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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:

- Vice-President and Chief Science Officer** 02/09- present
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 - present
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:

Environmental Science & Technology Excellence in Reviewing Award 2011
U.S. Frontiers of Engineering, National Academy of Engineering, Invited Participant 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:

8th 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 (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 2nd (Christina Arnaout) and 3rd (Jennifer Shore) Place Winners, Most Outstanding Student Poster at the 89th 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 2008
Independent Study Project in Civil and Env. Eng. Dept.
Advisor to Senol Utku Award Runner-up (Shuyi Wang), Best published Pre-Doctoral 2008
Peer-Reviewed Paper in Duke University Civil and Env. Eng. Dept.

ACTIVE PROFESSIONAL MEMBERSHIPS:

American Society of Civil Engineers (ASCE), American Society for Microbiology (ASM), American Chemical Society (ACS), Association of Environmental Engineering and Science Professors (AEESP)

PEER-REVIEWED PUBLICATIONS:

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

1. C.L. Arnaout and **C.K. Gunsch**. "Impact of Silver Nanoparticle Coating on the Nitrification Potential of *Nitrosomonas europaea*", *Environmental Science and Technology*, 2012, In Press.
2. 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, In Press.
3. K. Ikuma and **C.K. Gunsch**. "Functionality of the TOL Plasmid Under Varying Environmental Conditions Following Conjugal Transfer", *Applied Microbiology and Biotechnology*, 2012, In Press. (doi:10.1007/s00253-012-3949-8)
4. R. Pei and **C.K. Gunsch**, "Inflammatory Cytokine Gene Expression in THP-1 Cells Exposed to *Stachybotrys chartarum* and *Aspergillus versicolor*", *Environmental Toxicology*, 2012, In Press. (doi/10.1002/tox.20698)
5. 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.
6. 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.
7. 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.
8. 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.

9. 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.
10. K. Ikuma and **C. Gunsch**, “Effect of Carbon Source Addition on Toluene Biodegradation by *Escherichia coli* DH5 α Transconjugants Harboring the TOL Plasmid”, *Biotechnology and Bioengineering*, 2010, 107(2):269-277.
11. 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.
12. 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.
13. R. Pei and **C.K. Gunsch**, “Plasmid conjugation in a mixed activated sludge microbial community”, *Environmental Engineering Science*, 2009, 26(4):825-831.
14. 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.
15. S-R. Chae, S. Wang, Z.D. Hendren, M.R. Wiesner, Y. Watanabe and **C.K. Gunsch**, “Effects of Fullerene C₆₀ 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.
16. 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.
17. **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.
18. **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.
19. **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.
20. 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. 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. Cerca and N. F. Azevedo. Invited Book Chapter. Publindustria Lda, Porto, Portugal, ISBN: 978-972-8953935, In Press.
2. **C.K. Gunsch** and A.S. Danko. “Biofilms in Biocorrosion”, In Manuel Simões and Filipe Mergulhão (Eds.), Biofilms in Bioengineering (pp. XX). New York, NY: Nova Science Publishers, In Press

ORAL PRESENTATIONS:

1. **C.K. Gunsch*** and C.A. Gwin, “Impacts of Silver Nanoparticles on the Development of Silver Resistance in Wastewater Bacteria”, Invited for Presentation at the ACS Colloids and Surface Science Meeting, Riverside, CA (June 23-26, 2013).
2. **C.K. Gunsch***. “Genetic Bioaugmentation: Utilizing Horizontal Gene Transfer to Enhance *in situ* Bioremediation”, Johns Hopkins University, Baltimore, MD (September 25, 2012).
3. R. Holzem* and **C.K. Gunsch**, “Ecological Impacts of Biosolid Derived Emerging Organic Contaminants on Denitrifying Microbial Community Function”, 243rd National Meeting and Exposition of the American Chemical Society, San Diego, CA (March 25-29, 2012).
4. **C.K. Gunsch*** and C.L. Arnaout, “Impacts of Silver Nanoparticles on the Growth and Function of *Nitrosomonas europaea*”, Invited for Presentation at the 243rd National Meeting and Exposition of the American Chemical Society, San Diego, CA (March 25-29, 2012).
5. 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”, 4th International Barcode of Life Conference, Adelaide, Australia (November 28-December 3, 2011)
6. 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).
7. **C.K. Gunsch***. “Genetic Bioaugmentation: Utilizing Horizontal Gene Transfer to Enhance *in situ* Bioremediation”, University of California, Berkeley, CA (September 23, 2011).
8. T.O. Morse* and **C.K. Gunsch**, “Antisense Silencing for Pathogen Removal in Water Treatment”, 242nd National Meeting and Exposition of the American Chemical Society, Denver, CO (August 28-September 1, 2011).

