Contamination and Methods for Characterization of Microbial Communities. Seminar given at the Department of Plant and Soil Science, University of Delaware, Newark, DE. April 13, 2000.

- Development of DNA Microarrays for the Analysis of Microbial Communities. Seminar given at the DOE NABIR Workshop on Applications of Genomic Technology to Bioremediation. Arlington, VA. December 5–7, 1999.
- Development of DNA Microarrays for the Analysis of Microbial Communities. Seminar given at the Department of Civil and Environmental Engineering, Northwestern University, Evanston, IL. December 1, 1999.
- Effects of Sludge Applied Heavy Metals on Soil Microbial Communities. Seminar given at the Department of Soil and Water Engineering, Cornell University, Ithaca, NY. March 25, 1997.
- Effects of Metal Contamination and Remediation on Soil Microbial Communities. Seminar given at the Department of Environmental Sciences, Rutgers, The State University of New Jersey, New Brunswick, NJ. October 11, 1996.