

Krista Rule Wigginton

1. Personal Information

Education Background

- Ph.D., Environmental Engineering, Virginia Tech, Blacksburg, VA, 2008
- MS, Environmental Engineering, Virginia Tech, Blacksburg, VA, 2004
- BS, Professional Chemistry, University of Idaho, Moscow, ID, 2001

Employment Background

- Assistant Professor of Environmental Engineering in the Department of Civil and Environmental Engineering, University of Michigan, 2013-present.
- Pedro E. Wasmer Assistant Professor of Environmental Engineering in the Department of Civil and Environmental Engineering, University of Maryland, 2011-2012.
- Postdoctoral Researcher, EPFL, Lausanne, Switzerland, 2008-2010.
- Analytical Chemist, Anatek Labs, Inc., Moscow, ID, 2001-2002.

2. Research, Scholarly & Creative Activities

a. Articles in Refereed Journals

1. Rockey, N., Bischel, H. N., Kohn, T., Pecson, B., & Wigginton, K. R. (2019). The utility of flow cytometry for potable reuse. *Current Opinion in Biotechnology*, 57, 42-49.
2. Qiao, Z., Ye, Y., Chang, P. H., Thirunarayanan, D., & Wigginton, K. R. (2018). Nucleic Acid Photolysis by UV254 and the Impact of Virus Encapsidation. *Environmental science & technology*, 52(18), 10408-10415.
3. Ye, Y., Chang, P. H., Hartert, J., & **Wigginton, K. R.** (2018). Reactivity of enveloped virus genome, proteins, and lipids with free chlorine and UV254. *Environmental science & technology*, 52(14), 7698-7708.
4. Nelson, K. L. Boehm, A. B., Davies-Colley, R.J., Dodd, M. C., Kohn, T., Linden, K. G., Liu, Y., Maraccini, P. A., McNeill, K., Mitch, W. A., Nguyen, T. H., Parker, K. M., Rodriguez, R. A., Sassoubre, L. M., Silverman, A. I., **Wigginton, K. R.**, Zepp, R. G., "Sunlight-mediated inactivation of health-relevant microorganisms in water: a review of mechanisms and modeling approaches." *Environmental Science: Processes & Impacts* 20, no. 8 (2018): 1089-1122.
5. Pruden, A., Alcalde, R., Alvarez, P., Asholt, N., Bischel, H., Capiro, N., Crossette, E., Frigon, D., Grimes, K., Hass, C., Ikuma, K., Kappeli, A., Lapara, T., Seo, L., Sobsey, M., Sozzi, E., Navab-Daneschmand, Raskin, L., Riquelme, M., Vikesland, V., **Wigginton, K.**, Zhou, Z., "An Environmental Science and Engineering Framework for Combating Antimicrobial Resistance," *Environmental Engineering Science*.
6. Goetsch, H.E., Zhao, L., Gnegy, M., Imperiale, M.J., Love, N.G. and **Wigginton, K.R.**, (2018). Fate of the Urinary Tract Virus BK Human Polyomavirus in Source-

