

# Claudia K. Gunsch, Ph.D.

Department of Civil and Environmental Engineering  
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## EDUCATION:

- Ph.D., Civil Engineering** 05/04  
*University of Texas, Austin, TX*  
Dissertation: Linking Gene Expression to Performance in a Fungal Biofilter Treating Ethylbenzene
- M.S., Environmental Engineering and Science** 05/00  
*Clemson University, Clemson, SC*  
Thesis: Aerobic Cometabolism of Chlorinated Ethylenes by a Bacterial Isolate that Uses Vinyl Chloride as Primary Substrate
- B.S., Civil Engineering** 05/98  
*Purdue University, West Lafayette, IN*

## EMPLOYMENT HISTORY:

- Secondary Appointment, Nicholas School of the Environment** 01/16-present  
*Duke University, Durham, NC*
- Director, IBIEM Graduate Training Program** 09/15-present  
*Duke University, Durham, NC*
- Theodore S. Kennedy Associate Professor of Civil and Env. Eng.** 07/13 - present  
*Duke University, Durham, NC*
- Vice-President and Chief Science Officer** 02/09- 06/13  
*349Q, Cambridge, MA*
- Faculty Member, Center for Biomolecular and Tissue Engineering** 05/05 - present  
*Duke University, Durham, NC*
- Assistant Professor, Civil and Environmental Engineering** 08/04 – 06/13  
*Duke University, Durham, NC*
- Research Assistant/Teaching Assistant** 08/00-05/04  
*University of Texas, Austin, TX*
- Graduate Technical Writing Consultant** 08/01-12/01  
*University of Texas, Austin, TX*
- Environmental Engineer** 05/00-06/00  
*RMT, Inc, Greenville, SC*
- Research Assistant/Teaching Assistant** 08/98-05/00

*Clemson University, Clemson, SC*

**Environmental Engineer** 05/98-08/98  
*RMT, Inc, Greenville, SC*

**Research Assistant** 08/97-12/97  
*Purdue University, West Lafayette, IN*

**Environmental Engineer** 05/97-08/97  
*General Motors - Allison Transmission Division, Indianapolis, IN*

**Environmental Engineer** 05/96-08/96  
*General Motors - Powertrain Division, Bedford, IN*

**Environmental Engineer** 01/96-05/96  
*General Motors - Midsize Car Division, Kansas City, KS*

**Environmental Engineer** 05/95-08/95  
*General Motors - Environmental and Energy Staff, Detroit, MI*

**MAJOR HONORS AND AWARDS:**

ASCE Walter L. Huber Civil Engineering Research Prize 2016  
Duke University Bass Fellow 2016  
Capers and Marion McDonald Award for Excellence in Mentoring and Advising 2016  
RTI University Scholar 2015  
Indo-American Frontiers of Engineering, National Academy of Engineering, Fellow 2014  
Duke University Langford Lectureship Award 2013  
*Environmental Science & Technology* Excellence in Reviewing Award 2011  
U.S. Frontiers of Engineering, National Academy of Engineering, Fellow 2011  
National Science Foundation CAREER Award Recipient 2009  
Co-founder of Company Named in the Artemis Top 50 Water Companies 2009  
National Science Foundation Graduate Fellowship 1999-2004  
Environmental Protection Agency STAR Masters Student Graduate Fellowship 1999  
(Declined, Accepted the National Science Foundation Fellowship)

**OTHER HONORS AND AWARDS:**

8<sup>th</sup> US-Korea NanoForum, Co-Author on Poster awarded Silver Prize 2010  
Fellowship to attend NSF Workshop at AEESP Conference, Virginia Tech University 2007  
Duke University Nominee for the Oak Ridge Associated Universities Faculty Enhancement Award 2005  
Fellowship to attend CAREER Workshop at AEESP Conference, Clarkson University 2005  
Fellowship to attend "Nanotechnology, Biotechnology, and Green Manufacturing for Creating Sustainable Technologies" Short Course, Northwestern University 2005  
University of Texas THRUST 2000 Fellowship 2000-2004  
University of Texas Bruton Fellowship 2000-2004  
University of Texas Env. Eng. Departmental Fellowship 2001  
Clemson University Environmental Eng. and Sci. Departmental Fellowship 1999  
Clemson University Alumni Fellowship 1998  
General Motors Scholarship 1998  
Purdue Engineering Student Council Scholarship 1996 and 1997  
Society of Women in Engineering Scholarship 1995

### **HONORS AND AWARDS RECEIVED BY STUDENT ADVISEES:**

Advisor to Student (Savannah Volkoff) Receiving Travel Fellowship, American Chemical Society, Washington DC	2017
Advisor to Student (William Gerhard) Awarded NSF EAPSI Fellowship	2017
Advisor to Student (William Gerhard) Awarded NSF EAPSI Fellowship	2016
Advisor to Student (Lauren Redfern) Receiving Honorable Mention in NSF Graduate Fellowship Competition	2014
Advisor to Student (Courtney Gardner) Awarded NSF Graduate Fellowship	2013
Advisor to Student (Ashley Thomson) Awarded Fulbright Fellowship to perform Research in Vietnam	2012
Advisor to Student (Ryan Holzem) Receiving Travel Fellowship, American Society For Microbiology, General Meeting Division Q, San Francisco, CA	2012
Advisor to Student (Christina Arnaout) Receiving Best Poster Award, Association of Environmental Engineering and Science Professors Meeting, Tampa, FL	2011
Advisor to Student (Thomas Morse) Awarded EPA STAR Graduate Fellowship	2010
Advisor to Student (Christina Arnaout) Receiving Honorable Mention in NSF Graduate Fellowship Competition	2010
Advisor to 2 <sup>nd</sup> (Christina Arnaout) and 3 <sup>rd</sup> (Jennifer Shore) Place Winners, Most Outstanding Student Poster at the 89 <sup>th</sup> Annual Conference of the North Carolina AWWA-WEA, Raleigh, NC	2009
Advisor to Co-Recipient of Eric Pas Award (Aaron Lee), Most Outstanding Undergraduate Independent Study Project in Civil and Env. Eng. Dept.	2009
Advisor to Eric Pas Award Winner (Lee Pearson), Most Outstanding Undergraduate Independent Study Project in Civil and Env. Eng. Dept.	2008
Advisor to Senol Utku Award Runner-up (Shuyi Wang), Best published Pre-Doctoral Peer-Reviewed Paper in Duke University Civil and Env. Eng. Dept.	2008

### **ACTIVE PROFESSIONAL MEMBERSHIPS:**

American Society of Civil Engineers (ASCE), Association of Environmental Engineering and Science Professors (AEESP)

### **PEER-REVIEWED PUBLICATIONS:**

(Advisor or co-advisor to underlined student/postdoc)

1. R. M. Holzem, C.M. Gardner and **C.K. Gunsch**, "Evaluating the impacts of triclosan on wastewater treatment performance during startup and acclimation", *Water Science and Technology*, In Press.
2. C.A. Gwin, E. Lefevre, C. Alito and **C.K. Gunsch**, "Microbial community response to silver nanoparticles and Ag<sup>+</sup> in nitrifying activated sludge revealed by ion semiconductor sequencing", *Science of the Total Environment*, In Press.
3. C. Ng, S.G. Goh, N. Saeidi, W.A. Gerhard, **C.K. Gunsch**, K.Y.H., "Occurrence of Vibrio species, beta-lactam resistant Vibrio species, and indicator bacteria in ballast and port waters of a tropical harbor", *Science of the Total Environment*, 2018, 610:651-656.
4. E. Lefèvre, C.M. Gardner, G.E. Gehrke, E.M. Cooper, H.M. Stapleton, H. Hsu-Kim and **C.K. Gunsch**, "Biochar and activated carbon act as promising amendments for promoting

- the complete debromination of tetrabromobisphenol A”, *Water Research*, 2017, doi.org/10.1016/j.watres.2017.09.047.
5. C.M. Gardner and **C.K. Gunsch**, “Adsorption capacity of multiple DNA sources to clay minerals and environmental soil matrices less than previously estimated”, *Chemosphere*, 2017. 175:45-51.
  6. E. Lefevre, N. Bossa, M.R. Wiesner and **C.K. Gunsch**, “A Review of the Environmental Implications of *in situ* Nanoscale Zero Valent Iron (nZVI) Waste Treatment Applications: Transport, Exposure Routes and Microbial Ecological Impacts”, *Science of the Total Environment*, 2016, 565: 889-901.
  7. L.M. Czaplicki and **C.K. Gunsch**, “Reflection on Molecular Approaches Influencing State-of-the-Art Bioremediation Design: Culturing to Microbial Community Fingerprinting to Omics”, *ASCE Journal of Environmental Engineering*, 2016, 142(10), 03116002.
  8. E. Lefevre, E. Cooper, H.M. Stapleton and **C.K. Gunsch**, “Anaerobic sludge microbial community adaptation to tetrabromobisphenol A and identification of taxa responsible for its degradation”, *PLOS One*, 2016, 11(7), e0157622.
  9. L.K. Redfern and **C.K. Gunsch**, “Endophytic Phytoaugmentation: Treating Wastewater and Runoff through Augmented Phytoremediation”, *Industrial Biotechnology*, 2016, 12(2):83-90.
  10. L.M. Czaplicki, E. Cooper, P.L. Ferguson, H.M. Stapleton, R. Vilgalys, and **C.K. Gunsch**, “A New Perspective on Sustainable Soil Remediation-Case Study Suggests Novel Fungal Genera Could Facilitate *in situ* Biodegradation of Hazardous Contaminants”, *Remediation Journal*, 2016, 26:59-72.
  11. G.E. Schwartz, L. Redfern, K. Ikuma, **C. Gunsch**, L.S. Ruhl, A. Vengosh and H. Hsu-Kim, “Impacts of coal ash on methylmercury production and the methylating microbial community”, *Environmental Science: Process & Impacts*, 2016, 18:1427-1439.
  12. A.A. Danley-Thomson, D.M. Robbins and **C.K. Gunsch**, “Part II: Field Evaluation of Constructed Wetlands Packed with Copeat for Wastewater Treatment in Can Tho, Vietnam”, *ASCE Journal of Environmental Engineering*, 2016, 142: 04015070.
  13. A.A. Danley-Thomson, C.A. Gwin, C.M. Gardner and **C.K. Gunsch**, “Part I: Copeat for Wastewater Treatment in the Developing World: Optimizing Redox Depths in Biofiltration Columns”, *ASCE Journal of Environmental Engineering*, 2016, 142: 04015069.
  14. T.O. Worley-Morse, M.A. Deshusses and **C.K. Gunsch**. “Inactivation of Invasive Bacteria in Ethanol Fermentations Using Bacteriophages”, *Biotechnology and Bioengineering*, 2015, 112 (8), 1544-1553.
  15. D.E. Gorka, J.S. Osterberg, C.A. Gwin, B.P. Colman, J.N. Meyer, E.S. Bernhardt, **C.K. Gunsch**, R.T. DiGulio and J. Liu. “Reducing Environmental Toxicity of Silver Nanoparticles through Shape Control”, *Environmental Science and Technology*, 2015, 49:10093-98.

16. A.A. Thomson and **C.K. Gunsch**, “A Novel Method for Field Detection of *Vibrio cholerae* Using Membrane Filtration Technique to Evaluate Biosand Filter Performance in the Artibonite Valley, Haiti”, *Environmental Monitoring and Assessment*, 2015, 187:1-12.
17. E. Davis, **C.K. Gunsch** and H.M. Stapleton. “Environmental Fate of Flame Retardants and the Antimicrobial Agent Triclosan in Biosolid-Amended Soils”. *Environmental Toxicology and Chemistry*, 2015, 34:968-976.
18. T.O. Worley-Morse and **C.K. Gunsch**. “A Genomic Analysis of Antisense Off-Targets by Computational Methods in Prokaryotic Organisms Reveals Transcriptomic Competition for Antisense Strands”, *Genomics*, 2015, 105:123-130.
19. T.O. Worley-Morse and **C.K. Gunsch**. “Modeling Phage Inducted Bacterial Disinfection Rates and the Resulting Design Implication”, *Water Research*, 2015, 68:627-636.
20. R. M. Holzem, H.M. Stapleton and **C.K. Gunsch**, “Response to Comment on ‘Potential Functional Ecological Impacts of Biosolid-Derived Common Organic Antimicrobial Agents Determined Using a High Throughput Colorimetric Denitrification Assay’”, *Environmental Science and Technology*, 2014, 48:12470-12471.
21. S-R Chae, D.E. Hunt, K. Ikuma, S. Yang, J. Cho, **C.K. Gunsch**, J. Liu, and M.R. Wiesner. “Aging of fullerene C<sub>60</sub> nanoparticle suspensions in the presence of microbes”, *Water Research*, 2014, 65:282-289.
22. Bragança, J. Pacheco, **C. K. Gunsch**, C.A. Gwin, A. S. Danko, C. Delerue-Matos and V. F. Domingues, “Pharmaceutical compounds effects on *Nitrosomonas europaea* nitrification process”, *African Journal of Microbiology Research*, 2014, 8:1855-1862.
23. R. M. Holzem, H.M. Stapleton and **C.K. Gunsch**, “Potential Functional Ecological Impacts of Biosolid-Derived Common Organic Antimicrobial Agents Determined Using a High Throughput Colorimetric Denitrification Assay”, *Environmental Science and Technology*, 2014, 48:1646-1655.
24. C.L. Alito and **C.K. Gunsch**. “Assessing the Effects of Silver Nanoparticles on Biological Nutrient Removal in Bench-Scale Activated Sludge Sequencing Batch Reactors”, *Environmental Science and Technology*, 2014, 48:970-976.
25. T.O. Worley-Morse, L. Zhang and **C.K. Gunsch**. “The long-term effects of phage concentration on the inhibition of planktonic bacterial cultures”, *Environmental Science: Processes and Impacts*, 2014, 16:81-87.
26. A. Chariton, K. Ho, D. Proestou, H. Bik, S. Simpson, L. Portis, M. Cantwell, J. Baguley, R. Burgess, M. Pelletier, M. Perron, **C. Gunsch**, “A molecular-based approach for examining responses of microcosm-contained eukaryotes to contaminant-spiked estuarine sediments”, *Environmental Toxicology and Chemistry*, 2014, 33:359-369.
27. K. Ikuma and **C.K. Gunsch**. “Successful genetic bioaugmentation with *Pseudomonas putida* for toluene degradation in soil columns”, *Environmental Chemistry Letters*, 2013, 11:635-370.