9. 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).
10. 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).
11. 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).
12. 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).
13. 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).
14. 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).
15. 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”, 95th Ecological Society of America Annual Meeting, Pittsburgh, PA (August 1-6, 2010).
16. **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).
17. 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).
18. **C.K. Gunsch***, “Scientifica Program in the Gunsch Lab”, Durham Public Schools Scientifica Meeting, Durham, NC (January 15, 2010).
19. **C.K. Gunsch***, “Impacts of nanosilver on pure cultures and wastewater microbial communities”, CEINT Brownbag lunch series, Durham, NC (November 16, 2009).
20. 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).

21. 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).
22. 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).
23. 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).
24. 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).
25. 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).
26. S.J. Morey* and **C.K. Gunsch**, “Gene Silencing for Water Purification”, Entrepreneur Week, Duke University, Durham, NC (November 18, 2008).
27. 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).
28. **C.K. Gunsch***, “Mechanisms of Genetic Adaptation Following Exposure to Anthropogenic Contaminants”, University of Nebraska, Lincoln, NE (March 10, 2008).
29. 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 α ”, Institute of Biological Engineering 2008 Annual Conference, Chapel Hill, NC (March 6-9, 2008).
30. **C.K. Gunsch***, “Bacterial Conjugation in Aquatic Environments and its Relevance to Bioremediation”, Clemson University, Clemson, SC (October 19, 2007).
31. 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).
32. **C.K. Gunsch***, “Molecular Tools for Vapor-Phase Biofiltration”, North Carolina State University, Raleigh, NC. (October 2, 2006).

33. **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).
34. **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).
35. **C.K. Gunsch***. “Utilizing Molecular Biotechnology to Optimize Biological Treatment Performance”, The University of Illinois, Urbana, IL. (April 7, 2006)
36. **C.K. Gunsch***. “Molecular Biotechnology and Environmental Engineering”, Nanotechnology and Biotechnology Symposium, Duke University, Durham, NC. (March 30, 2006)
37. **C.K. Gunsch***. “Linking Gene Expression to Performance in Biofiltration”. Environmental Protection Agency, Research Triangle Park, NC. (February 28, 2005)
38. **C.K. Gunsch***. “Linking Gene Expression to Performance in Biofiltration”. Savannah River Site, Aiken, SC. (November 30, 2004)
39. **C.K. Gunsch***. “Linking Gene Expression to Performance in Biofiltration”. Duke University, Durham, NC. (August 25, 2004)
40. **C.K. Gunsch***. “Linking Gene Expression to Performance in a Fungal Vapor-Phase Biofilter”. ExxonMobil, Upstream Division, Houston, Texas. (April 5, 2004)
41. **C.K. Gunsch***. “Linking Gene Expression to Performance in a Fungal Vapor-Phase Biofilter”. The University of Iowa, Iowa City, Iowa. (April 2, 2004)
42. **C.K. Gunsch***. “Linking Gene Expression to Performance in a Fungal Vapor-Phase Biofilter”. The University of Missouri, Columbia, Missouri. (March 5, 2004)
43. **C.K. Gunsch***. “Linking Gene Expression to Performance in a Fungal Vapor-Phase Biofilter”. The University of California, Los Angeles, California. (March 1, 2004)
44. **C.K. Gunsch***. “Linking Gene Expression to Performance in a Fungal Vapor-Phase Biofilter”. Duke University, Durham, North Carolina. (February 3, 2004)
45. **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)
46. **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)
47. **C.K. Gunsch***. “Methods for Pathway Determination”. Environmental and Water Resources Engineering Departmental Seminar, The University of Texas, Austin, Texas. (September 29, 2001)