- Separated Urine. *Applied and Environmental Microbiology*, Vol. 84, pp. e02374-17.
7. Vikesland, P.J., Pruden, A., Alvarez, P.J., Aga, D.S., Buergermann, H., Li, X., Manaia, C.M., Nambi, I.M., **Wigginton, K.R.**, Zhang, T. and Zhu, Y.G., (2017). Towards a Comprehensive Strategy to Mitigate Dissemination of Environmental Sources of Antibiotic Resistance. *Environmental Science & Technology*, Vol. 51, pp. 13061-13069.
 8. Mullen, R. A., **Wigginton, K. R.**, Noe-Hays, A., Nace, K., Love, N. G., Bott, C. B., & Aga, D. S. (2017). Optimizing extraction and analysis of pharmaceuticals in human urine, struvite, food crops, soil, and lysimeter water by liquid chromatography-tandem mass spectrometry. *Analytical Methods*, in press.
 9. Chang, P. H., Juhrend, B., Olson, T. M., Marrs, C. F., & **Wigginton, K. R.** (2017). Degradation of extracellular antibiotic resistance genes with UV254 treatment. *Environmental Science & Technology*, Vol. 51, pp. 6185–6192.
 10. Cable, R. N., Beletsky, D., Beletsky, R., **Wigginton, K.**, Locke, B. W., & Duhaime, M. B. (2017). Distribution and Modeled Transport of Plastic Pollution in the Great Lakes, the World's Largest Freshwater Resource. *Frontiers in Environmental Science*, Vol. 5, pp. 45-54.
 11. Bibby, K., Aquino de Carvalho, N., and **Wigginton, K.** (2017) "Research Needs for Wastewater Handling in Virus Outbreak Response." *Environmental Science & Technology*, Vol. 51 pp. 2534-2535.
 12. Ye, Y., Ellenberg, M., Graham, K, **Wigginton K.** (2016) "Survivability, partitioning, and recovery of enveloped viruses in untreated municipal wastewater." *Environmental Science & Technology*, Vol. 50, pp. 5077-5085.
 13. Lahr, R., Goetsch, H., Haig, S. Noe-Hays, A., Love, N., Aga, D., Bott, C., **Wigginton, K.** (2016) "Urine Bacterial Community Convergence through Fertilizer Production: Storage, Pasteurization, and Struvite Precipitation." *Environmental Science & Technology*, Vol 50, pp. 11619-11626.
 14. Qiao, Z., and **Wigginton, K.** (2016) "Direct and Indirect Photochemical Reactions in Viral RNA Measured with RT-qPCR and Mass Spectrometry." *Environmental Science & Technology*, Vol. 50, pp. 13371-13379.
 15. **Wigginton, K.**, Ye, Y., Ellenberg, M. (2015) "Emerging Investigators Series: The source and fate of pandemic viruses in the urban water cycle," *Environmental Science: Water Science and Technology*, Vol. 1, pp. 735-746.
 16. Donham, J., Rosenfeldt, E., **Wigginton, K.**, (2014) "Photometric hydroxyl radical scavenging analysis of standard natural organic matter isolates," *Environmental Science: Processes and Impacts*, Vol. 16, pp. 764-769.
 17. Sigstam, T, Gannon, G., Cascella, M., Pecson, B., **Wigginton, K.**, Kohn, T. (2013) "Subtle differences in virus composition affect disinfection kinetics and mechanisms." *Applied and Environmental Microbiology*, Vol. 79, pp. 3455-3467.
 18. Vikesland, P.V., Fiss, E.M., **Wigginton, K.R.**, McNeill, K., Arnold, W.A. (2013) "Halogenation of Bisphenol-A, Triclosan, and Chlorophenols in Chlorinated Waters

- Containing Iodide.” Environmental Science & Technology, Vol. 47, pp. 6764-6772.
19. **Wigginton, K.R.**, Pecson, B.M., Sigstam, T., Bosshard, F., Kohn, T. (2012) “Virus inactivation mechanisms: impact of disinfectants on virus function and structural integrity,” Environmental Science & Technology, Vol. 46, pp. 12069-12078.
 20. **Wigginton, K.R.**, Menin, L., Sigstam, T., Gannon, G., Cascella, M., Hamidane, H.B., Tsybin, Y.O., Waridel, P., Kohn, T. (2012) “UV radiation induces genome-mediated, site-specific cleavage in viral protein,” ChemBioChem, Vol. 13, pp. 837-845.
 21. **Wigginton, K.R.**, Kohn, T. “Virus disinfection mechanisms: the role of virus composition, structure, and function,” (2012) Current Opinion in Virology, Current Opinion in Virology, Vol. 2, pp. 84-89.
 22. Mattle, M.J., Crouzy, B., Brennecke M., **Wigginton, K.R.**, Perona, P., and Kohn, T. (2011). “Impact of virus aggregation on inactivation by peracetic acid and implications for other disinfectants.” Environmental Science and Technology, Vol. 45, pp. 7710-7717.
 23. **Wigginton, K.R.**, Menin, L., Montoya, J.P., Kohn, T. (2010) “Oxidation of virus proteins during UV₂₅₄ and singlet oxygen mediated inactivation.” Environmental Science and Technology, Vol. 44, 5437–5443.
 24. Vikesland, P.J., **Wigginton, K.R.** (2010) “Nanomaterial enabled biosensors for pathogen monitoring – a review.” Environmental Science and Technology, Vol. 44, 3656-3669.
 25. **Wigginton, K.R.**, Vikesland, P.J. (2010) “Gold-coated polycarbonate membrane filter for pathogen concentration and SERS-based detection.” The Analyst, Vol. 135, 1320-1326.
 26. **Rule, K.L.**, Vikesland, P.J. (2009) “Surface-enhanced resonance Raman spectroscopy for the rapid detection of *Cryptosporidium parvum* and *Giardia lamblia*,” Environmental Science and Technology, Vol. 43, 1147-1152.
 27. Fiss, M.E., **Rule, K.L.**, Vikesland, P.J. (2007) “Formation of chloroform and other chlorinated byproducts by chlorination of Triclosan-containing antibacterial products.” Environmental Science and Technology, Vol. 41, 2387-2394.
 28. **Rule, K.L.**, Ebbett, V.R., Vikesland, P.J., (2005). “Formation of chloroform and chlorinated organics by free-chlorine mediated oxidation of Triclosan” Environmental Science and Technology, Vol. 39, 3176-3185.
 29. **Rule, K.L.**, Selvaraj, I.I., Kirchmeier, R.L. (2001). “Synthesis and characterization of per/polyfluorophenoxy derivatives of octachlorocyclotetraphosphazenes.” Journal of Fluorine Chemistry, Vol. 112, 307-312 Sp. Iss.

b. Talks, Abstracts, and Other Professional Papers Presented

i. Invited Talks

1. Wigginton, K.R. “Plagued by viruses: how to detect the unculturable and kill the nonliving, MIT Department of Civil and Environmental Engineering Parsons Seminar, December 2018.