28. B.P. Colman, C.L. Arnaout, S. Anciaux, **C.K. Gunsch**, M.F. Hochella Jr., B. Kim, G.V. Lowry, B.M. McGill, B.C. Reinsch, C.J. Richardson, J.M. Unrine, J.P. Wright, L. Yin, E.S. Bernhardt, “Low concentrations of silver nanoparticles in biosolids cause adverse ecosystem responses under realistic field scenario”, *pLOS One*, 2013, 8(2), e57189.
29. K.T. Ho, A.A. Chariton, L.M. Portis, D. Proestou, M. Cantwell, J.G. Baguley, R.M. Burgess, S. Simpson, M.C. Pelletier, M. Perron, **C.K. Gunsch**, H. Bik, A. Kamikawa. “Use of a Novel Sediment Exposure to Determine the Effects of Triclosan on Estuarine Benthic Communities”. *Environmental Toxicology and Chemistry*, 2013, 32:384-392.
30. K. Ikuma and **C.K. Gunsch**. “Functionality of the TOL Plasmid Under Varying Environmental Conditions Following Conjugal Transfer”, *Applied Microbiology and Biotechnology*, 2013, 97:395-408
31. R. Pei and **C.K. Gunsch**, “Inflammatory Cytokine Gene Expression in THP-1 Cells Exposed to *Stachybotrys chartarum* and *Aspergillus versicolor*”, *Environmental Toxicology*, 2013, 28:51-60
32. C.L. Arnaout and **C.K. Gunsch**. “Impact of Silver Nanoparticle Coating on the Nitrification Potential of *Nitrosomonas europaea*”, *Environmental Science and Technology*, 2012, 46: 5387–5395
33. K. Ikuma, R. M. Holzem and **C.K. Gunsch**. “Impacts of organic carbon availability and recipient bacteria characteristics on the potential for TOL plasmid genetic bioaugmentation in soil slurries”, *Chemosphere*, 2012, 89:158-163.
34. K. Ikuma and **C.K. Gunsch**. “Genetic bioaugmentation as an effective method for *in situ* bioremediation: Functionality of catabolic plasmids following conjugal transfers” (Invited Addendum to *Applied Microbiology and Biotechnology* manuscript), *Bioengineered Bugs*, 2012, 3(4):1-6.
35. J.L. Shore, W.S. M’Coy, **C.K. Gunsch**, M.A. Deshusses, “Applications of a Moving Bed Biofilm Reactor for Tertiary Ammonia Removal in High Temperature Industrial Wastewater”, *Bioresource Technology*, 2012, 112:51–60.
36. R. Pei and **C.K. Gunsch**, “Cytotoxic and Proinflammatory Response of RAW 264.7 Cells to Differentially Fractionated Fungal Fragments”, *Toxicological and Environmental Chemistry*, 2011, 93(67):1386-1399.
37. H.S. Kim, A.J. Schuler, **C.K. Gunsch**, R. Pei, J.J. Gellner, J.P. Boltz,, R. G. Freudenberg, R. Dodson and, “Comparison of Conventional and Integrated Fixed-Film Activated Sludge Systems: Attached- and Suspended-Growth Functions and Quantitative Polymerase Chain Reaction Measurements”, *Water Environment Research*, 2011, 83(7):627-635.
38. S. Wang and **C.K. Gunsch**, “Effects of Selected Pharmaceutically Active Compounds on Treatment Performance in Sequencing Batch Reactors Mimicking Wastewater Treatment Plant Operations”, *Water Research*, 2011, 45(11):3398-3406.
39. S. Wang and **C.K. Gunsch**, “Effects of Selected Pharmaceutically Active Compounds on the Ammonia Oxidizing Bacterium *Nitrosomonas europaea*”, *Chemosphere*, 2011, 82(4):565-572.

40. K. Ikuma and **C. Gunsch**, “Effect of Carbon Source Addition on Toluene Biodegradation by *Escherichia coli* DH5 $\alpha$  Transconjugants Harboring the TOL Plasmid”, *Biotechnology and Bioengineering*, 2010, 107(2):269-277.
41. T. Morse, S.J. Morey and **C.K. Gunsch**, “Microbial Inactivation of *Pseudomonas putida* and *Pichia pastoris* Using Gene Silencing”, *Environmental Science and Technology*, 2010, 44(9):3293-3297.
42. H.S. Kim, J.W. Gellner, J.P. Boltz, R.G. Freudenberg, **C.K. Gunsch** and A.J. Schuler, “Effects of Integrated Fixed Film Activated Sludge Media on Activated Settling in Biological Nutrient Removal Systems”, *Water Research*, 2010, 44(5):1553-1561.
43. R. Pei and **C.K. Gunsch**, “Plasmid conjugation in a mixed activated sludge microbial community”, *Environmental Engineering Science*, 2009, 26(4):825-831.
44. H.M. Stapleton, S. Kelly, R. Pei, R.J. Lechter and **C. Gunsch**, “Metabolism of Polybrominated Diphenyl Ethers (PBDEs) by Human Hepatocytes In Vitro”, *Environmental Health Perspectives*, 2009, 117(2):197-202.
45. S-R. Chae, S. Wang, Z.D. Hendren, M.R. Wiesner, Y. Watanabe and **C.K. Gunsch**, “Effects of Fullerene C<sub>60</sub> Nanoparticles on the Attachment of *Escherichia coli* K12 to Microfiltration Membrane Surfaces and Respiratory Activity in Aqueous Suspension”, *Journal of Membrane Science*, 2009, 329(5):68-74.
46. S. Wang, R. Holzem and **C.K. Gunsch**, “Effects of Pharmaceutically Active Compounds on a Mixed Microbial Community Originating from a Municipal Wastewater Treatment Plant”, *Environmental Science and Technology*, 2008, 42(4):1091-1095.
47. **C.K. Gunsch**, K.A. Kinney, P.J. Szaniszlo and C.P. Whitman, “Relative Gene Expression Quantification in a Fungal Gas-Phase Biofilter”. *Biotechnology and Bioengineering*, 2007, 98(1):101-111.
48. **C.K. Gunsch**, K.A. Kinney, P.J. Szaniszlo and C.P. Whitman, “Quantification of Homogentisate-1,2-Dioxygenase Expression in the Fungus *Exophiala lecanii-corni*”. *Journal of Microbiological Methods*, 2006, 67(2):257-265.
49. **C.K. Gunsch**, Q. Cheng, K.A. Kinney, P.J. Szaniszlo and C.P. Whitman, “Identification of a Homogentisate-1,2-Dioxygenase Gene in the Fungus *Exophiala lecanii-corni*: Analysis and Implications”. *Applied Microbiology and Biotechnology*, 2005, 68(3):405-411.
50. M.F. Verce, **C.K. Gunsch**, A.S. Danko, D.L. Freedman, “Cometabolism of *cis*-1,2-Dichloroethene by Aerobic Cultures Grown on Vinyl Chloride as the Primary Substrate”. *Environmental Science and Technology*, 2002, 36(10):2171-2177.

#### BOOK CHAPTERS:

1. K. Grieger, A. Wells Carpenter, F. Klaessig, E. Lefevre, **C. Gunsch**, K. Soratana, A. E. Landis, F. Wickson, D. Hristozov, I. Linkov. “Sustainable Environmental Remediation

using nZVI by Managing Lifecycle Benefit-Risk Tradeoffs”, In G. Lowry and T. Phenrat (Eds.), In Press.

2. A.S. Danko and **C.K. Gunsch**. “Biofilmes em Bioremediação” (translates to Biofilms in Bioremediation) chapter for the book “Biofilmes – Na Saúde, No Ambiente, Na Indústria”. Edited by N. F. Azevedo and N. Cerca. Invited Book Chapter. pp:170-120. Publindústria, Porto, ISBN: 978-972-8953935.
3. **C.K. Gunsch** and A.S. Danko. “Chapter 8: Biofilms in Biocorrosion”, In M. Simões and F. Mergulhão (Eds.), Biofilms in Bioengineering (pp. 191-212). New York, NY: Nova Science Publishers, ISBN: 978-1-62948-161-6.

#### ORAL PRESENTATIONS:

1. W.A. Gerhard, N. DiStefano, P.L. Ferguson and **C.K. Gunsch**. Nanyang Technological University. PIRE: Water and Commerce Technologies to enable environmental sustainability in global markets. June 7, 2016.
2. W. Gerhard, N. DiStefano, P.L. Ferguson and **C.K. Gunsch**. National University of Singapore. NERI Seminar on Duke-NUS PIRE Collaboration to Investigate Ballast Water Quality. June 10, 2016.
3. L.K. Redfern, L. Alvarez-Cohen, **C.K. Gunsch**. Monitoring catabolic gene transfer during genetic bioaugmentation in mixed contaminant hazardous waste sites. 2016. Superfund annual conference. Durham, NC.
4. **C.K. Gunsch\*** and W.A. Gerhard. “Environmental Impacts of Ballast Water Transfer for Maritime Freight Transport”, Accepted for Presentation at the 7<sup>th</sup> Civil Engineering Conference in the Asia Region, Honolulu, HI. (August 30-September 2, 2016)
5. L.K. Redfern\* and **C.K. Gunsch**, “Evaluation of endophytic phytoaugmentation for *in-situ* treatment of leachate and municipal waste runoff”, Submitted for presentation at 2016 American Society of Civil Engineering Environmental Water Resources Institute Congress, West Palm Beach, Florida (May 22-26, 2016).
6. A.A. Danley-Thomson\* and **C.K. Gunsch**, “Membrane filtration field enumeration of *Vibrio cholera*”, Submitted for presentation at 2016 American Society of Civil Engineering Environmental Water Resources Institute Congress, West Palm Beach Florida (May 22-26, 2016).
7. R. M. Holzem\*, C. Gardner, H.M. Stapleton and **C.K. Gunsch**, “Impact of Emerging Contaminants and Biosolids Aging on Ecotoxicity in Soils”, Proceedings of the Water Environment Foundation, Residuals and Biosolids Conference, Milwaukee, WI (April 3-6, 2016).
8. G. Schwartz\*, H. Hsu-Kim, L. Redfern, **C. Gunsch** and A. Vengosh. “Stimulation of Mercury Methylation by Coal Ash in Anaerobic Sediment Microcosms”, 2015 Fall AGU Meeting, San Francisco, California (December 14-18, 2015).
9. **C.K. Gunsch\***, “Nanoparticles and Wastewater Treatment”, North Carolina Wastewater Operator Conference (December 2, 2015)



10. L. Czaplicki\*, R. Vilgalys and **C.K. Gunsch**, "A Fungus Walks into a Superfund Site: A Fungal Bio-stimulation Adventure", New Jersey Mycological Association (November 15, 2015).
11. C.M. Gardner\* and **C.K. Gunsch**, "Role of GM Crops in the Rise of Antibiotic Resistance", *BioMicroWorld 2015*, Barcelona, Spain (October 28-30, 2015).
12. **C.K. Gunsch**\*, "Endophytic Augmentation: A Case Study with Oxford Landfill Leachate", Granville County Environmental Advisory Council (October 12, 2015)
13. **C.K. Gunsch**\*, "Emerging Contaminants, Emerging Solutions", Research Triangle Institute (August 8, 2015)
14. E. Lefevre\*, G. Petersen and C.K. Gunsch, "Characterization of TBBPA biodegradation pathway and microbial community responsible in wastewater sludge anaerobic digesters", Association of Environmental Engineering and Science Professors Meeting, New Haven, CT (June 13-16, 2015).
15. L. Czaplicki\*, R. Vilgalys and **C.K. Gunsch**, "Correlating Fungal Occurrence and Diversity to Contaminant Profile at the Atlantic Wood Industries Superfund Site", 3<sup>rd</sup> International Symposium on Bioremediation and Sustainable Environmental Technologies, Miami, FL (May 18-21, 2015).
16. R. M. Holzem\* and **C.K. Gunsch**, "Using lab-generated biosolids to evaluate the impacts of triclosan on soil denitrifiers following land application", 2015 American Society of Civil Engineering Environmental Water Resources Institute Congress, Austin, TX (May 17-21, 2015).
17. L.K Redfern\*, C.A. Gwin, C.A. Alito and **C.K. Gunsch**, "Ecological Impacts of Silver and Cerium Oxide Nanoparticles in Wastewater Treatment", 2015 American Society of Civil Engineering Environmental Water Resources Institute Congress, Austin, TX (May 17-21, 2015).
18. L.K. Redfern\* and **C.K. Gunsch**, "2010s: Emerging Contaminants in Aquatic Environments", Invited Talk for the 2015 American Society of Civil Engineering Environmental Water Resources Institute Congress, Austin, TX (May 17-21, 2015).
19. J. Farner Budarz, C. Gardner, **C.K. Gunsch**, M.R. Wiesner, "Photoreactivity of Titanium Dioxide Nanoparticles With Chlorpyrifos in Aqueous Suspensions", 6<sup>th</sup> International Water and Health Conference, Cannes, France (June 16-18, 2014).
20. C.A. Gwin\*, C.A. Alito, E. Lefevre and **C.K. Gunsch**, "Bacterial Community Shifts in Silver Nanoparticle-Spiked Reactors: T-RFLP & Ion Torrent", 248<sup>th</sup> National Meeting and Exposition of the American Chemical Society, San Francisco, CA (August 10-14, 2014).
21. C.A. Gwin\*, C.A. Alito, E. Lefevre and **C.K. Gunsch**, "Microbial Community Characterization in Silver Nanoparticle-Spiked Reactors", 9<sup>th</sup> International Conference on the Environmental Effects of Nanoparticles and Nanomaterials, Columbia, SC (September 7-11, 2014).