48. **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. **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”, Accepted for presentation at the 112th American Society for Microbiology General Meeting, San Francisco, CA (June 16-19, 2012).
2. **C.A. Gwin***, **C.L. Arnaout** and **C.K. Gunsch**, “Microbial Inhibition by Silver Nanoparticles with Various Coatings”, Accepted for presentation at the 112th American Society for Microbiology General Meeting, San Francisco, CA (June 16-19, 2012).
3. 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, 32nd General Meeting of the Society of Environmental Toxicology and Chemistry, Boston, MA (November 13-17, 2011).
4. **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)
5. **K. Ikuma**, **R. Holzem*** and **C.K. Gunsch**. “Stimulating Genetic Bioaugmentation in Soil: Impact on TOL Plasmid Transfer Rates and Toluene Biodegradation” Submitted for Presentation at the Association of Environmental Engineering and Science Professors Meeting, Tampa, FL (July 10-12, 2011).
6. **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).
7. **T.O. Morse*** and **C.K. Gunsch**, “Antisense Silencing for Pathogenic Bacterial Removal in Engineered Settings”, 111th General Meeting of the American Society for Microbiology, New Orleans, LA (May 21-24, 2011).
8. **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).
9. **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 α ”, 13th International Society for Microbial Ecology Meeting, Seattle, Washington (August 22-27, 2010).
10. **T.O. Morse*** and **C.K. Gunsch**, “Impacts of Silver Nanoparticles on the Growth and Composition of Microbial Communities Found in Wastewater”, 110th General Meeting of the American Society for Microbiology, San Diego, CA (May 23-27, 2010).

11. 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”, 110th General Meeting of the American Society for Microbiology, San Diego, CA (May 23-27, 2010).
12. 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”, 7th Annual US Korea Nanoforum, Pasadena, CA (April 4-5, 2010)
13. C.L. Arnaout*, E. Bernhardt, C. Richardson and **C.K. Gunsch**, “Microbial Inhibition and Silver Resistance Development in Wastewater Containing Silver Nanoparticles”, 89th Annual Conference of the North Carolina AWWA-WEA, Raleigh, NC (November 16, 2009).
14. 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”, 89th Annual Conference of the North Carolina AWWA-WEA, Raleigh, NC (November 16, 2009).
15. 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 α ”, Association of Environmental Engineering and Science Professors Meeting, Iowa City, Iowa (July 26-29, 2009).
16. 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).
17. K. Ikuma* and **C.K. Gunsch**, “Characterization of Toluene Biodegradation Following a Horizontal Gene Transfer Event in *Escherichia coli* DH5 α and Environmental Bacteria”, BAGECO 10, Uppsala, Sweden (June 15-19, 2009).
18. 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).
19. S.J. Morey* and **C.K. Gunsch**, “Gene Silencing for Water Purification”, Entrepreneur Week, Duke University, Durham, NC (November 18, 2008).
20. 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).
21. S.J. Morey* and **C.K. Gunsch**, “Gene Silencing of Catechol-2,3-Dioxygenase in *Pichia pastoris* and *Pseudomonas putida*”, Abstracts from the 108th General Meeting of the American Society for Microbiology, Boston, MA (June 1-5, 2008).