2. Wigginton, K.R. "Plagued by viruses: how to detect the unculturable and kill the nonliving, Duke Department of Civil and Environmental Engineering, November 2018.
3. Wigginton, K.R. "Small but fierce: How virus particle structures control their persistence in the environment", invited talk at the 2018 Gordon Research Conference on Microbiology of the Built Environment, July 2018, Portland, ME.
4. Wigginton, K.R. "Nucleic acid reactivity and functional fate in water treatment processes", invited talk at the American Chemical Society annual conference, New Orleans, March 2018.
5. Wigginton, K. "Biomolecule pollutants and their fate in water treatment processes", CEE departmental seminar at CU Boulder, October, 2017.
6. Wigginton, K.R. (2017, October) "Biomolecule pollutants and their fate in water treatment processes," University of Colorado Department of Civil and Environmental Engineering Seminar.
7. Wigginton, K.R. (2017, January) "Biomolecule pollutants and their fate in water treatment processes," Stanford University Department of Civil and Environmental Engineering Seminar.
8. Wigginton, K.R. (2017, January) "The fate of biomolecule pollutants in water treatment processes," Seminar for UC Berkeley Environmental Engineering program.
9. Wigginton, K.R. (2016, May) "The Role of Environmental Engineering and Science in Pandemic Preparedness." Invited talk at the NSF-AEESP Grand Challenges Workshop, Arlington, VA.
10. Wigginton, K.R. (2016, May), "Fate of enveloped and non-enveloped surrogate viruses in WW treatment", NSF Workshop on Ebola Preparedness, Arlington, VA.
11. Wigginton, K.R. (2016, December) "Systems View of Nutrient Management – Nutrient Recovery from Human Urine." EPA SSWR Water Research Seminar.
12. Wigginton, K.R., (2016, September) "Viruses in the urban water cycle" Indian Institute of Sciences (IISc), Chemistry Departmental Seminar, Bangalore, India.
13. Wigginton, K.R., (2016, May), "Emerging Contaminant Studies in Environmental Biotechnology Using High Resolution LC-MS," Thermo Webinar Series on the Analysis of Emerging Contaminants.
14. Wigginton, K., November 2015, "Viruses in the urban water cycle," Civil and Environmental Engineering Department Seminar Series, University of Iowa, Iowa City, IA.
15. Wigginton, K., March 2015, "The Fate of Emerging Biochemical Contaminants in Wastewater Disinfecting Treatments," Pittcon Conference, New Orleans.
16. Wigginton, K. November 2014, "Biological and Chemical Fate of Viruses in

Water Treatment Processes”, Civil and Environmental Engineering Department Seminar, University of Pittsburgh, Pittsburgh PA.

17. Wigginton, K.R., March 2014, “A closer look at waterborne viruses”, Civil and Environmental Engineering Department Seminar, Syracuse University, Syracuse, NY.
18. Wigginton, K.R., January 2014, “The presence and fate of viruses in drinking water and wastewater treatment,” Environmental and Water Resources Program Seminar, Virginia Tech, Blacksburg, VA.
19. Wigginton, K.R., October 2013, “A closer look at waterborne viruses,” Women in Science & Engineering Leadership Institute Lecture for Environmental Chemistry & Toxicology Program, University of Wisconsin, Madison, WI.
20. Wigginton, K.R., April 2013, “Routes to Protein Damage with UVC”, ReNUWit Workshop on Sunlight Degradation of Biomolecules and Microorganisms, Stanford, CA.
21. Wigginton, K.R., December 2011, “How to “kill” a virus: degradation of viral components during disinfection,” Metrology of Microbial Systems Seminar, National Institute of Standards and Technology, Gaithersburg, MD.
22. Wigginton, K.R., September 2011, “How to “kill” a virus: mechanisms of virus inactivation with heat, UV, and chemical oxidants,” Department of Geography and Environmental Engineering M. Gordon Wolman Seminar, The Johns Hopkins University, Baltimore, MD.
23. Wigginton, K.R., April 2011, “Virus Inactivation Mechanisms Upon Exposure to Heat, Oxidants, and UV-irradiation,” Department of Environmental Engineering and Earth Sciences, Clemson University, Anderson, SC.
24. Wigginton, K.R., November 2008, "A nanotechnology-enabled strategy for waterborne pathogen detection,” Department of Civil and Environmental Engineering, University of Michigan, Ann Arbor, MI.