22. **C.K. Gunsch\***, “Emerging Contaminants, Emerging Solutions”, Keynote Address, 2014 USPHS Scientific and Training Symposium, Raleigh, NC (June 12, 2014)
23. **L. Czaplicki\*** and **C.K. Gunsch**, “Evaluating Fungal Ecology under Heavy Polycyclic Aromatic Hydrocarbon Soil Contamination”, 2014 Mycological Society of America Conference, East Lansing, MI (June 8-12, 2014).
24. **R. M. Holzem\*** and **C.K. Gunsch**, “Ecological Impacts of Liquid Biosolids Land Application on Soil Denitrifiers”, 2014 American Society of Civil Engineering Environmental Water Resources Institute Congress, Portland, OR (June 1-5, 2014).
25. **C.K. Gunsch\***, “Emerging Contaminants, Emerging Solutions”, Women in STEM Workshop, Winston-Salem, NC (November 22, 2013)
26. **C.L. Alito\*** and **C.K. Gunsch**. “Assessing the Effects of Silver Nanoparticles on Biological Nutrient Removal in Bench-Scale Activated Sludge Sequencing Batch Reactors”, WEFTEC, Chicago, IL (October 5-9, 2013).
27. **A. Thomson\***, **C.K. Gunsch**, D. Robbins and N. Huu Chiem. “Removal of Coliform Bacteria and Nutrients from Wastewater Using Vertical Flow Constructed Wetlands Packed with Cocopeat: A Case Study in Can Tho, Vietnam”, WEFTEC, Chicago, IL (October 5-9, 2013).
28. **T.O. Worley-Morse\*** and **C.K. Gunsch**, “Bacteriophage Disinfection of Engineered Waste Streams”, 93th Annual Conference of the North Carolina AWWA-WEA, Concord, NC (November 10-13, 2013).
29. **C.K. Gunsch\***, “Nanoparticles in Wastewater Treatment”, Triangle Wastewater Treatment Plant, Research Triangle Park, NC (August 23, 2013)
30. **R.M. Holzem\*** and **C.K. Gunsch**, “The Effect of Common Organic Household Disinfectants Found in Biosolids on the Potential Function of the Soil Denitrifying Bacterium *Paracoccus denitrificans* PD1222”, Association of Environmental Engineering and Science Professors Meeting, Golden, CO (July 14-16, 2013).
31. **C.K. Gunsch\***, **C.A. Gwin** and **C.L. Arnaout**, “Impacts of Silver Nanoparticles on the Growth and Activity of Model Microorganisms”, Invited for Presentation at the ACS Colloids and Surface Science Meeting, Riverside, CA (June 23-26, 2013).
32. **C.K. Gunsch\***, “Emerging Issues in Environmental Engineering”, Durham Engineers Club, Durham, NC (May 23, 2013)
33. **R. M. Holzem\*** and **C.K. Gunsch**, “Impacts of Household Disinfectants on Denitrifying Function in Agricultural Soil Following Biosolids Land Application”, 2013 American Society of Civil Engineering Environmental Water Resources Institute Congress, Cincinnati, OH (May 19-22, 2013).
34. **K.R. Rhoads**, **J. Farner Budarz**, **C.M. Gardner**, **C. Le**, **M.R. Wiesner**, **H. Hsu-Kim**, **C.K. Gunsch**, “Microbial Effects of Chlorpyrifos Remediation with UV-illuminated Nano-TiO<sub>2</sub>”, Superfund Research Program Annual Meeting, Raleigh, NC (October 21-23, 2012).

35. **C.K. Gunsch\***. “Genetic Bioaugmentation: Utilizing Horizontal Gene Transfer to Enhance *in situ* Bioremediation”, Johns Hopkins University, Baltimore, MD (September 12, 2012).
36. **R. Holzem\*** and **C.K. Gunsch**, “Ecological Impacts of Biosolid Derived Emerging Organic Contaminants on Denitrifying Microbial Community Function”, 243<sup>rd</sup> National Meeting and Exposition of the American Chemical Society, San Diego, CA (March 25-29, 2012).
37. **C.K. Gunsch\*** and **C.L. Arnaout**, “Impacts of Silver Nanoparticles on the Growth and Function of *Nitrosomonas europaea*”, Invited for Presentation at the 243<sup>rd</sup> National Meeting and Exposition of the American Chemical Society, San Diego, CA (March 25-29, 2012).
38. A. Chariton\*, K. Ho, H. Bik, S. Simpson, R. Burgess, J.G. Baguley, **C. Gunsch**, L. Portis, A. Kamikawa, “An Ecogenomic Approach for Assessing the Effects of the Anti-Bacterial Agent Triclosan on Estuarine Sedimentary Eukaryotic Biota”, 4<sup>th</sup> International Barcode of Life Conference, Adelaide, Australia (November 28-December 3, 2011)
39. **C.L. Arnaout\*** and **C.K. Gunsch**. “Impacts of Silver Nanoparticles on the Growth and Composition of Microbial Communities Found in Wastewater”, WEFTEC, Los Angeles, CA (October 15-19, 2011).
40. **C.K. Gunsch\***. “Genetic Bioaugmentation: Utilizing Horizontal Gene Transfer to Enhance *in situ* Bioremediation”, University of California, Berkeley, CA (September 23, 2011).
41. **T.O. Morse\*** and **C.K. Gunsch**, “Antisense Silencing for Pathogen Removal in Water Treatment”, 242<sup>nd</sup> National Meeting and Exposition of the American Chemical Society, Denver, CO (August 28-September 1, 2011).
42. **K. Ikuma** and **C.K. Gunsch\***. “Genetic Bioaugmentation: Utilizing Horizontal Gene Transfer to Enhance *in situ* Bioremediation”, Association of Environmental Engineering and Science Professors Meeting, Tampa, FL (July 10-12, 2011).
43. **C.L. Arnaout\*** and **C.K. Gunsch**, “Impacts of Silver Nanoparticles on the Growth and Composition of Microorganisms Found in Natural and Engineered Systems”, CEINT Brownbag lunch series, Durham, NC (January 10, 2011).
44. **J.L. Shore\***, W.B. McCoy, **C.K. Gunsch** and M.A. Deshusses. “Application of a Moving Bed Biofilm Bioreactor for Tertiary Removal in High Temperature Industrial Wastewater”, WEFTEC, New Orleans, LA (October 2-6, 2010).
45. **H.S. Kim**, **C.K. Gunsch**, B. Freudenberg and A.J. Schuler\*, “Shelter from the Storm: Integrated Fixed Film Activated Sludge Protects Nitrifiers from Toxic Upsets”, WEFTEC, New Orleans, LA (October 2-6, 2010).
46. **C.L. Arnaout\*** and **C.K. Gunsch**, “Impacts of Silver Nanoparticles on the Growth and Composition of Microbial Communities Found in Wastewater”, Environmental Effects of Nanoparticles and Nanomaterials: 2010, Clemson, SC (August 22-26, 2010).
47. **J.L. Shore\***, W.B. McCoy, **C.K. Gunsch** and M.A. Deshusses. “Application of a Moving Bed Biofilm Bioreactor for Tertiary Removal in High Temperature Industrial Wastewater”,

Water Environment Foundation Biofilm Reactor Technology Conference 2010, Portland, OR (August 15-19, 2010).

48. B.P. Colman\*, E.S. Bernhardt, C.A. Arnaout, **C.K. Gunsch**, B.M. McGill, C.J. Richardson, J.P. Wright, and L. Yin. “Nanomaterials in the environment: The effect of realistic silver nanoparticle exposures on terrestrial ecosystem dynamics”, 95<sup>th</sup> Ecological Society of America Annual Meeting, Pittsburgh, PA (August 1-6, 2010).
49. **C.K. Gunsch\***, C.L. Arnaout, B. Colman, E. Bernhardt. “Impacts of Silver Nanoparticles on the Growth and Composition of Microbial Communities Found in Wastewater and Soil”, Environmental Protection Agency (June 24, 2010).
50. C.L. Arnaout\*, E. Bernhardt, C. Richardson and **C.K. Gunsch**, “Impacts of Silver Nanoparticles on the Growth and Composition of Microbial Communities Found in Wastewater and Soil”, International Conference on the Environmental Implications of Nanomaterials, Los Angeles, CA (May 10-12, 2010).
51. **C.K. Gunsch\***, “Scientifica Program in the Gunsch Lab”, Durham Public Schools Scientifica Meeting, Durham, NC (January 15, 2010).
52. **C.K. Gunsch\***, “Impacts of nanosilver on pure cultures and wastewater microbial communities”, CEINT Brownbag lunch series, Durham, NC (November 16, 2009).
53. H.S. Kim, R. Pei, J.P. Boltz, **C.K. Gunsch**, J. Gellner, B. Freudenberg, R. Dodson, Ki Don Cho and A.J. Schuler\*, “Trace Organic Chemical Profiles in Nutrient Removal Systems With and Without Integrated Fixed Film Activated Sludge”, WEFTEC, Orlando, FL (October 12-14, 2009).
54. H.S. Kim, R. Pei, J.P. Boltz, **C.K. Gunsch**, J. Gellner, B. Freudenberg, R. Dodson and A.J. Schuler\*, “How Does IFAS Affect Distributions of AOB and NOB Communities? Population Measurements and Modeling of Pilot Scale Systems” WEFTEC, Orlando, FL (October 12-14, 2009).
55. C.L. Arnaout\*, E. Bernhardt, C. Richardson and **C.K. Gunsch**, “Microbial Inhibition and Silver Resistance Development in Wastewater Containing Silver Nanoparticles”, International Conference on the Environmental Implications of Nanomaterials, Washington, DC (September 9-11, 2009).
56. C.L. Arnaout\*, E. Bernhardt, C. Richardson and **C.K. Gunsch**, “Microbial Inhibition and Silver Resistance Development in Wastewater Containing Silver Nanoparticles”, International Conference on the Implications of Nanotechnology, Washington, DC (September 9-10, 2009).
57. H.S. Kim, R. Pei\*, **C.K. Gunsch**, K.D. Cho, J. Gellner, J.P. Boltz, B. Freudenberg, R. Dodson and A.J. Schuler, “Microconstituent Removal Throughout systems With and Without Integrated Fixed Film Activated Sludge Media”, Water Environment Foundation Microconstituents Conference, Baltimore, MD (July 26-29, 2009).
58. H.S. Kim\*, R. Pei, J.P. Boltz, **C.K. Gunsch**, J. Gellner, B. Freudenberg, R. Dodson and A.J. Schuler, “Nitrification and AOB/NOB Populations in Integrated Fixed Film Activated

Sludge: Measurements and Modeling”, Water Environment Foundation Nutrient Removal Conference, Washington, DC (June 28-July 1, 2009).