22. K. Ikuma*, R. Pei and **C.K. Gunsch**, “Characterization of Toluene Biodegradation Following a Horizontal Gene Transfer Event in *Escherichia coli* DH5 α ”, Abstracts from the 108th General Meeting of the American Society for Microbiology, Boston, MA (June 1-5, 2008).
23. R. Pei* and **C.K. Gunsch**, “Horizontal Gene Transfer Occurrences in a Mixed Microbial Community”, Abstracts from the 108th General Meeting of the American Society for Microbiology, Boston, MA (June 1-5, 2008).
24. S. Wang* and **C.K. Gunsch**, “Effects of pharmaceutically active compounds on a mixed microbial community under different organic loadings”, Abstracts from the 108th General Meeting of the American Society for Microbiology, Boston, MA (June 1-5, 2008).
25. 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).
26. 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).
27. 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).
28. S. Wang* and **C.K. Gunsch**, “Impact of Antisense Target DNA Length on Gene Silencing in *Pseudomonas putida* F1”. Abstracts from the 107th General Meeting of the American Society for Microbiology, Toronto, Canada (May 21-26, 2007).
29. R. Pei, S. Wang and **C.K. Gunsch***, “Effects of Pharmaceutically Active Compounds on Activated Sludge Microorganisms”. Abstracts from the 107th General Meeting of the American Society for Microbiology, Toronto, Canada (May 21-26, 2007).
30. L.M. Pearson* and **C.K. Gunsch**, “Mycotoxins in Indoor Air Environments”. Pratt Up Close, Duke University, Durham, NC (April 16, 2007).
31. S. Wang* and **C.K. Gunsch**, “Inhibitory Effect of Four Pharmaceutical Compounds on Microbial Growth”. Abstracts from the 106th General Meeting of the American Society for Microbiology, Orlando, Florida (May 21-25, 2006).
32. **C.K. Gunsch***, K.A. Kinney, C.P. Whitman and P.J. Szaniszló, “Nitrogen Regulated Gene Expression in the Fungus *Exophiala lecanii-corni*”. Abstracts from the 105th General Meeting of the American Society for Microbiology, Atlanta, Georgia (June 5-9, 2005).
33. **C.K. Gunsch***, Q. Cheng, K.A. Kinney, C.P. Whitman and P.J. Szaniszló, “Metabolic Regulation of Ethylbenzene Degradation in the Fungus *Exophiala lecanii-corni*”. Abstracts from the 104th General Meeting of the American Society for Microbiology, New Orleans, Louisiana (May 24-27, 2004).

34. **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 103rd General Meeting of the American Society for Microbiology, Washington, District of Columbia. (May 18-22, 2003).
35. Q.Cheng*, S. Wang, **C.K. Gunsch**, K.A. Kinney, C.P. Whitman and P.J. Szaniszlo, "Bacterial Catechol-2,3-Dioxygenase Gene Expression in Fungi". Abstracts from the 103rd General Meeting of the American Society for Microbiology, Washington, District of Columbia. (May 18-22, 2003).
36. **C.K. Gunsch***, J.R. Woertz, K.A. Kinney and P.J. Szaniszlo, "Growth Phase Control of *Exophiala lecanii-corni* using Farnesol". Abstracts from the 102nd General Meeting of the American Society for Microbiology, Salt Lake City, Utah. (May 19-23, 2002).
37. **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 6th 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).
38. 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).
39. J.R. Woertz, **C.K. Gunsch***, R.M. Czerwinski, K.A. Kinney, P.J. Szaniszlo and C.P. Whitman. "Toluene and Ethylbenzene Biodegradation by *Exophiala lecanii-corni* in Biofilters". Abstracts from the 101st General Meeting of the American Society for Microbiology, Orlando, Florida. (May 20-24, 2001).

RADIO ADDRESS:

"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:

"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 (PI or Co-PI on more than \$4.3 million funded research):

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 (02/01/2009-01/31/2014) [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 Deiodinased 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 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 (CE24L), Lead Instructor, Duke University, Fall 2006; Guest Lecturer, Fall 2008, Fall 2009 and Fall 2010.

Environmental Microbiology (CE250), Lead Instructor, Duke University, Fall 2005, 2007-2011.

Environmental Molecular Biotechnology (CE239L/BME240L), Lead Instructor, Duke University, Spring 2005, 2006, 2008, 2010 and 2011.