ii. Refereed conference proceedings (all oral presentations)

1. Rockey, N., Young, S., Kohn, K., Pecson, B., Wobus, C., Raskin, L., Wigginton, K.R., Infectivity of Human Norovirus Through Water Reuse Disinfection Processes, The Water Research Foundation Conference, Atlanta, May 2018.
2. Langenfeld, K., R. Cable, M. Duhaime, K. Wigginton “Comparison of virus concentration methods from various water matrices for detecting the viral resistome”, ACS National Meeting, New Orleans, March 2018.
3. Qiao, Z., P. Chang, K. Wigginton, “Impact of higher order nucleic acid structure on reactivity with UV254”, ACS National Meeting, New Orleans, March 2018.
4. Ye, Y., K. Wigginton “Enveloped virus inactivation by UV and chlorine disinfection,” ACS National Meeting, New Orleans, March 2018.
5. Tarpeh, W., D.S. Aga, K. Wigginton, N. Love, “Assessing risks from

- pharmaceuticals and transformation products in urine-derived fertilizers”, ACS National Meeting, New Orleans, March 2018.
6. Rockey, N., Kohn, K., Pecson, B., Wobus, C., Raskin, L., Wigginton, K.R., Infectivity of Human Norovirus Through Water Reuse Disinfection Processes, AWWA Potable Reuse Conference, Austin, TX., January 2018.
 7. Ye, Y., Wigginton, K., “Model enveloped virus inactivation by free chlorine,” 2017 Water Microbiology Conference and the 19th IWA-HRWM Symposium, Chapel Hill, N.C., May 2017.
 8. Goetsch, H. ; N. G. Love; M. Imperiale; K. Wigginton, “Fate of human BK polyomavirus through urine diverted for fertilizer use”, International Resource Recovery Conference 2017, New York City, August, 2017.
 9. Qiao, Z. D. Thirunarayanan; K. R. Wigginton, “Reactions in viral RNA during water disinfection treatments”, 2017 AEESP Research and Education Conference, June 2017.
 10. H. Goetsch ; N. G. Love; M. Imperiale; K. Wigginton, “Fate of human BK polyomavirus through urine diverted for fertilizer use”, 2017 AEESP Research and Education Conference, June 2017.
 11. Rockey, N., Kohn, K., Wobus, C., Wigginton, K. “Infectivity of Human Norovirus through Water Reuse Disinfection Processes” IWA International Symposium on Health-Related Water Microbiology, Chapel Hill, NC, May 2017.
 12. Goetsch, H., Wigginton, K., Love N., Mullen, R., Gagnon, A., Lahr, R., Felek, A., Aga, D., Bott, C., Jimenez, J., Nace, K., Noe-Hays, A., “Nutrient Recovery through Development of Urine-derived Fertilizers: Fate of Trace Contaminants”, Borchardt Conference, Ann Arbor, MI, February 2017.
 13. Qiao, Zhong, K.R., Wigginton, “Direct and indirect photochemical reactions in viral RNA measured with RT-qPCR and mass spectrometry”, ACS National Conference, San Francisco, CA, April 2016.
 14. Goetsch, H., Love, M., Imperiale, M., Wigginton, K., “Fate of human BK polyomavirus through urine diverted for fertilizer,” ACS National Conference, San Francisco, CA, April 2017.
 15. Ye, Yinyin, Wigginton, K. “Fate and Recovery of Enveloped Viruses in Municipal Wastewater” Water Microbiology Conference 2016, Chapel Hill, N.C., May 2016.
 16. Wigginton, K.R., Ye, Y., “Comparisons of the behavior of enveloped and non-enveloped viruses in wastewater treatment” International Society of Food and Environmental Virology Conference, Kusatsu, Japan, September 2016.
 17. Rockey, N., Yonts, J., Haig, S., Wigginton, K., Raskin, L., “Characterizing Opportunistic Bacterial Pathogens in a Domestic Hot Water Pipe Loop System ,” AWWA WQTC Conference, Indianapolis, IN, November 2016.
 18. K.R. Wigginton, Z. Qiao, “Implications of PCR techniques for measuring the fate of viruses and ARGs in UV-treated waters,” Pacifichem, December 2015.