59. S.J. Morey\* and **C.K. Gunsch**, “Gene Silencing for Water Purification”, Entrepreneur Week, Duke University, Durham, NC (November 18, 2008).
60. L. Pearson\* and **C.K. Gunsch**, “Towards a Life Cycle Assessment of Algal Biodiesel as a Transportation Fuel Stock”, Pratt Fellows Forum, Duke University, Durham, NC (March 27, 2008).
61. **C.K. Gunsch**\*, “Mechanisms of Genetic Adaptation Following Exposure to Anthropogenic Contaminants”, University of Nebraska, Lincoln, NE (March 10, 2008).
62. K. Ikuma\*, R. Pei and **C.K. Gunsch**, “Effect of Substrate Type on Toluene Biodegradation Following a Horizontal Gene Transfer Event in *Escherichia coli* DH5 $\alpha$ ”, Institute of Biological Engineering 2008 Annual Conference, Chapel Hill, NC (March 6-9, 2008).
63. **C.K. Gunsch**\*. “Bacterial Conjugation in Aquatic Environments and its Relevance to Bioremediation”, Clemson University, Clemson, SC (October 19, 2007).
64. R.B. Fair\*, A. Khlystov, **C.K. Gunsch**, R.D. Evans, N. Jokerst\*, V. Srinivasan, V. Pamula, M.G. Pollack, P.B. Griffin and J. Zhou. “Chemical and Biological Pathogen Detection in a Digital Microfluidic Platform”, DARPA Workshop. (October 4, 2006).
65. **C.K. Gunsch**\*, “Molecular Tools for Vapor-Phase Biofiltration”, North Carolina State University, Raleigh, NC. (October 2, 2006).
66. R. Holzem\* and **C.K. Gunsch**, “The Effect of Pharmaceutically Active Compounds on Microbial Activity”, NSF REU Fellows Forum, Duke University, Durham, NC (July 27, 2006).
67. J. Sommer\* and **C.K. Gunsch**. “Developing a New Paradigm for Evaluating the Health Risks of Mold Exposure”, Visible Thinking Research Forum, Duke University, Durham, NC (April 18, 2006).
68. **C.K. Gunsch**\*. “Utilizing Molecular Biotechnology to Optimize Biological Treatment Performance”, The University of Illinois, Urbana, IL. (April 7, 2006)
69. **C.K. Gunsch**\*. “Molecular Biotechnology and Environmental Engineering”, Nanotechnology and Biotechnology Symposium, Duke University, Durham, NC. (March 30, 2006)
70. **C.K. Gunsch**\*. “Linking Gene Expression to Performance in Biofiltration”. Environmental Protection Agency, Research Triangle Park, NC. (February 28, 2005)
71. **C.K. Gunsch**\*. “Linking Gene Expression to Performance in Biofiltration”. Savannah River Site, Aiken, SC. (November 30, 2004)
72. **C.K. Gunsch**\*. “Linking Gene Expression to Performance in Biofiltration”. Duke University, Durham, NC. (August 25, 2004)

73. **C.K. Gunsch\***. “Linking Gene Expression to Performance in a Fungal Vapor-Phase Biofilter”. ExxonMobil, Upstream Division, Houston, Texas. (April 5, 2004)
74. **C.K. Gunsch\***. “Linking Gene Expression to Performance in a Fungal Vapor-Phase Biofilter”. The University of Iowa, Iowa City, Iowa. (April 2, 2004)
75. **C.K. Gunsch\***. “Linking Gene Expression to Performance in a Fungal Vapor-Phase Biofilter”. The University of Missouri, Columbia, Missouri. (March 5, 2004)
76. **C.K. Gunsch\***. “Linking Gene Expression to Performance in a Fungal Vapor-Phase Biofilter”. The University of California, Los Angeles, California. (March 1, 2004)
77. **C.K. Gunsch\***. “Linking Gene Expression to Performance in a Fungal Vapor-Phase Biofilter”. Duke University, Durham, North Carolina. (February 3, 2004)
78. **C.K. Gunsch\***. “Monitoring Ethylbenzene Degradation by Quantitative Real-Time PCR”. Environmental and Water Resources Engineering Departmental Seminar, The University of Texas, Austin, Texas. (September 18, 2003)
79. **C.K. Gunsch\***. “Determining Gene Sequences by Gene Walking”. Environmental and Water Resources Engineering Departmental Seminar, The University of Texas, Austin, Texas. (September 12, 2002)
80. **C.K. Gunsch\***. “Methods for Pathway Determination”. Environmental and Water Resources Engineering Departmental Seminar, The University of Texas, Austin, Texas. (September 29, 2001)
81. **C.K. Gunsch\***, M.F. Verce and D. L. Freedman. Modeling cometabolism of *cis*-dichloroethene by an isolate that uses Vinyl Chloride as a growth substrate. Quadrangle Conference in Atlanta, Georgia. (March 2000)

#### POSTER PRESENTATIONS:

1. L.M. Czaplicki\* L.K. Redfern, E. Cooper, P.L. Ferguson, R. Vilgalys and C.K. Gunsch. “Investigating the polycyclic aromatic hydrocarbon-associated fungal community supports remediation of the Holcomb Creosote Superfund Site”, 16th International Symposium on Microbial Ecology. Montreal, Canada (August 21-26, 2016).
2. C.M. Gardner\* and **C.K. Gunsch**. 2016. “Using Next Generation Sequencing to Assess the Changes in Soil and Endophytic Microbiomes Associated with Transgenic Maize.” International Society for Microbial Ecology Meeting, Montreal, Canada (August 21-26, 2016).
3. L.K. Redfern\*, N. Jayasundara, R.T. Di Giulio, J. Carlson, S.J. Sumner and C.K. Gunsch. PAH-resistant Atlantic killifish (*Fundulus heteroclitus*) exhibit shifts in their commensal gut microbiota when compared to a reference site. 2016. ISME. Montreal, Canada.
4. A.A. Danley-Thompson\* and **C.K. Gunsch**. “Effect of operation, total organic carbon loading, and schmutzdecke composition on *Vibrio cholerae* removal efficacy in lab and Haiti biosand filters”, Submitted for presentation at Water and Health Conference 2016:

Where Science Meets Policy, University of North Carolina, Chapel Hill, NC (October 10-14, 2016)

5. C.M. Gardner\* and C.K. Gunsch, “Using Next Generation Sequencing to Assess the Changes in Soil and Endophytic Microbiomes Associated with Transgenic Maize”, Submitted for presentation at *ASM Microbe 2016*, Boston, MA. (June 16-20, 2016)
6. L.K. Redfern, N. Jayasundara, R.T. Di Giulio and **C.K. Gunsch**. 2015. “PAH-exposure related differences in the sediment profiles and the prokaryotic gut communities of Atlantic killifish (*Fundulus heteroclitus*)”, 27th Annual Meeting of the Superfund Research Program, Puerto Rico. (November 18-20, 2015)
7. L.M. Czaplicki\*, R. Vilgalys, **C.K. Gunsch**. 2015. “Scanning Two Eastern Creosote Sites for Potentially Useful Fungi”, 27th Annual Meeting of the Superfund Research Program, Puerto Rico. (November 18-20, 2015)
8. E. Lefevre\*, E. Cooper, H.M. Stapleton and C.K. Gunsch, “Anaerobic sludge microbial community adaptation to TBBPA and identification of taxa responsible for its degradation”, 27th Annual Meeting of the Superfund Research Program, Puerto Rico. (November 18-20, 2015)
5. L.K. Redfern\*, A.L.P. Starling and **C.K. Gunsch**. “Novel Approach to Developing and Implementing Curriculum in a High School Summer Engineering Camp”, 122<sup>nd</sup> American Society of Engineering Education Conference and Exposition. Seattle, WA (June 14-17, 2015).
6. C.M. Gardner\* and **C.K. Gunsch**. 2015. “Microbial Communities and Bt Maize: Understanding the Role Transgenic Crops May Play in the Rise of Antibiotic Resistance.” Association of Environmental Engineering and Science Professors Meeting, New Haven, CT (June 13-16, 2015).
7. L. Redfern\*, **C.K. Gunsch**. 2014. “Evaluating Bacterial and Archaeal Community Structure and their Potential for in situ Bioremediation of Polycyclic Aromatic Hydrocarbons”, The 26th Annual Meeting of the Superfund Research Program, San Jose, CA. (November 12-14, 2014).
8. L.M. Czaplicki\*, R. Vilgalys, **C.K. Gunsch**. 2014. “Correlating Fungal Presence and Community Structure to Contaminant Profile at the Atlantic Wood Industries Superfund Site”, The 26th Annual Meeting of the Superfund Research Program, San Jose, CA. (November 12-14, 2014).
9. L.M. Czaplicki\*, R. Vilgalys, **C.K. Gunsch**. 2014. “A First Look into the Polluted Fungal Microbiome at the Atlantic Wood Industries Superfund Site”. The Human and Environmental Microbiome Symposium. Durham, NC. (November 21, 2014).
10. **C.K. Gunsch\***, “Emerging Contaminants, Emerging Solutions”, Indo-American Frontiers of Engineering Symposium, Mysore, India (May 18-21, 2014).
11. L.M. Czaplicki\* and **C.K. Gunsch**, “Mycoremediation: An Innovative Remediation Technology to Treat PAHs under Harsh Environmental Conditions, The 25<sup>th</sup> Superfund Research Program Annual Meeting, Baton Rouge, LA (October 15-17, 2013).

12. C.A. Gwin\*, C.L. Arnaout and **C.K. Gunsch**, “The Development of Silver Resistant Microorganisms following their Exposure to Silver Nanoparticles”, Association of Environmental Engineering and Science Professors Meeting, Golden, CO (July 14-16, 2013).
13. R. Holzem\* and **C.K. Gunsch**, “Elucidating the functional impacts of common biosolid-derived organic contaminants on the soil denitrifying bacteria *Paracoccus denitrificans* PD1222 and *Sinorhizobium meliloti* 1021”, 112<sup>th</sup> American Society for Microbiology General Meeting, San Francisco, CA (June 16-19, 2012).
14. C.A. Gwin\*, C.L. Arnaout and **C.K. Gunsch**, “Microbial Inhibition by Silver Nanoparticles with Various Coatings”, Accepted for presentation at the 112<sup>th</sup> American Society for Microbiology General Meeting, San Francisco, CA (June 16-19, 2012).
15. K.T. Ho, A. Chariton, L.M. Portis\*, D. Proestou, M.G. Cantwell, J. Baguley, R.M. Burgess, S. Simpson, M.C. Pelletier, M.M. Perron, **C.K. Gunsch**, H.M. Bik, A. Kamikawa. 2011. Using a novel sediment exposure to determine the effects of triclosan on estuarine benthic communities, 32<sup>nd</sup> General Meeting of the Society of Environmental Toxicology and Chemistry, Boston, MA (November 13-17, 2011).
16. A.A. Thompson\* and C.K. Gunsch. “Field Operation of Biosand Filters in Haiti for the Removal of Total Coliform and *Vibrio cholerae*”, Water and Health: Where Science Meets Policy, University of North Carolina, Chapel Hill, NC (October 3-7, 2011)
17. K. Ikuma, R. Holzem\* and **C.K. Gunsch**. “Stimulating Genetic Bioaugmentation in Soil: Impact on TOL Plasmid Transfer Rates and Toluene Biodegradation” Association of Environmental Engineering and Science Professors Meeting, Tampa, FL (July 10-12, 2011).
18. C.L. Arnaout\* and **C.K. Gunsch**. “Measuring the Antibacterial Impacts of Silver Nanoparticles” Association of Environmental Engineering and Science Professors Meeting, Tampa, FL (July 10-12, 2011).
19. T.O. Morse\* and **C.K. Gunsch**, “Antisense Silencing for Pathogenic Bacterial Removal in Engineered Settings”, 111<sup>th</sup> General Meeting of the American Society for Microbiology, New Orleans, LA (May 21-24, 2011).
20. C.L. Arnaout\* and **C.K. Gunsch**. “Inhibition of nitrite production in *Nitrosomonas europaea* in the presence of silver nanoparticles”, International Conference on the Environmental Implications of Nanotechnology, Durham, NC (May 9-11, 2011).
21. K. Ikuma\* and **C.K. Gunsch**, “Effect of Substrate Addition on Toluene Biodegradation Following a Horizontal Gene Transfer Event of the TOL Plasmid into *Escherichia coli* DH5 $\alpha$ ”, 13<sup>th</sup> International Society for Microbial Ecology Meeting, Seattle, Washington (August 22-27, 2010).
22. T.O. Morse\* and **C.K. Gunsch**, “Impacts of Silver Nanoparticles on the Growth and Composition of Microbial Communities Found in Wastewater”, 110<sup>th</sup> General Meeting of the American Society for Microbiology, San Diego, CA (May 23-27, 2010).



23. C.L. Arnaout\*, E. Bernhardt, C. Richardson and **C.K. Gunsch**, “Impacts of Silver Nanoparticles on the Growth and Composition of Microbial Communities Found in Wastewater”, 110<sup>th</sup> General Meeting of the American Society for Microbiology, San Diego, CA (May 23-27, 2010).
24. D.E. Hunt\*, S-R Chae, K. Ikuma, S. Yang, J. Cho, **C.K. Gunsch**, J. Liu and M.R. Wiesner. “Complex Bacterial Interactions with Nanomaterials”, 7<sup>th</sup> Annual US Korea Nanoforum, Pasadena, CA (April 4-5, 2010)
25. C.L. Arnaout\*, E. Bernhardt, C. Richardson and **C.K. Gunsch**, “Microbial Inhibition and Silver Resistance Development in Wastewater Containing Silver Nanoparticles”, 89<sup>th</sup> Annual Conference of the North Carolina AWWA-WEA, Raleigh, NC (November 16, 2009).
26. J.L. Shore\*, W.B. McCoy, **C.K. Gunsch** and M.A. Deshusses. “Application of a Moving Bed Biofilm Bioreactor for Tertiary Removal in High Temperature Industrial Wastewater”, 89<sup>th</sup> Annual Conference of the North Carolina AWWA-WEA, Raleigh, NC (November 16, 2009).
27. K. Ikuma\* and **C.K. Gunsch**, “Effect of Substrate Addition on Toluene Biodegradation Following a Horizontal Gene Transfer Event of the TOL Plasmid into *Escherichia coli* DH5 $\alpha$ ”, Association of Environmental Engineering and Science Professors Meeting, Iowa City, Iowa (July 26-29, 2009).
28. C.L. Arnaout\*, B. Colman, J. Wang, E. Bernhardt, C. Richardson and **C.K. Gunsch**, “Effects of Silver Nanoparticles on *Escherichia coli* and Denitrifying Bacterial Communities”, Association of Environmental Engineering and Science Professors Meeting, Iowa City, Iowa (July 26-29, 2009).
29. K. Ikuma\* and **C.K. Gunsch**, “Characterization of Toluene Biodegradation Following a Horizontal Gene Transfer Event in *Escherichia coli* DH5 $\alpha$  and Environmental Bacteria”, BAGECO 10, Uppsala, Sweden (June 15-19, 2009).
30. H.S. Kim, R. Pei, **C.K. Gunsch**, M. McGehee, J. Gellner, P. Boltz, B. Freudenberg and A.J. Schuler\*, “Nitrifier Population Structure and Function in Attached and Suspended Biomass: Investigation of Pilot Scale IFAS and Non-IFAS Systems”, International Water Association ASPD5 Specialized Conference Microbial Population Dynamics in Biological Wastewater Treatment, Aalborg, Denmark (24-27 May, 2009).
31. S.J. Morey\* and **C.K. Gunsch**, “Gene Silencing for Water Purification”, Entrepreneur Week, Duke University, Durham, NC (November 18, 2008).
32. H.M. Stapleton\*, S.M. Kelly, R. Pei, **C.K. Gunsch**, C.L. Mitchelmore. “In Vitro Metabolism of Polybrominated Diphenyl Ethers (PBDEs) by Human and Fish Liver Cells”, Environmental Sciences Core, NIEHS, Philadelphia, PA (October 20-21, 2008).
33. S.J. Morey\* and **C.K. Gunsch**, “Gene Silencing of Catechol-2,3-Dioxygenase in *Pichia pastoris* and *Pseudomonas putida*”, Abstracts from the 108<sup>th</sup> General Meeting of the American Society for Microbiology, Boston, MA (June 1-5, 2008).