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:

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

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

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

PROFESSIONAL COMMUNITY SERVICE:

ASCE 2012 Congress, “Water Quality Management”, Session Moderator (May 23, 2012)

ASCE, EWRI 2012 Congress Paper Reviewer (Spring 2012)

Purdue University, Department of Civil Engineering Advisory Council, Member (October 2011-Current)

ASCE/EWRI Environmental Health and Water Quality Committee, Secretary (October 2011-Current)

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 (Sept 10, 2009)

Invited Participant in the Research Triangle Environmental Health Collaborative (Nov. 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:

Singapore National Research Foundation (Spring 2012)

National Science Foundation (*ad hoc* Reviewer for BIO division: Spring 2005 and 2006, *ad hoc* Reviewer for CBET division: Spring 2010, *ad hoc* Reviewer for ABI division: Fall 2010, Panel Reviewer for CBET division: Spring 2007, Summer 2007, Fall 2009, Spring 2011 (2 panels), Spring 2012 (2 panels), Panel Reviewer for SBIR: Fall 2009, Panel Reviewer for PFI: Spring 2011)

United States Civilian Research and Development Foundation (Spring 2007)

JOURNAL REVIEWER:

Environmental Science and Technology, Water Research, Environmental Health Perspectives, ACS Nano, 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.

BOOK REVIEWER:

John Wiley & Sons, Academic Press/Elsevier

UNIVERSITY SERVICE:University Level

Duke University, President's Art Advisory Committee (July 2011-Current)

Duke University, Academic Council Elected Representative (Spring 2011-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, Diversity Strategy Committee (Fall 2010-Current)

Pratt School of Engineering, Energy Engineering Committee (Fall 2010-Current)

Pratt School of Engineering, Engineering Faculty Council Elected Representative (Fall 2010-Spring 2012, Fall 2012-Current)

Pratt School of Engineering, Infrastructure Planning Committee (Spring 2005)

Departmental Level

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:

Interviewee for 5th 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 12th 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 (2010 and 2011)
Organizer for "Scientists and Engineers for the Future", Outreach Activity for 7th Grade Students at Neal Middle School (January 7-8, 2010)
Volunteer for Duke-Durham School Days, Outreach Program for Local Gifted Students in 8th Grade (October 23, 2008)
Volunteer for *FEMMES*, Outreach Program for Local Female Students in 4-6th Grades (Spring 2008, 2009 and 2011)
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)

RECENT 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 (Environmental Protection Agency), David Caroll (Wake Forest University), Anthony Chariton (CSIRO, Australia), Anthony Danko (CIGAR, Portugal), Marc Deshusses (Duke University, Department of Civil and Environmental Engineering), Robert Dodson (South Durham Reclamation Facility), Wayne Flournoy (Entex Inc.), Bob Freudenberg (Entex Inc.), James Gellner (Hazen and Sawyer), Kay Ho (Environmental Protection Agency), Dana Hunt (Duke University, Marine Lab), Mike McGehee (Hazen and Sawyer), Sarah Hubbard (Entex Inc.), Andrey Khlystov (Duke University, Department of Civil and Environmental Engineering), William S. M'Coy (HDR Engineering Inc.), Lisa Portis (Environmental Protection Agency), Dina Proestou (Environmental Protection Agency), Wiley Schell (Duke University, School of Medicine), Andrew Schuler (University of New Mexico, Department of Civil Engineering), Stuart Simpson (CSIRO, Australia), Heather Stapleton (Duke University, Nicholas School of the Environment), Mark Wiesner (Duke University, Department of Civil and Environmental Engineering)

POSTDOCTORAL ASSOCIATE SUPERVISION:

1. 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.
2. 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.
3. 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", Presently Assistant Professor at University of Texas at San Antonio.