19. Jeyaratnam, J., Wigginton, K., "Bacteriophage-assisted ARG Transfer Within Drinking Water Distribution Systems," WQTC, November 2015.
20. Wigginton, K.R., "The presence and fate of enveloped viruses in municipal wastewater treatment," IWA International Symposium on Health-Related Water Microbiology, September 2015.
21. Goetsch, H. Mullen, R., Lahr, R., Noe-Hays, A., Aga, D., Bott, C., Foxman, B. Jimenez, J., Love, N., Luo, T., Nace, K., Ramadugu, Wigginton, K., "Fate of pharmaceutical and biological contaminants through the preparation and application of urine derived fertilizers," WEFTEC Annual Conference, September 2015.
22. Goetsch, H. Mullen, R., Lahr, R., Noe-Hays, A., Aga, D., Bott, C., Foxman, B. Jimenez, J., Love, N., Luo, T., Nace, K., Ramadugu, Wigginton, K., "The Fate of pharmaceutical and biological contaminants through the preparation and application of urine derived fertilizers," IWA Resource Recovery Conference, Gent, August 2015.
23. Ye, Y., Wigginton, K., "Methods for the Detection of Infective Enveloped Viruses in Municipal Wastewater", ACS National Fall Conference, Boston, August 2015.
24. Wigginton, K., Ye, Y., "The implications of a virus pandemic on wastewater and drinking water treatment", AEESP Conference, New Haven, June 2015.
25. Qiao, Z., Wigginton, K., "Examination of Reactions in Viral RNA During UV Disinfection With RT-QPCR and Mass Spectrometry," AWWA ACE 2015, Anaheim, June 2015.
26. Wigginton, K., Qiao, Z., "Chemical Fate of Nucleic Acids During Disinfecting Treatments," International Symposium on Waterborne Pathogens Program, Savannah, April 2015.
27. Wigginton, K., "Nucleic Acid Pollutant Fate in Disinfecting Treatments," 2014 Borchardt Conference, Ann Arbor, February 2014.
28. Donham, J., Rosenfeldt, E., Wigginton, K., "Analysis of $k_{\text{NOM-OH}}$ for NOM isolates and drinking water samples with rapid background scavenging technique," ACS National Spring Meeting, New Orleans, April 2013.
29. Donham, J., Rosenfeldt, E., Wigginton, K., "Variability of Background Hydroxyl Radical Scavenging in Drinking Water," IUVA 2012 Americas Conference, August, 2012.
30. Wigginton, K.R., Pecson, B.M, Sigstam, T., Bosshard, F., Kohn, T., August 2011, "Virus inactivation upon exposure to heat, oxidants, and UV irradiation," American Chemical Society Fall Meeting, Denver, CO.
31. Wigginton, K.R., Kohn, T., Pecson, B., Sigstam, T., Bosshard, F., July 2011, "Quantitative Assessment of virus protein and genome damage upon inactivation by common disinfectants," AEESP Education and Research Conference, Tampa, FL.

32. Wigginton, K.R., Kohn, T., Pecson, B., Sigstam, T., Bosshard, F., May 2011, "The Mechanisms Responsible for Virus Inactivation Upon Exposure to Oxidants, Germicidal UV, and Heat," American Society for Microbiology General Meeting, New Orleans, LA.
33. Wigginton, K.R., October 2010, "The kinetics and products of virus protein degradation during water disinfection," COST-929 Symposium, Istanbul, Turkey.
34. Wigginton, K.R., Pecson, B.M, Kohn, T., March 2010, "Virus oxidation in sunlit waters," American Chemical Society Spring Meeting, San Francisco, CA.
35. Wigginton, K.R., Vikesland, P.J., August 2008, "A nanotechnology enabled detection method for *Cryptosporidium parvum* and *Giardia lamblia*," American Chemical Society Fall Meeting, Philadelphia, PA.
36. Rule, K.L., Vikesland, P.J., April 2008, "SERS-based method for pathogen monitoring in drinking water," American Chemical Society Spring Meeting, New Orleans, LA.
37. Rule, K.L., Rectanus, H.V., Vikesland, P.J., July 2007, "Development of a SERS immunoassay for the detection of *Cryptosporidium* in drinking waters," American Water Works Association Annual Conference and Exposition, Toronto, Canada.
38. Rule, K.L., Rectanus, H.V., Vikesland, P.J., March 2007, "A SERS based immunoassay for the detection of *Cryptosporidium parvum* in drinking water," American Chemical Society Spring Meeting, Chicago, IL.
39. Rule, K.L., Vikesland, P.J., November 2006, "The development of an immunoassay for the detection of *Cryptosporidium parvum* in drinking waters," AIChE Annual Meeting, San Francisco, CA.
40. Rule, K.L., Greyshock, A.E., Vikesland, P.J., August 2004, "The mechanisms, kinetics, and products Of Triclosan-disinfectant reactions," American Chemical Society Fall Meeting, Philadelphia, PA.
41. Rule, K.L., Ebbett, V.R., Greyshock, A.E., Vikesland, P.J., November 2003, "The mechanisms, kinetics, and products of Triclosan-disinfectant reactions," American Water Works Association Water Quality and Technology Conference, Philadelphia.

c. Contracts and Grants.