34. K. Ikuma\*, R. Pei and **C.K. Gunsch**, “Characterization of Toluene Biodegradation Following a Horizontal Gene Transfer Event in *Escherichia coli* DH5 $\alpha$ ”, Abstracts from the 108<sup>th</sup> General Meeting of the American Society for Microbiology, Boston, MA (June 1-5, 2008).
35. R. Pei\* and **C.K. Gunsch**, “Horizontal Gene Transfer Occurrences in a Mixed Microbial Community”, Abstracts from the 108<sup>th</sup> General Meeting of the American Society for Microbiology, Boston, MA (June 1-5, 2008).
36. S. Wang\* and **C.K. Gunsch**, “Effects of pharmaceutically active compounds on a mixed microbial community under different organic loadings”, Abstracts from the 108<sup>th</sup> General Meeting of the American Society for Microbiology, Boston, MA (June 1-5, 2008).
37. S.J. Morey\* and **C.K. Gunsch**, “Effect of ssDNA Concentration on Catechol-2,3-Dioxygenase Activity in *Pichia pastoris* DO2-1”, Institute of Biological Engineering 2008 Annual Conference, Chapel Hill, NC (March 6-9, 2008).
38. S. Wang\* and **C.K. Gunsch**, “Antisense DNA: A Novel Gene Silencing Method”. Association of Environmental Engineering and Science Professors Meeting, Blacksburg, Virginia (July 28-August 1, 2007).
39. A. Chen\*, R. Pei and **C.K. Gunsch**, “Identification of an *E. coli* Conjugate That Can Degrade Toluene”, Howard Hughes Precollege Program Presentation, Duke University, Durham, NC (July 28, 2007).
40. S. Wang\* and **C.K. Gunsch**, “Impact of Antisense Target DNA Length on Gene Silencing in *Pseudomonas putida* F1”. Abstracts from the 107<sup>th</sup> General Meeting of the American Society for Microbiology, Toronto, Canada (May 21-26, 2007).
41. R. Pei, S. Wang and **C.K. Gunsch**\*, “Effects of Pharmaceutically Active Compounds on Activated Sludge Microorganisms”. Abstracts from the 107<sup>th</sup> General Meeting of the American Society for Microbiology, Toronto, Canada (May 21-26, 2007).
42. L.M. Pearson\* and **C.K. Gunsch**, “Mycotoxins in Indoor Air Environments”. Pratt Up Close, Duke University, Durham, NC (April 16, 2007).
43. S. Wang\* and **C.K. Gunsch**, “Inhibitory Effect of Four Pharmaceutical Compounds on Microbial Growth”. Abstracts from the 106<sup>th</sup> General Meeting of the American Society for Microbiology, Orlando, Florida (May 21-25, 2006).
44. **C.K. Gunsch**\*, K.A. Kinney, C.P. Whitman and P.J. Szaniszlo, “Nitrogen Regulated Gene Expression in the Fungus *Exophiala lecanii-corni*”. Abstracts from the 105<sup>th</sup> General Meeting of the American Society for Microbiology, Atlanta, Georgia (June 5-9, 2005).
45. **C.K. Gunsch**\*, Q. Cheng, K.A. Kinney, C.P. Whitman and P.J. Szaniszlo, “Metabolic Regulation of Ethylbenzene Degradation in the Fungus *Exophiala lecanii-corni*”. Abstracts from the 104<sup>th</sup> General Meeting of the American Society for Microbiology, New Orleans, Louisiana (May 24-27, 2004).
46. **C.K. Gunsch**\*, Q.Cheng, E.A. Burkes, K.A. Kinney, P.J. Szaniszlo and C.P. Whitman, “Investigation of Ethylbenzene Biodegradation Pathway in *Exophiala lecanii-corni*”.

Abstracts from the 103<sup>rd</sup> General Meeting of the American Society for Microbiology, Washington, District of Columbia. (May 18-22, 2003).

47. Q.Cheng\*, S. Wang, **C.K. Gunsch**, K.A. Kinney, C.P. Whitman and P.J. Szaniszló, “Bacterial Catechol-2,3-Dioxygenase Gene Expression in Fungi”. Abstracts from the 103<sup>rd</sup> General Meeting of the American Society for Microbiology, Washington, District of Columbia. (May 18-22, 2003).
48. **C.K. Gunsch\***, J.R. Woertz, K.A. Kinney and P.J. Szaniszló, “Growth Phase Control of *Exophiala lecanii-corni* using Farnesol”. Abstracts from the 102<sup>nd</sup> General Meeting of the American Society for Microbiology, Salt Lake City, Utah. (May 19-23, 2002).
49. **C.K. Gunsch\***, M.F. Verce and D. L. Freedman. “Aerobic Cometabolism of dichloroethylenes and trichloroethylene by an isolate grown on vinyl chloride”, Abstracts from the 6<sup>th</sup> In situ and On-Site Bioremediation Symposia. A. Leeson, P. Johnson, R.E. Hinchee, L. Semprini and V.S. Magar (Eds.), Battelle Press, Columbus, Ohio (2001).
50. D.L. Freedman\*, J. Cox, L. Baiden, K. Carvalho, **C.K. Gunsch**, J. Hunt and R. Brigmon. "Potential for Bioremediation of Groundwater Contaminated with Landfill Leachate," pp. 109-116, in: Anaerobic Degradation of Chlorinated Solvents, Magar, V. S., Fennell, D. E., Morse, J. J., Alleman, B. C. and Leeson, A. (eds.), Battelle Press, Columbus, Ohio (2001).
51. J.R. Woertz, **C.K. Gunsch\***, R.M. Czerwinski, K.A. Kinney, P.J. Szaniszló and C.P. Whitman. “Toluene and Ethylbenzene Biodegradation by *Exophiala lecanii-corni* in Biofilters”. Abstracts from the 101<sup>st</sup> General Meeting of the American Society for Microbiology, Orlando, Florida. (May 20-24, 2001).

#### **RADIO ADDRESS:**

“New Test Screens Wastewater Biosolids Contaminants”, February 18, 2014. National Public Radio, WUNC.

“Preventing Biofouling Using BuckyBalls”, March 5, 2009. National Public Radio, WUNC.

“Drug Compounds in Wastewater Treatment”, MicrobeWorld, January 3, 2008. Educational broadcast disseminated to 90 public and commercial radio stations in the United States and in more than 100 countries via Armed Forces Radio.

“Possible New Approach to Purifying Water”, Our World, June 14, 2008. Weekly examination of developments in science, technology, health, medicine, space, and the environment, plus the Website of the Week broadcasted through Voice of America Internet Radio.

#### **POPULAR PRESS COVERAGE:**

“New Test Screens Wastewater Biosolids Contaminants”, February 13, 2014, News story featured on a various media outlets.

“Teaching for the Future: Engineers pursue big projects”, September 24, 2012, News story featured in USA Today.

“Center Studies Effects of Silver Nanoparticles”, February 11, 2011, News story featured in the Duke Chronicle.

“Engineering for Better Wastewater Treatment Results”, December 26, 2010, News story featured in scienceinthetriangle.org.

“Nanoparticles and the Environment” November 1, 2010, Article co-authored with D.L. Carroll featured on photonics.com.

“Women in Science: Juggling Science and Motherhood”, December 2009, *Focus*, Burroughs Wellcome Fund.

“Women in Science: A Spot at the Bench”, October 2009, *Focus*, Burroughs Wellcome Fund.

“New England building water-focused technology cluster”, May 1, 2009, News Featured on Mass High Tech – The Journal of New England Technology.

“Cleaner Water Through Biotech? 349Q Kills Water-Borne Microbes with RNAi”, April 27, 2009. News story featured on Xconomy.com.

“Buckyballs Do Antimicrobial Magic”, March 6, 2009. News story featured on Science News, eurekaalert.org, chemie.de, bio-medicine.org, smarteconomy.typepad.com, news.softpedia.com, nanonewsnet.ru, article.feeds4all.nl, cb.openmolecules.net, wholehousewaterfilter.us, freerepublic.com, radarfarms.com, sciencedaily.com, networkdirectory.com, prospect.rsc.org, sciencecentric.com, jyi.org, secure.theengineer.co.uk, faculty.london.edu, grupos.emagister.com, ecoworld.com, yasni.com, inpipeline.com, news.surfswax.com, asmcommunity.asminternational.org, iconoclast.com, Stanford.wellsphere.com, zibb.com, chemeurope.com, news.joelreinmd.com, yeskist.net, radar.ndsl.kr, nanonewsnet.ru, cs.cmu.edu. Also featured in *Forskning & Framsteg* (Swedish scientific publication) and *Advanced Materials and Processes*.

“Possible New Approach to Purifying Water”, June 3 and 4, 2008. News story featured on physorg.com, eurekaalert.org, sciencedaily.com, huliq.com, wateronline.com, watertechonline.com, linuxinsider.com, indiaenews.com, esciencenews.com, topnews.in, thaindian.com, bottledwaterweb.com, virtualmedicalcentre.com, keralanext.com, bio-medicine.org, inboxrobot.com, asianage.com, in.news.yahoo.com, tiede.fi, iconocast.com, voanews.com, intertwined.com, medicalnewstoday.com, labspaces.net, waterandwastewater.com, wikio.co.uk, indiaedunews.net, mangalorean.com, medstore.biz, rdmag.com, technologyreview.com, tcetoday.com, keralanext.com, pennet.com, news-medical.net, chinawater.net, crmbuyer.com, khoahoc.com.vn, kisti.re.kr, thedocisin.net, stage7.presstoday.com, mediainindonesia.com, newkerala.com, google-sina.com, arte.tv/fr. Also featured in *Water Research*.

“Genetic tool may make water safer”, June 8, 2008. *Herald Sun*, Durham, NC.

“Retuning Bacteria: Gene-silencing techniques for bacteria could mean more-efficient biofuel production”, June 12, 2008. *Technology Review*.

“A la Claire Fontaine”, June 12, 2008. *Le Point*.

## **PATENTS:**

“RNAi and Antisense Inhibition of Microorganisms”, Patent Application Filed 24 February 2010, Serial No. 12/711,792, Duke University Office of Licensing and Ventures Invention Disclosure No. 3154.

## **PAST AND CURRENT FUNDING (TOTALLING ~\$8.5 MILLION):**

**National Institute of Environmental Health and Safety:** Superfund Basic Research Center Project 5 - Engineering the Physico-Chemical Environment to Enhance the Bioremediation of Developmental Toxicants in Sediment Fungal-Bacterial Biofilms, \$1,096,939 (04/01/2017-03/31/2022) [PIs: Gunsch\*, Vilgalys, Wiesner and Hsu-Kim]

**MedX:** Microbiome Synthesis Colloquium -Exploring Cross-Disciplinary Microbiome Research between Pratt and SoM Investigators at Duke and the Broader North Carolina Triangle Region \$5,000 (10/01/2015-09/30/2016) [PIs: Gunsch\*, Rawls, Deshusses and David]

**Gulf of Mexico Research Initiative:** Chemical Evolution and Plant-microbe Degradation of Petroleum in Saline Marsh Plants and Soils, \$481,166 subcontract (01/01/2016-12/31/2018) [PIs: Van Bael, Blum, Gunsch, Papadopoulos, Pardue]

**National Science Foundation:** NRT: Integrative Bioinformatics for Investigating and Engineering Microbiomes, \$2,999,999 (09/01/2015-08/30/2020) [PIs: Gunsch\*, Rawls, Granek, Graves and Wray]

**Research Triangle Institute:** Exploring the Interface between Genomics, Transcriptomics and Metabolomics for Environmental, Agricultural and Health Applications, \$77,983 (07/01/2015-06/30/2016) [PI: Gunsch\*]

**Lord Foundation of North Carolina:** Project Design for Introduction of Environmental Engineering Course, \$3,500 (06/01/2015-05/31/2016) [PIs: Gunsch\* and Schaad]

**National Science Foundation:** Investigating the Role of Genetically Modified Crop Transgenes in the Proliferation of Antibiotic Resistance in the Environment, \$318,965 (09/01/2014-08/30/2017) [PI: Gunsch\*]

**National Science Foundation and Environmental Protection Agency:** Center for the Environmental Implications of Nanotechnology – Theme 2: Properties and Impacts of Nanoparticles on Microbial Communities, \$447,062 (09/01/2013-08/31/2018) [PI: Gunsch\*]

**National Science Foundation:** PIRE: Water and Commerce – Technologies to Enable Environmental Sustainability in Global Markets, (09/19/2012-08/31/2017) [Participating Faculty Member, PI: Ferguson, Wiesner, Tarabara, Rose and Bang]

**National Science Foundation:** GRS: CAREER: Genetic Adaptation in Soils Resulting from Microbial Exposure to Anthropogenic Contaminants, \$41,500 (09/01/2012-08/30/2013) [PI: Gunsch\*]