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:

1. Courtney Gardner, Ph.D. Student [B.S. *Stetson University*] (Scheduled to start August 2012)
2. Lauren Czaplicki, Ph.D. Student [B.S. *Ohio State University*] (Scheduled to start August 2012), Duke Dean Award Recipient
3. Carley Gwin, Ph.D. Student [B.S. *Pennsylvania State University Behrend*, M.S. *SUNY Fredonia*] (August 2011- Current)
4. Scott Powell, Ph.D. Student [B.S. *Duke University*] (August 2011- Current), Duke Pratt Gardner Fellow
5. Ryan Holzem, Ph.D. Student [B.S. *University of Wisconsin Platteville*, M.S. *University of Wisconsin Madison*] (August 2010- Current), Duke BTE Graduate Fellow
6. Ashley Thomson, Ph.D. Student [B.S. *Florida State University*] (June 2010- Current), NSF Graduate Fellow and Fulbright Fellow (Vietnam).
7. Thomas Morse, Ph.D. Student [B.S. *Colorado State University*] (Aug. 2009-Current), EPA STAR Graduate Fellow
8. Christina Arnaout, Ph.D. Student [B.S. *University of Texas*] (Aug. 2008-Current), NSF Graduate Fellowship Honorable Mention Recipient
9. Kaoru Ikuma, Ph.D. Student [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 a Postdoctoral Associate at Baylor University.
10. 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.
11. 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.
12. 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 Postdoctoral Associate at the University of California at San Diego.

UNDERGRADUATE STUDENT SUPERVISION:

1. 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).
2. Kathryn Latham, Civil and Environmental Engineering Undergraduate Pratt Fellow, “Investigation of Algal Growth on Industrial and Municipal Wastewaters”, (January 2012-Current).
3. Lucy Zhang, “Use of Bacteriophage for Water Disinfection”, Biology and Chemistry Undergraduate Student (August 2011-May 2012).
4. Ellen Huang, “Ecological Impacts of Silver Nanoparticles”, Environmental Engineering Undergraduate Student (January 2011-May 2012).
5. Fernando Iglesia, Biomedical Engineering Undergraduate Student, “Use of Wastewater Bacteriophage for Gene Silencing Application”, (August 2010-December 2010).

6. Kevin He, Environmental Science Undergraduate Student, “Ecological Impacts of Emerging Contaminants in Biosolids Following Land Application”, (June 2010-May 2011).
7. Michael Meers, Biology Undergraduate Student, “Identifying the Effect of GC Content on Phenotype Functionality Following Conjugation Events”, (September 2009-May 2010).
8. George Yang, Biology Undergraduate Student, “Developing a Green Fluorescent Protein Reporter System to Track Plasmid Transfer Involved in Naphthalene Degradation” (September 2009-May 2010).
9. 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”
10. Trisha Lowe, Environmental Eng. Undergraduate Student (August 2008-May 2009), Project: “Development of Bioreactors for Enhanced Biodiesel Production from Algae”.
11. 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”
12. 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”.
13. 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”
14. Hannah Freedman, Undergraduate Student, (September 2006-February 2007), Project: “Bacterial Genetic Mutations Resulting from Exposure to Toluene in Aquatic Environments”.
15. Ryan Holzem, REU Environmental Engineering Student, University of Wisconsin at Platteville (May-July 2006), Project: “Effect of Pharmaceutically Active Compounds on Microbial Growth”.
16. Pallavi Kansal, Biomedical Eng. Undergraduate Student (August 2005-May 2006), Project: “Bacterial Genetic Mutations Resulting from Exposure to Toluene in Aquatic Environments”.
17. 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”.
18. Peter Perez, Biomedical Eng. Undergraduate Student (August 2005-May 2006), “Effect of Pharmaceutically Active Compounds on Microbial Growth”.
19. Todd Cobb, Environmental Eng. Undergraduate Student (August 2005-December 2005), “Effect of Pharmaceutically Active Compounds on Microbial Growth”.
20. Tse-Hwa Yin, Biomedical Eng. Undergraduate Student (January 2005–July 2005), “Effect of Pharmaceutically Active Compounds on Microbial Growth”.
21. 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)
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