1. NSF (2018 – 2019) \$224,982, "STTR Phase I: Protecting Livestock from Airborne Disease Transmission Using Non-thermal Plasma Airstream Disinfection," PI: Herek Clack, Co-PIs: Krista Wigginton.
2. National Science Foundation (2017-2021), \$999, 089, "RAISE: Neighborhood Environments as Socio-Techno-bio Systems: Water Quality, Public Trust, and Health in Mexico City," PI: Elizabeth Roberts, Co-PIs: Branko Kerkez, Brisa Sanchez, **Krista R. Wigginton**, Martha M. Tellez-Rojo.
3. Water Reuse Research Foundations (2017-2019), \$349,794, "Methods for

Measurement of Infectivity and Concentration of Pathogens,” PI: **Krista Wigginton**, Co-PIs: Tamar Kohn, Brian Pecson, Christiane Wobus.

4. National Science Foundation (2016-2020), \$299,968, “INFEWS/T3: Advancing Technologies and Improving Communication of Urine-Derived Fertilizers for Food Production Within a Risk-Based Framework,” PI: Nancy Love, Co-PIs: Diana Aga, Charles Bott, Abe Noe-Hayes, **Krista Wigginton**
5. Water Reuse Research Foundations (2015-2016), \$50,000, “Review of Non-Culture-Based Methods for Pathogen Monitoring in Potable Reuse,” PI: **Krista Wigginton**, Co-PIs: Michael Dodd, Tamar Kohn, Brian Pecson.
6. USDA (2016-2018), \$999,921, “Evaluating Different Manure Management Practices in Controlling Spread of Antibiotic Resistance,” PI: Diana Aga, Co-PIs: Gary Felton, Curt Gooch, Lauren Sassourbe, Lut Raskin, Stephanie Lansing, Krista Wigginton.
7. National Science Foundation (2015-2020), \$3,600,000, “PIRE: Halting Environmental Antimicrobial Resistance Dissemination (HEARD),” PI: Peter Vikesland, Co-PIs: Diana Aga, Pedro Alvarez, Amy Pruden, **Krista Wigginton** (\$417,809).
8. National Science Foundation EAGER (2014-2015), \$63,405 “Dose-Response Disinfection Curves for Human Norovirus with Novel Mouse Model,” PI: **Krista Wigginton**, Co-PIs: Christiane Wobus, Tamar Kohn.
9. University of Michigan UMOR Faculty Grant (2015), \$15,000 “Antibiotic Resistance Gene Degradation Mechanisms,” PI: Terese Olson, co-PIs: Carl Marrs, **Krista Wigginton**.
10. National Science Foundation EAGER (2014-2015), \$63,405 “Dose-Response Disinfection Curves for Human Norovirus with Novel Mouse Model,” PI: **Krista Wigginton**, Co-PIs: Christiane Wobus, Tamar Kohn.
11. UM Third Century Initiative Global Challenges Grant (2014), \$2,993,832 “REFRESCH: Researching Fresh Solutions to the Energy/Water/Food Challenge in Resource-Constrained Environments,” PI: Johannes Schwank, Co-PIs: Donald Scavia, Mark Barteau, Andrew Hoffman, Galen Fisher, Shelie Miller, Peter Adriaens, Aileen Huang-Saad, Eric Hill, Joseph Trumpey, Nancy Love, Lutgarde Raskin, Roy Clarke, Steve Skerlos, James Diana, Andrew Tadd, **Krista Wigginton**.
12. University of Michigan UMOR Faculty Grant (2014), \$15,000 “Seasonal variability of respiratory viruses in wastewater treatment processes”, PI: **Krista Wigginton**.

13. Environmental Protection Agency Star Grant for Nutrient Management (2014-2016), \$2,200,000, “WERFs National Center for Resource Recovery and Nutrient Management” Lead PI: WERF, Co-PIs: **Krista Wigginton** (\$330,034), Craig Frear, David Stensel, David Sedlak, Kartik Chandran.
14. National Science Foundation CAREER Award (2014-2019), \$400,000, “Wastewater Treatment as a Conduit and Control of Emerging Respiratory Viruses in the Environment,” PI: **Krista Wigginton**.
15. University of Michigan Water Center Grant (2014-2015), \$250,000, “Microplastics in the Great Lakes: Towards establishing a long-term multidisciplinary research platform to assess the impact of microplastics on Laurentian Great Lakes ecosystem health,” Lead PI: Melissa Duhaime, Co-PIs: **Krista Wigginton** (\$34,831), Dmitry Beletsky
16. University of Michigan Water Center Grant (2013-2014), \$50,000, “High resolution orbitrap mass spectrometry for expanding U-M freshwater research,” PI: **Krista Wigginton**.
17. National Science Foundation BRIGE Award (2012-2014), \$174,365, “A reductionist approach to enterovirus disinfection,” PI: **Krista Wigginton**.
18. UMD Advance Seed Grant (2012-2013), \$20,000, “Multiscale characterization of virus adsorption onto fomites,” PI: **Krista Wigginton** (\$10,000), Co-PI: Sylvina Matysiak.
19. District of Columbia Water and Sewer Authority (2011-2012), \$24,277, “Transition from a Class B to a Class A Biosolids Treatment Train at the Blue Plains Wastewater Treatment Plant: Impact on Emerging Pathogen Concentrations,” PI: **Krista Wigginton**.
20. National Science Foundation International Postdoctoral Fellowship (2009-2010), \$143,000, “Virus inactivation in sunlight-treated waters: An investigation on the reactions between singlet oxygen ($^1\text{O}_2$) and virus capsid proteins”, PI: **Krista Wigginton**.