**Research Triangle Institute:** Subcontract on Gates Foundation Grant – Comparison of Cocopeat and Sphagnum Peat Biofilters for the Treatment of Septic Waste, \$3,500 (08/01/2012-10/30-2012)

**Lord Foundation of North Carolina:** WERC Design Contest, \$7,860 (06/01/2012-05/31/2013)  
[PIs: Gunsch\* and Schaad]

**Research Triangle Institute:** Subcontract on Gates Foundation Grant – Comparison of Cocopeat and Sphagnum Peat Biofilters for the Treatment of Septic Waste, \$2,500 (09/01/2011-08/30-2012)

**National Science Foundation:** GRS: CAREER: Genetic Adaptation in Soils Resulting from Microbial Exposure to Anthropogenic Contaminants, \$41,500 (09/01/2011-08/30/2012) [PI: Gunsch\*]

**CSIRO:** Pyrosequencing analysis of bacteria and fungi community distribution following exposure to emerging anthropogenic contaminants, \$15,320 (09/01/2011-08/31/2012) [PI: Gunsch\*]

**Lord Foundation of North Carolina:** WERC Design Contest, \$7,629 (06/01/2011-05/31/2012)  
[PIs: Gunsch\*, Knight, Pratson and Schaad]

**National Institute of Environmental Health and Safety:** Superfund Basic Research Center Project 4 - Nanoparticle based strategies for remediation of contaminated sediments: synergies and antagonistic effects with associated bioremediation, \$2,064,409 (04/01/2011-03/31/2016)  
[PIs: Wiesner\*, Gunsch and Hsu-Kim]

**Howard Hughes Foundation.** Precollege Program Research Stipend. \$1,000 (06/01/2010-07/31/2010) [Funding obtained through D. Wahl, Duke University]

**Lord Foundation of North Carolina:** WERC Design Contest, \$10,000 (06/01/2010-05/31/2011)  
[PIs: Gunsch\*, Knight, Pratson and Schaad]

**National Science Foundation:** MRI-R2: Acquisition of High-Speed Sorting Flow Cytometer for Multi-User Environmental Microbiology Research, \$473,370 (02/01/2010-01/31/2012) [PIs: Johnson\*, Bernhardt, Gunsch and Hunt]

**National Science Foundation:** Fate of Biosolid Derived Organic Contaminants in Soils and Effects on Soil Microbial Communities, \$299,775 (07/01/2009-06/30/2013) [PIs: Gunsch\* and Stapleton]

**Lord Foundation of North Carolina:** WERC Design Contest, \$6,700 (06/01/2009-05/31/2010)  
[PIs: Gunsch\*, Knight, Pratson and Schaad]

**Howard Hughes Foundation.** Precollege Program Research Stipend. \$1,000 (06/01/2009-07/31/2009) [Funding obtained through D. Wahl, Duke University]

**National Science Foundation:** CAREER: Genetic Adaptation in Soils Resulting from Microbial Exposure to Anthropogenic Contaminants, \$400,035 (02/01/2009-01/31/2016) [PI: Gunsch\*]

**National Science Foundation and Environmental Protection Agency:** Center for the Environmental Implications of Nanotechnology – Theme 3: Properties and Impacts of Nanoparticles on Microbial Communities, \$447,062 (09/01/2008-08/31/2013) [PI: Gunsch\*]

**Lord Foundation of North Carolina:** WERC Design Contest, \$11,240 (06/01/2008-05/31/2009)  
[PIs: Gunsch\* and Schaad]

**Howard Hughes Foundation.** Precollege Program Research Stipend. \$1,000 (06/01/2008-07/31/2008) [Funding obtained through D. Wahl, Duke University]

**North Carolina Biotechnology Center:** Integrated Fixed Film Activated Sludge Research for Biological Wastewater Treatment in North Carolina, \$80,000 (09/01/2008-08/31/2009) [PIs: Gunsch\* and Schuler in collaboration with Entex Inc.]

**CH2M Hill:** Integrated Fixed Film Activated Sludge Research for Biological Wastewater Treatment in North Carolina, \$15,000 (09/01/2007-08/31/2008) [PIs: Gunsch\* and Schuler]

**Hazen and Sawyer:** Integrated Fixed Film Activated Sludge Research for Biological Wastewater Treatment in North Carolina, \$15,000 (09/01/2007-08/31/2008) [PIs: Gunsch\* and Schuler]

**National Institute for Environmental Health and Safety, Center for Comparative Biology of Vulnerable Populations:** Human Gene Expression Analysis Following a Mycotoxin Exposure Event, \$15,000 (09/01/2007-08/31/2008) [PIs: Gunsch\*, Khlystov and Schell]

**Lord Foundation of North Carolina:** WERC Design Contest, \$10,000 (06/01/2007-05/31/2008)  
[PIs: Gunsch\* and Schaad]

**Howard Hughes Foundation.** Precollege Program Research Stipend. \$1,000 (05/01/2007-07/31/2007) [Funding obtained through D. Wahl, Duke University]

**Lord Foundation of North Carolina and Pratt School of Engineering:** Design/Build/Operate Sensing Labs Using Sensors, Sensor Circuits, Sensor Communications, Sensor/Analyte Interfaces, \$60,000, (06/01/2007-05/31/2008) [PIs: Jokerst\*, Brooke, Gunsch, Khlystov and Fair]

**Lord Foundation of North Carolina:** Studying Exposure to Fungal Indoor Air Contaminants in North Carolina: An Interactive Research Project for Undergraduate Environmental Engineering Students, \$17,500 (06/01/2006-05/31/2007) [PIs: Gunsch\* and Khlystov]

**National Science Foundation.** REU Program Research Stipend. \$1,000 (05/01/2006-07/31/2006)  
[Funding obtained through Martha Absher, Duke University]

**National Institute for Environmental Health and Safety, Center for Comparative Biology of Vulnerable Populations:** Investigating Deiodinase Catalyzed Biotransformation of Brominated Flame Retardants in Fish and Human Cell Lines: Implications for Neurotoxicity in Children, \$44,575 (04/01/2006-03/31/2007) [PIs: Stapleton\* and Gunsch]

#### **TEACHING ACTIVITIES:**

**Sustainable Food Systems,** Guest Lecturer, Duke University, Fall 2012.

**Food University House Course,** Guest Lecturer, Duke University, Spring 2012.

**Sustainable Site Design (ENV99FCS),** Guest Lecturer, Duke University, Fall 2008.

**Biological Processes in Environmental Engineering (CE124L)**, Lead Instructor, Duke University, Fall 2007.

**Introduction to Environmental Engineering (CEE160L formerly CE24L)**, Lead Instructor, Duke University, Fall 2006 and 2014; Guest Lecturer, Fall 2008, 2009, 2010, 2015-2017.

**Environmental Microbiology (CEE 566L formerly CE250)**, Lead Instructor, Duke University, Fall 2005, 2007-2014, 2016.

**Environmental Molecular Biotechnology (CEE661L/BME565L formerly CE239L/BME240L)**, Lead Instructor, Duke University, Spring 2005, 2006, 2008, 2010-2015, 2017.

**Introduction to Engineering (EGR10)**, Guest Lecturer, Duke University, Fall 2004, 2005 and 2006.

**Chemistry and Microbiology for Environmental Engineers (CE120L)**, Guest Lecturer, Duke University, Fall 2004 and 2005.

**Environmental Engineering (CE124L)**, Guest Lecturer, Duke University, Fall 2004 and Fall 2006.

**Engineering Microbiology (CE390J)**, Teaching Assistant, The University of Texas, Fall 2003.

**Introduction to Environmental Engineering and Science (EE&S401)**, Teaching Assistant, Clemson University, Spring 1999.

**Introduction to Environmental Science (ENSP200)**, Teaching Assistant, Clemson University, Fall 1998.

#### **EDITORIAL BOARDS:**

Associate Editor, *ASCE Journal of Environmental Engineering* (May 2015-Current)

Associate Editor, *Biodegradation* (May 2011- Current)

Editorial Board Member, *Industrial Biotechnology* (October 2011-Current)

Editorial Board Member, *Biodegradation* (February 2011-May 2011)

#### **PROFESSIONAL COMMUNITY SERVICE:**

National Academies of Science, Engineering and Medicine, Invited Panelist for 2<sup>nd</sup> committee meeting on “Revitalizing Graduate STEM Education for the 21<sup>st</sup> Century” (May 2017)

ASCE EWRI Congress Paper Reviewer and Environmental Health and Water Quality Session Organizer/Moderator (May 2017)

Engineering Conferences International, Conferences Committee, Affiliate Member (January 2016-Present)

Civil Engineering Conference in the Asia Region 7 (CECAR7), Session Organizer and Moderator (Planned for September 2016)

ASCE EWRI Congress Paper Reviewer and Environmental Health and Water Quality Session Organizer/Moderator (May 2016)

ASCE/EWRI Environmental Health and Water Quality Committee, Chair (October 2015-Current)

ASCE/EWRI Environmental Council, Vice Chair (October 2015-Current)

ASCE EWRI Congress Paper Reviewer and Environmental Health and Water Quality Session Organizer/Moderator (May 2015)

Battelle, Third International Symposium on Bioremediation and Sustainable Environmental Technologies, Student Mentor (May 19, 2015)

Battelle, Third International Symposium on Bioremediation and Sustainable Environmental Technologies, “Mycoremediation”, Session Organizer and Moderator (May 19, 2015)

ASCE EWRI Congress Paper Reviewer and Environmental Health and Water Quality Session Organizer/Moderator (May 2014)



AEESP Board of Directors, Nominee (Spring 2014)  
ASCE/EWRI Environmental Health and Water Quality Committee, Vice Chair (October 2013-September 2015)  
ASCE EWRI Congress Paper Reviewer and Environmental Health and Water Quality Session Organizer/Moderator (May 2013)  
National Science Foundation NSEC Panelist, Arlington, VA (December 3-4, 2012)  
ASCE EWRI Congress Paper Reviewer and Environmental Health and Water Quality Session Organizer/Moderator (May 2012)  
Purdue University, Department of Civil Engineering Advisory Council, Member (October 2011-Current)  
ASCE/EWRI Environmental Health and Water Quality Committee, Secretary (October 2011-September 2013)  
AEESP “Navigating the Academic Job Search Workshop”, Speaker (July 10, 2011)  
ASCE/EWRI Environmental Health and Water Quality Committee, Member (March 2011-September 2011)  
AEESP Education Committee, Chair (Spring 2010- Current)  
In Vitro Protocol Testing Panel, International Conference on the Implications of Nanotechnology, Co-Chair (September 10, 2009)  
Invited Participant in the Research Triangle Environmental Health Collaborative (November 10-11, 2008) – Environmental Health Summit to explore the research needs and possible health consequences of contaminants in our water supply from the use of pharmaceutical products.  
AEESP Education Committee, Member (Fall 2006-Spring 2010)

**PROPOSAL REVIEWER:**

Natural Environmental Research Council, United Kingdom  
CRDF Global, Georgia Regional Cooperation Grant Competition  
Swiss State Secretariat for Education, Research and Innovation  
Singapore National Research Foundation  
National Science Foundation (Reviewer for BIO, CBET, ABI and DGE divisions as well as SBIR, OIA and PFI Programs)  
United States Civilian Research and Development Foundation

**JOURNAL REVIEWER:**

Nano Letters, Environmental Science and Technology, Water Research, Environmental Health Perspectives, ACS Nano, pLOS One, Biotechnology and Bioengineering, Nanotoxicology, Chemosphere, ASCE Journal of Environmental Engineering, Biodegradation, Environmental Pollution, Environmental Engineering Science, Journal of Membrane Science, Biomarker Insights, Environmental Progress, Journal of Environmental Informatics, Mycological Research, Biomacromolecules, Journal of Applied Microbiology, Process Biochemistry, Aquatic Toxicology, Chemical Engineering Journal, Desalination, Rural and Remote Health, Ecological Engineering, Desalination and Water Treatment, Industrial Biotechnology, Environmental Engineering and Management, Water Environment Research, Bioprocess and Biosystems Engineering, African Journal of Microbiology Research, Journal of Environmental Monitoring, Sensors, ACS Sustainable Chemistry and Engineering, Frontiers in Microbiology, .

**BOOK REVIEWER:**

John Wiley & Sons, Academic Press/Elsevier

**UNIVERSITY SERVICE:**

University Level

Duke University, Board of Trustees Undergraduate Education Subcommittee (Fall 2017-Current)  
 Duke University, University Priorities Committee, *ex officio* member (Fall 2017-Current)  
 Duke University, Executive Committee of the Academic Council, Elected Representative (Fall 2017-Current)  
 Duke University, Nicholas School of the Environment Dean Search Committee (Fall 2017)  
 Duke University, Bass Chair Advisory Committee (Spring 2017 - Current)  
 Duke University, NSF Grant Writing Workshop, Panelist (Fall 2016)  
 Duke University, MEDx Steering Committee Member (Spring 2016-Current)  
 Duke University, Pratt School of Engineering Dean Search Committee (Fall 2015)  
 Duke University, Executive Committee of the Academic Council, Elected Representative (Fall 2014-Spring 2015)  
 Duke University, Hearings Committee (Fall 2014-Present)  
 Duke University, CAREER Workshop, Panelist (Summer 2014)  
 Duke University, Faculty Diversity Task Force, Identifying Best Practices in Faculty and Administrative Diversity Subcommittee, Member (Summer 2014-Spring 2015)  
 Duke University, Executive Committee of the Academic Council, Nominee (Spring 2014)  
 Duke University, President's Art Advisory Committee (July 2011-June 2014)  
 Duke University, Academic Council, Elected Representative (Fall 2011-Spring 2015, Fall 2016 – Current)  
 Duke University, Proposal Reviewer for Office of Research Support Internal Competition (Spring 2011)  
 Duke University, Faculty Advisor for the University Scholars Program (Spring 2010-Current)  
 Duke University, Responsible Research Conduct Training for Graduate Students (Fall 2006)  
 Duke University, Faculty Representative for Duke Seniors Open Day (September 2005)

#### School Level

Pratt School of Engineering, Engineering Faculty Council, Chair (Fall 2017-Current)  
 Pratt School of Engineering, Space Committee (Fall 2015-Current)  
 Pratt School of Engineering, Diversity and Inclusion Committee, Co-Chair (Fall 2015-Current)  
 Pratt School of Engineering, Proposal Reviewer for Lord Foundation Grants (Spring 2014)  
 Pratt School of Engineering, Faculty Budget Advisory Committee (Fall 2013-Spring 2015)  
 Pratt School of Engineering, Diversity Strategy Committee (Fall 2010-Spring 2015)  
 Pratt School of Engineering, Energy Engineering Committee (Fall 2010-Fall 2013)  
 Pratt School of Engineering, Engineering Faculty Council, Elected Representative (Fall 2010-Spring 2012, Fall 2012-Spring 2014, Spring 2017-Current), Served as Secretary (Fall 2011-Spring 2014)  
 Pratt School of Engineering, Infrastructure Planning Committee (Spring 2005)

#### Departmental Level

Civil and Environmental Engineering Department, Faculty Search Committee (Fall 2014-Spring 2015)  
 Civil and Environmental Engineering Department, Departmental Review Committee (Fall 2005-Spring 2009 and Spring 2012-Current)  
 Civil and Environmental Department, Engineering Graduate Committee (Fall 2009-Current)  
 Civil and Environmental Engineering Department, Auditor for Undergraduate Team Submission to the Water Environment Research Council Competition (Spring 2005, 2007 and 2008)  
 Civil and Environmental Engineering Department, Judge for Graduating Senior Civil and Environmental Engineering Eric Pas Outstanding Student Award Presentations (April 2005 and 2006)  
 Civil and Environmental Engineering Department, Undergraduate Curriculum Revision Committee (May 2005-Current)

Civil and Environmental Engineering Department, Graduate Student Core Class Requirement Committee (January 2005-Current)

**OUTREACH SERVICE:**

Speaker for *SENSOR Academy*, Workshop for Underrepresented Minority Students in 8<sup>th</sup> Grade “Environmental Engineering: Emerging Contaminants, Emerging Solutions”, (January 24, 2015)  
Keynote Address for World Health Model United Nations Meeting, “Fix that Water! A Grand Challenge for Past, Present and Future Engineers” (May 30, 2014)  
Speaker for *Women in STEM*, Workshop for High School Female Students (Fall 2013)  
Organizer for “Scientists and Engineers for the Future”, Outreach Activity for 7<sup>th</sup> Grade Students at Lowes Grove Middle School (October 29-30, 2013)  
Organizer for “Scientists and Engineers for the Future”, Outreach Activity for 11<sup>th</sup> Grade Students at Jordan High School (March 11-12, 2013)  
Organizer for “Scientists and Engineers for the Future”, Outreach Activity for 7<sup>th</sup> Grade Students at Lowes Grove Middle School (March 7-8, 2013)  
Interviewee for 5<sup>th</sup> Grade Science Project, Duke School (Spring 2011)  
Judge and Faculty Advisor for the ASCE Carolinas Conference Environmental Competition (April 9-10, 2010)  
Mentor for Saint Mary’s School Internship Partner Program, Shadow Program to Expose Underrepresented Students in 12<sup>th</sup> Grade to Science and Engineering (April 6-7, 2010)  
Volunteer for NanoDays, Outreach Program to Educate Public About Nanotechnology at the North Carolina Life Science Museum and Marbles (2010-2015)  
Organizer for “Scientists and Engineers for the Future”, Outreach Activity for 7<sup>th</sup> Grade Students at Neal Middle School (January 7-8, 2010)  
Volunteer for Duke-Durham School Days, Outreach Program for Local Gifted Students in 8<sup>th</sup> Grade (October 23, 2008)  
Volunteer for *FEMMES*, Outreach Program for Local Female Students in 4-6<sup>th</sup> Grades (Spring 2008, 2009, 2011- 2015)  
Speaker for *Techtronics*, Science Camp for Middle School Female Students (Summer 2007)  
Volunteer for *Women in Math Mentoring*, Outreach Program for Middle School Female Students in Durham and Wake Counties (Fall 2004-Spring 2006)

**COLLABORATORS:**

Jeffrey Baguley (University of Nevada, Department of Biology), Joshua Boltz (CH2M Hill), Emily Bernhardt (Duke University, Department of Biology), Holly Bik (University of New Hampshire, Hubbard Center for Genome Studies), Robert Burgess (EPA), David Carroll (Wake Forest University), SoRyong Chae (University of Cincinnati, Department of Civil and Environmental Engineering), Anthony Chariton (CSIRO), Nguyen Huu Chiem (Cần Thơ University), Anthony Danko (CIGAR, Portugal), Benjamin Colman (Montana State University, College of Forestry and Conservation), Elizabeth DeLong (Duke University, Biostatistics and Bioinformatics), Marc Deshusses (Duke University, Department of Civil and Environmental Engineering), Richard DiGulio (Duke University, Nicholas School of the Environment), Robert Dodson (South Durham Reclamation Facility), P. Lee Ferguson (Duke University, Civil and Environmental Engineering) Wayne Flournoy (Entex Inc.), Bob Freudenberg (Entex Inc.), James Gellner (Hazen and Sawyer), Joshua Granek (Duke University, Biostatistics and Bioinformatics), Joseph Graves Jr. (North Carolina A&T, Joint School of Nanosciences and Nanoengineering), Kay Ho (EPA), Dana Hunt (Duke University, Nicholas School of the Environment), Mike McGehee (Hazen and Sawyer), Jie Liu (Duke University, Department of Chemistry), William S. M’Coy (HDR Engineering Inc.), Joel Meyer (Duke University, Nicholas School of the Environment), Lisa Portis (EPA), John Rawls (Duke University, Microbial Genetics and Microbiology), David Robbins (RTI International), Wiley Schell (Duke University, School of

Medicine), Andrew Schuler (University of New Mexico, Department of Civil Engineering), Stuart Simpson (CSIRO), Heather Stapleton (Duke University, Nicholas School of the Environment), Le Hoang Viet (Cần Thơ University), Rytas Vilgalys (Duke University, Department of Biology), Jennifer Wernegreen (Duke University, Nicholas School of the Environment), Mark Wiesner (Duke University, Department of Civil and Environmental Engineering), Gregory Wray (Duke University, Department of Biology)

#### **POSTDOCTORAL ASSOCIATE SUPERVISION:**

1. Courtney Gardner, Postdoctoral Associate [Ph.D. *Duke University*] (May 2017 – Current), Project: “Investigating exposome – gut microbiome associations”.
2. Emilie Lefevre, Postdoctoral Associate (Ph.D., *Université Clermont Ferrand II*) (October 2013-November 2017), Project: “Investigating the biodegradation and ecological impacts of flame retardants”, Presently Assistant Professor at the National University of Colombia.
3. Kurt Rhoads, Postdoctoral Associate co-advised with Wiesner and Hsu-Kim (Ph.D., *Stanford University*) (October 2011-July 2012), Project: “Investigating the ecological impacts of nanoparticles used in bioremediation”, Presently Assistant Professor at Case Western University.
4. Hyun-su Kim, (Sept 2007 – August 2009), Project: “Integrated Fixed Film Activated Sludge Research For Biological Wastewater Treatment in North Carolina”, Presently Assistant Professor at Chonbuk National University.
5. Ruoting Pei, Postdoctoral Associate (Ph.D., *Colorado State University*) (Sept. 2006-April 2009), Projects: “Investigating the Prevalence of Sterigmatocystin and Tricothecene Mycotoxins in Indoor Environments in North Carolina using ELISAs” and “Bacterial Genetic Mutations Resulting from Exposure to Toluene in Aquatic Environments”, Assistant Professor at University of Texas at San Antonio (2009-2015).

#### **VISITING SCHOLAR SUPERVISION:**

1. Suyun Chang (Ph.D. Candidate, Tianjin University), (October 2009-March 2011), Project: “Horizontal Gene Transfer Event Characterization in *Pseudomonas putida* Following Exposure to Naphthalene”, Awarded Chinese National Fund Scholarship to work in Gunsch Lab.

#### **GRADUATE STUDENT SUPERVISION:**

(M.S. Students are double underlined)

1. Paige Bippus, Ph.D. Student [B.S. *College of Charleston*] (August 2017-Current).
2. Alexander McCumber, Ph.D. Student [B.S. *Oklahoma Christian University*, M.S. *Oklahoma University*] (August 2016-Current).
3. Savannah Volkoff, Ph.D. Student [B.S. *San Francisco State University*] (August 2015-Current).
4. William Gerhard, Ph.D. Student [B.S. and M.S. *University of North Carolina*] Dissertation Topic: “Examining the Role of Ballast Water in the Global Translocation of Microorganisms and Antibiotic Resistance Genes”, 2016 and 2017 NSF EAPSI Fellow (August 2015-Current).
5. Lauren Czaplicki, Ph.D. Candidate [B.S. *Ohio State University*] Dissertation Topic: “Assessing Mycoremediation Strategies to Address Heavy Polycyclic Aromatic Hydrocarbon-Contaminated Soils” (August 2012-December 2017), Duke Dean’s Graduate Fellow. Presently a Research Associate with Jonah Ventures.
6. Lauren Redfern, Ph.D. Student [B.S. *University of Florida*] Dissertation Topic: “Microbial Communities and Polycyclic Aromatic Hydrocarbons: Exposure Related Adaptations in Environmental Microbiomes and their Potential for Bioremediation”

- (August 2013-August 2017), K.C. Donnelly Award Recipient, NSF Graduate Fellowship Honorable Mention Recipient. Presently an Environmental Engineer with Ramboll-Environ.
7. Courtney Gardner, Ph.D. [B.S. *Stetson University*] Dissertation Topic: “Microbial Communities and Transgenic Crops: Understanding the Role Transgenic Crops May Play in the Rise of Antibiotic Resistance” (August 2012-May 2017). NSF Graduate Fellow. Presently a Postdoctoral Associate at Duke University.
  8. Carley Gwin, Ph.D. [B.S. *Pennsylvania State University Behrend*, M.S. *SUNY Fredonia*] Dissertation Topic: “Bacterial responses to silver nanoparticle treatment: Community structure, resistance, and function.” (August 2011- December 2016). Presently an Visiting Assistant Professor at Bucknell University.
  9. Thomas Worley-Morse, Ph.D. [B.S. *Colorado State University*] Ph.D. Dissertation Topic: “Antisense Gene Silencing and Bacteriophages as Novel Disinfection Processes for Engineered Systems”, (Aug. 2009-August 2014), EPA STAR Graduate Fellow. Presently an Environmental Engineer with Hazen & Sawyer.
  10. Ryan Holzem, Ph.D. [B.S. *University of Wisconsin Platteville*, M.S. *University of Wisconsin Madison*] Ph.D. Dissertation Topic: “Elucidating the Impact of Biosolids-Derived Antimicrobials on Denitrifying Microbial Community Function and Structure in Agricultural Soil”, (August 2010- May 2014), Duke BTE Graduate Fellow. Presently an Assistant Professor at the University of Wisconsin at Green Bay.
  11. Ashley Danley-Thomson, Ph.D. [B.S. *Florida State University*] (June 2010- May 2014), Ph.D. Dissertation Topic: “Development of Water and Wastewater Biofiltration Technologies for the Developing World Using Locally Available Packing Media: Case Studies in Vietnam and Haiti”, NSF Graduate Fellow and Fulbright Fellow (Vietnam). Presently an Assistant Professor at Florida Gulf Coast University.
  12. Christina Arnaout (Alito), Ph.D. [B.S. *University of Texas*] Ph.D. Dissertation Topic: “Assessing the Impacts of Silver Nanoparticles on the Growth, Diversity, and Function of Wastewater Bacteria”, (Aug. 2008-Aug. 2012), NSF Graduate Fellowship Honorable Mention Recipient. Presently an Environmental Engineer with HDR Engineering Inc.
  13. Kaoru Ikuma, Ph.D. [B.S. and M.S. *Virginia Tech*] Ph.D. Dissertation Topic: “Effects of Select Biological and Environmental Factors on the Horizontal Gene Transfer and Functionality of the TOL Plasmid: A Case Study for Genetic Bioaugmentation”, (Aug. 2007-December 2011), Recipient of Duke University 2011 Dean’s Award for Excellence in Mentoring. Presently an Assistant Professor at Iowa State University.
  14. Jennifer Shore, co-advised with Marc Deshusses, [B.S. *University of the Pacific*] M.S. Thesis Topic: “Application of a Moving Bed Biofilm reactor for Ammonia Removal in High Temperature Industrial Wastewater”, (Aug. 2008-December 2009). Presently an Environmental Engineer at HDR Engineering Inc.
  15. Sara Morey [B.S., *Cornell University*], M.S. Thesis Topic: “Gene Silencing in *Pichia pastoris* and *Pseudomonas putida* for Water Purification”, (July 2007-May 2009). Presently an Environmental Engineer at Exxon-Mobil.
  16. Shuyi Wang [B.S. and M.S., *Tsinghua University, China*], Ph.D. Dissertation Topic: “Microbial Impacts of Selected Pharmaceutically Active Compounds found in Domestic Wastewater Treatment Plants”, (August 2005-May 2009). Presently Director of Government Training and Professional Education Programs at Duke Kunshan University.