d. Research Fellowships and Awards

1. Paul L. Busch Award (2018)
2. Virginia Tech Via Department of Civil and Environmental Engineering Outstanding Young Alumni Award (2015).
3. NSF CAREER Award (2014-2019); listed under Contracts and Grants).
4. Borchardt and Glysson Water Treatment Faculty Scholar (2013-present).
5. NSF BRIGE Award (2012; listed under Contracts and Grants).
6. AWWA Academic Achievement Award, Second Place for Best Dissertation

(2010).

7. Best Poster Award at the Environmental Sciences: Water Gordon Research Conference (2008).
8. ACS Ellen Gonter Environmental Chemistry Award (2008).
9. Philanthropic Educational Organization (PEO) Scholar Fellowship (2007-2008).
10. National Science Foundation AdvanceVT Ph.D. Fellowship (2007-2008).
11. American Chemical Society Graduate Student Award in Environmental Chemistry (2004).
12. Virginia Tech Department of Civil and Environmental Engineering Via Scholar (2004-2007).
13. National Science Foundation Graduate Research Fellowship (2003-2006).
14. Chi Epsilon National Civil Engineering Honor Society (2003 - present).

e. Editorships, Editorial Boards, & Reviewing Activities for Journals and Other Learned Publications.

1. Associate Editor at Environmental Sciences: Water Research & Technology (2018-present).
2. Reviewer for *Environmental Science and Technology*, *Applied and Environmental Microbiology*, *Journal of Environmental Monitoring*, *Micron*, *Applied Microbiology*, *Biochemistry*, *Water Research*, *Environmental Engineering Science*.
3. Editorial Board of *Chemosphere* (2010-2015).

3. Teaching, Mentoring, and Advising

a. Courses taught in the last five years.

1. Winter 2019, University of Michigan, Environmental Organic Chemistry (CEE 597), Enrollment = 12.
2. Fall 2018, University of Michigan, Environmental Engineering Seminar Series (CEE 880), Enrollment = 68.
3. Winter 2018, University of Michigan, Environmental Engineering Seminar Series (CEE 880), Enrollment = 55.
4. Winter 2017. University of Michigan, Environmental Organic Chemistry (CEE 597), Enrollment = 14.
5. Fall 2016. University of Michigan, Environmental Engineering Principles (CEE 365), Enrollment = 74.
6. Winter 2016. University of Michigan, Physical and Chemical Processes in Water Quality Engineering (CEE 580), Enrollment = 9
7. Fall 2015. University of Michigan, Environmental Engineering Principles (CEE 365), Enrollment = 63.

8. Winter 2015. University of Michigan, Physical and Chemical Processes in Water Quality Engineering (CEE 580), Enrollment = 13.
9. Winter 2014. University of Michigan, Environmental Organic Chemistry (CEE 597), Enrollment = 9.
10. Fall 2013. University of Michigan, Environmental Engineering Principles (CEE 365), Enrollment = 92.
11. Spring 2013. University of Michigan, Environmental Organic Chemistry, (CEE 682), Enrollment = 12.
12. Fall 2012. University of Maryland, Introduction to Environmental Engineering, (ENCE 310), Enrollment = 39.
13. Spring 2012. University of Maryland, Environmental Microbiology: Waterborne Pathogens (ENCE 688N). Enrollment = 12.
14. Fall 2011. University of Maryland, Introduction to Environmental Engineering (ENCE 310). Enrollment = 48.
15. Spring 2011. University of Maryland, Introduction to Environmental Engineering (ENCE 310). Enrollment = 62.

b. Advising:

- a. **Undergraduates.** Katherine Graham (2014-2016), Lauren Eastes (2014-2016), Salonia Dagli (2014-2016), Mariah Gnegy (2015-2016), Ishi Keenum (2015-2017), John Hartert (2015-2017), Dylan Raye-Leonard (2017- present), Ariel Roy (2018 – present), Michael Mata (2018 – present), Yan Du (2018 – present).
- b. **Masters.** Eric Liang (2013, UMD), Joel Donham (2013, UMD), HK Stephens (2015, UMD), Yinyin Ye (2014, UM), Brianna Juhrend (2014, UM), Miles Ellenberg (2015, UM), Joy Jeyaratnam (2015, UM) Pin Chang (2016, UM), Devibaghya Thirunarayanan (2016, UM), Enrique Rodriguez (2018, UM), Ernesto Paz-Martinez (expected 2019).
- c. **Ph.D.** Zhong Qiao (2018), Yinyin Ye (2018), Heather Goetsch (2018), Emily Crosse (expected 2020), Nicole Rocky (expected 2020), Kathryn Langenfeld (expected 2021), Enrique Rodriguez (expected 2022), Lucinda Li (expected 2023).
- d. **Postdoctoral Researchers.** Rebecca Lahr (2014- 2015), William Tarpeh (2017-2018)

c. Guest Lectures

- a. “Environmental Viruses”, February 19, 2014, Microbiology 415: Virology.
- b. “Overview of the Environmental Engineering Field,” March 18, 2015, CEE 200.

d. Teaching Initiatives and Awards

- a. ASCE ExCEED Teaching Fellow (2014)
- b. Developed teaching module on peer review for graduate and undergraduate environmental engineering courses (2015)

- c. MSC Case Study developed for urine diversion technologies (2018)

4. Service

a. Professional

i. Reviewing activities for agencies

1. NSF Environmental Engineering Unsolicited Panels (2012, 2013), NSF Environmental Engineering CAREER Panel (2014)
2. EPA Star Panel (2012)
3. US-Israel Agricultural Research & Development Fund external reviewer
4. Swiss NSF external reviewer

ii. Other non-University committees and panels

1. AEESP Membership and Demographics Committee member (2014-present), chair (2018-present).
2. Session organizer for the Japan America NAE Frontiers of Engineering 2018 meeting. Session title “Water Treatment Revolution”.
3. Session chair at Gordon Research Conference on Disinfection Byproducts (July 2017).
4. Organized and conducted workshop titled “NSF CAREER Proposals” at AEESP Conference, June 2019.
5. Member of American Water Works Association Joint Section Research Committee (2015-present)
6. Symposium organizer along with K. Bibby, “Detection and Fate of Health-Related Microorganisms in Water,” August 2015, Fall ACS National Meeting, Boston, MA.
7. AEESP Reviewer for Faculty Application Packages 2014, 2015
8. Poster judge at 2014 GRC Environmental Science: Water
9. Senior Discussion Leader at 2014 GRS Environmental Science: Water
10. 2014 Borchardt Conference Planning Committee, 2013-present.
11. Symposium organizer along with M. Dodd, “Innovative Materials and Technologies for Detection and Inactivation of Environmental Pathogens,” August 2012, Fall ACS National Meeting, Philadelphia, PA.
12. Panel member for “Academia” session at EPA Star 2011 Star Graduate Conference, September 2011, Washington D.C
13. Symposium organizer along with K. McNeill and T. Kohn, “Degradation of Biomolecules in the Environment,” August 2011, Fall ACS National Meeting, Denver, CO.

b. Campus

i. Departmental

1. Strategic Planning Committee (2017-)
2. Facilities and Research Committee (2017-)
3. One-Years Masters Committee (2015).
4. Masters Committee (2014-2017).
5. Graduate Student Committee (2013- 2017).
6. Faculty Search Committee (Spring 2011).
7. Visiting Student Weekend Committee (Spring 2013).
8. Faculty Search Committee (Spring 2012).

ii. College

1. CEE Chair Search Committee (2016-2017)
2. Panel Discussion Leader for UM NextProf (May 2015).
3. A. James Clark Hall Steering Committee (2012).

iii. University

1. University of Michigan Marshal for December 2013 Commencement, 2014 Annual Honors Convocation, December 2017 Commencement, May 2018 Rackham Commencement.
2. Guest speaker for Undergraduate Opportunity Program (March 2015).

c. Outreach

- i. Organized urine collection outreach on University of Michigan campus to educate students and public on resource recovery from human waste. Details at <http://dme.engin.umich.edu/toilettotable/> (2015).
- ii. Activities focused on students from underrepresented backgrounds
 1. UM College of Engineering representative at Hispanic Professional Engineers National Conference (2015).
 2. Panel Discussion Leader for UM NextProf program focused on graduate students and postdocs interested in academic careers (May 2015).
 3. Participation in hands-on summer research activities focused on underrepresented high school, college, and graduate students.
 - a. College 101 (2013)
 - b. UMD ESTEEM Research Presentation and Lab Tours, (2012).
 4. Instructor volunteer for WitsOn Mentoring Program, an online mentoring forum for female scientists (2012).