#### **UNDERGRADUATE STUDENT SUPERVISION:**

1. Winston Lindqwister, Biomedical Engineering Undergraduate Student, Duke University (October 2017-Current)

2. Hunter Bradshaw, REU Biology and Environmental Studies Student, Wofford College, "Mycoremediation of PAHs", (May 2014-August 2014).
3. Zakiya James, REU Civil Engineering Student, Howard University, "Ecological Impacts of Cerium Dioxide Nanoparticles", (May 2014-August 2014).
4. Caroline Lehman Civil and Environmental Engineering Undergraduate Student, Duke University, "Ecological Impacts of Nanomaterials", (January 2014-December 2014).
5. Grant Petersen, Civil and Environmental Engineering Undergraduate Researcher and Pratt Fellow, "Biodegradation of Flame Retardants", (August 2013-May 2015).
6. Shanice McLean Civil and Environmental Engineering Undergraduate Student, Duke University, "Operation of Wastewater Reactors", (August 2013-May 2014).
7. Jasper Louie Tang Sia, REU Chemical Engineering Student, University of Arizona, "Ecological Impacts of Silver Nanoparticles", (May 2013-August 2013).
8. Danielle Colson, Mechanical Engineering and Material Sciences Undergraduate Student, Duke University, "Operation of Wastewater Reactors", (January 2013-May 2013).
9. Stephanie Ogwo, Civil and Environmental Engineering Undergraduate Student, Duke University, "Operation of Wastewater Reactors", (August 2012-December 2012).
10. Bridget Darby, REU Biology Student, Boston University, "Ecological Impacts of Emerging Contaminants Found Biosolids Following their Land Application to Agricultural Fields", (May 2012-August 2012).
11. Kathryn Latham, Civil and Environmental Engineering Undergraduate Pratt Fellow, "Investigation of Algal Growth on Industrial and Municipal Wastewaters", (January 2012-May 2013).
12. Lucy Zhang, "Use of Bacteriophage for Water Disinfection", Biology and Chemistry Undergraduate Student (August 2011-May 2012).
13. Ellen Huang, "Ecological Impacts of Silver Nanoparticles", Environmental Engineering Undergraduate Student (January 2011-May 2012).
14. Fernando Iglesia, Biomedical Engineering Undergraduate Student, "Use of Wastewater Bacteriophage for Gene Silencing Application", (August 2010-December 2010).
15. Kevin He, Environmental Science Undergraduate Student, "Ecological Impacts of Emerging Contaminants in Biosolids Following Land Application", (June 2010-May 2011).
16. Michael Meers, Biology Undergraduate Student, "Identifying the Effect of GC Content on Phenotype Functionality Following Conjugation Events", (September 2009-May 2010).
17. George Yang, Biology Undergraduate Student, "Developing a Green Fluorescent Protein Reporter System to Track Plasmid Transfer Involved in Naphthalene Degradation" (September 2009-May 2010).
18. Lindsey Duplissa, REU Environmental Engineering Student, Clarkson University (May-July 2009), Project: "Effect of Silver Nanoparticles on Microbial Growth and Silver Resistance Adaptation in Wastewater Treatment Plants"
19. Trisha Lowe, Environmental Eng. Undergraduate Student (August 2008-May 2009), Project: "Development of Bioreactors for Enhanced Biodiesel Production from Algae".
20. Lee Pearson, Civil and Environmental Engineering Undergraduate Pratt Fellow, Environmental Engineering Student, (January 2007-May 2008), Projects: "Life Cycle Analysis of Algal Biodiesel Production" and "Investigating the Prevalence of Sterigmatocystin and Tricothecene Mycotoxins in Indoor Environments in North Carolina using ELISAs"
21. Aaron Lee, Civil and Environmental Engineering Undergraduate Student and Pratt Fellow (May 2006-May 2009), Projects: "Development of Bioreactors for Enhanced Biodiesel Production from Algae", "Effect of Pharmaceutically Active Compounds on

- Microbial Growth” and “Bacterial Genetic Mutations Resulting from Exposure to Toluene in Aquatic Environments”.
22. Nicholas Millar, Undergraduate Environmental Engineering Student, (September 2006-May 2007), Project: “Investigating the Prevalence of Sterigmatocystin and Tricothecene Mycotoxins in Indoor Environments in North Carolina using ELISAs”
  23. Hannah Freedman, Undergraduate Student, (September 2006-February 2007), Project: “Bacterial Genetic Mutations Resulting from Exposure to Toluene in Aquatic Environments”.
  24. Ryan Holzem, REU Environmental Engineering Student, University of Wisconsin at Platteville (May-July 2006), Project: “Effect of Pharmaceutically Active Compounds on Microbial Growth”.
  25. Pallavi Kansal, Biomedical Eng. Undergraduate Student (August 2005-May 2006), Project: “Bacterial Genetic Mutations Resulting from Exposure to Toluene in Aquatic Environments”.
  26. Joshua Sommer, Environmental Eng. Undergraduate Student (August 2005-Current), “Investigating the Prevalence of Sterigmatocystin and Tricothecene Mycotoxins in Indoor Environments in North Carolina using ELISAs”.
  27. Peter Perez, Biomedical Eng. Undergraduate Student (August 2005-May 2006), “Effect of Pharmaceutically Active Compounds on Microbial Growth”.
  28. Todd Cobb, Environmental Eng. Undergraduate Student (August 2005-December 2005), “Effect of Pharmaceutically Active Compounds on Microbial Growth”.
  29. Tse-Hwa Yin, Biomedical Eng. Undergraduate Student (January 2005–July 2005), “Effect of Pharmaceutically Active Compounds on Microbial Growth”.
  30. Christian Agudelo, Biomedical Eng. Undergraduate Student (January 2005-May 2005), “Effect of Pharmaceutical on Microbial Growth”.

#### **HIGH SCHOOL STUDENT SUPERVISION:**

1. Anthony Wu (North Carolina School of Science and Math, Durham, NC), Howard Hughes Scholar (June 2010-July 2010), Project: “*Serratia marcescens* transconjugant characterization”, Currently enrolled at the University of North Carolina, Chapel Hill.
2. Leighanne Oh (Northern High School, Durham, NC), Howard Hughes Scholar (June 2009-May 2011), Project: “Investigating the microbial toxicity of consumer products containing silver nanoparticles”, Currently enrolled at Duke University.
3. Brook Teffera (Jordan High School, Durham, NC), CEINT Summer Intern (June 2009-August 2009), Project: “Investigating the microbial toxicity of consumer products containing silver nanoparticles”, Currently enrolled at the University of North Carolina, Chapel Hill.
4. Anna Ruth Halberstadt (Carolina Friends School, Durham, NC), Howard Hughes Scholar (June 2008-August 2008), Project: “Investigating the role of G/C content on conjugation rates in aquatic environments”, Currently Enrolled at Rice University.
5. Annie Chen (East Chapel Hill High School, Chapel Hill, NC), Howard Hughes Scholar (June 2007-August 2007), Project: “Investigating the role of anthropogenic compounds on microbial adaptation in aquatic environments”, Currently enrolled at Duke University.

#### **GRADUATE STUDENT COMMITTEES:**

1. Johnnie Chamberlin, M.S. Degree, Graduation Date: May 2005 (Main Advisor: Schuler, Civil and Environmental Engineering)
2. Hoon Jang, Ph.D. Degree, Graduation Date: May 2006 (Main Advisor: Schuler, Civil and Environmental Engineering)
3. Michael Watts, Ph.D. Degree, Graduation Date: May 2008 (Main Advisor: Linden, Civil and Environmental Engineering, University of Colorado)

4. Dave Sebba, Ph.D. Degree, Graduation Date: August 2008 (Main Advisor: Lazarides, Mechanical Engineering and Material Sciences)
5. Changlong Wu, Ph.D. Degree, Graduation Date: August 2008 (Main Advisor: Linden, Civil and Environmental Engineering, University of Colorado)
6. Ernest Hotze, Ph.D. Degree, Graduation Date: December 2008 (Main Advisor: Wiesner, Civil and Environmental Engineering)
7. Jeffrey Bandy, Ph.D. Candidate, Graduation Date: May 2009 (Main Advisor: Linden, Civil and Environmental Engineering, University of Colorado)
8. Anne Eischeid, Ph.D. Candidate, Graduation Date: May 2009 (Main Advisor: Linden, Civil and Environmental Engineering, University of Colorado)
9. Nelita Elliott, Ph.D. Candidate, Graduation Date: December 2010 (Main Advisor: Yuan, Biomedical Engineering)
10. Rawad Saleh, Ph.D. Candidate, Graduation Date: December 2010 (Main Advisor: Klystov, Civil and Environmental Engineering)
11. Yang Zhao, Ph.D. Degree, Graduation Date: May 2011 (Main Advisor: Chakrabarty, Electrical and Computer Engineering)
12. Arnak Aleksanyan, Ph.D. Degree, Graduation Date: May 2011 (Main Advisor: Brooke, Electrical and Computer Engineering)
13. Brian Vogler, M.S. Degree, Graduation Date: May 2011 (Main Advisor: Gersbach, Biomedical Engineering)
14. David Kahler, Ph.D. Degree, Graduation Date: May 2011 (Main Advisor: Kabala, Civil and Environmental Engineering)
15. Si-Yi (Jenny) Wang, Ph.D. Degree, Graduation Date: August 2011 (Main Advisor: Wright, Biology)
16. Zachary Hendren, Ph.D. Student, Graduation Date: August 2011 (Main Advisor: Wiesner, Civil and Environmental Engineering)
17. Zhiqiang Li, Ph.D. Student, Expected Graduation Date: August 2011 (Main Advisor: Gregory, Civil and Environmental Engineering, Carnegie Mellon University)
18. Ming-Yeng Lin, Ph.D. Student, Expected Graduation Date: August 2011 (Main Advisor: Khlystov, Civil and Environmental Engineering)
19. Tong Zhang, Ph.D., Graduation Date: May 2012 (Main Advisor: Hsu-Kim, Civil and Environmental Engineering)
20. Osman Karatum, M.S. Student, Graduation Date: May 2012 (Main Advisor: Deshusses, Civil and Environmental Engineering)
21. Matthew Strickland, M.S. Student, Graduation Date: August 2012 (Main Advisor: Deshusses, Civil and Environmental Engineering)
22. Elizabeth Davis, Ph.D. Candidate, Graduation Date: May 2013 (Main Advisor: Stapleton, Nicholas School of the Environment)
23. Lauren Barton, Ph.D. Student, Graduation Date: May 2014 (Main Advisor: Wiesner, Civil and Environmental Engineering)
24. Grace Schwartz, Ph.D. Student, Graduation Date: May 2015 (Main Advisor: Hsu-Kim, Civil and Environmental Engineering)
25. Anna Liu Ph.D. Student, Expected Graduation Date: December 2016 (Main Advisor: You, Biomedical Engineering)
26. Jeff Farner Budarz, Ph.D. Student, Expected Graduation Date: December 2016 (Main Advisor: Wiesner, Civil and Environmental Engineering)
27. Aaron Forbis-Stokes, Ph.D. Student, Expected Graduation Date: May 2016 (Main Advisor: Deshusses, Civil and Environmental Engineering)
28. Judy Winglee, Ph.D. Candidate, Expected Graduation Date: May 2017 (Main Advisor: Wiesner, Civil and Environmental Engineering)



29. Noelle DeStefano, Ph.D. Student, Graduation Date: May 2018 (Main Advisor: Ferguson, Nicholas School of the Environment)
30. John Pura Ph.D. Student, Expected Graduation Date: May 2018 (Main Advisor: Chen, Biostatistics and Bioinformatics)
31. Ahna Beruk, Ph.D. Student, Expected Graduation Date: May 2021 (Main Advisor: Wiesner, Civil and Environmental Engineering)
32. Brandon Hunter, Ph.D. Student, Expected Graduation Date: May 2021 (Main Advisor: Deshusses, Civil and Environmental Engineering)
33. Jonathan Bethke Ph.D. Student, Expected Graduation Date: May 2021 (Main Advisor: You Biomedical Engineering)
34. Sada Boyd Ph.D., Student, Expected Graduation Date: May 2021 (Main Advisor: Graves, Energy Systems Engineering, North Carolina A&T)
35. Xin Song Ph.D. Student, Expected Graduation Date: May 2021 (Main Advisor: You Electrical and Computer Engineering)
36. Nadratum Chowdury, Ph.D. Student, Expected Graduation Date: May 2022 (Main Advisor: Wiesner, Civil and Environmental Engineering)
37. Nicholas Rogers, Ph.D. Student, Expected Graduation Date: May 2022 (Main Advisor: Wiesner, Civil and Environmental Engineering)
38. Kelsey Deaton, Ph.D. Student, Expected Graduation Date: May 2022 (Main Advisor: Deshusses, Civil and Environmental Engineering)
39. Natalia Neal-Walthall, Ph.D. Student, Graduation Date: May 2022 (Main Advisor: Hsu-Kim, Civil and Environmental Engineering)

**UNDERGRADUATE STUDENT COMMITTEES:**

1. Jialing Kim Png, Graduation with Distinction Committee, Graduation Date: May 2006 (Main Advisor: Chilkoti, Biomedical Engineering)

**THESIS ADVISORS:**

M.S. Thesis Advisor: David L. Freedman, Clemson University, Dept. of Env. Eng. and Science  
Ph.D. Thesis Advisor: Kerry A. Kinney, University of Texas, Dept. of Civil Engineering