Approved by the Regents
May 16, 2024

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Civil and Environmental Engineering

Krista R. Wigginton, associate professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering, is recommended for promotion to professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering.

Academic Degrees:

Ph.D.	2008	Virginia Tech, Environmental Engineering, Blacksburg, VA
M.S.	2004	Virginia Tech, Environmental Engineering, Blacksburg, VA
B.S.	2001	University of Idaho, Chemistry, Moscow, ID

Professional Record:

2019 – present	Associate Professor (with tenure), Department of Civil and Environmental Engineering, University of Michigan
2013– 2019	Assistant Professor, Department of Civil and Environmental Engineering, University of Michigan
2013 – 2016	Borchardt and Glysson Water Treatment Scholar, Department of Civil and Environmental Engineering, University of Michigan
2011 – 2012	Pedro E. Wasmer Assistant Professor of Environmental Engineering, Civil and Environmental Engineering, University of Maryland, College Park, MD
2008 – 2010	Post-doctoral Researcher, Civil and Environmental Engineering, Ecole Polytechnique Federale de Lausanne, Switzerland

Summary of Evaluation:

Teaching: During her time in rank, Professor Wigginton has taught three different classes. Her two undergraduate courses are CEE 365 (Principles of Environmental Engineering) and CEE 465 (Water Process Engineering. She created her graduate class CEE 597 (Environmental Organic Chemistry). Students routinely acknowledge that she is approachable, challenging-but-fair, respectful, and knowledgeable. She is acknowledged for bringing real-world examples into her classes to effectively enhance student learning. Professor Wigginton is an excellent mentor and respected advisor. She has chaired or co-chaired 13 Ph.D. students (four current), 13 master's students, 18 undergraduate students, six post-doctoral scholars (two current) and a current research scientist. She is active nationally and locally in both mentoring and service-based teaching activities.

Research: Professor Wigginton's research is focused on the detection, removal, and fate of contaminants in the environment with an emphasis on viruses. One element of her work focuses on environmental technologies to achieve virus inactivation and she is credited with creating methods critical to the advancement of direct potable reuse of drinking water in the United States. Her methodological work on detecting coronaviruses in treated wastewater led to her playing a leading role in the development of methods used globally in wastewater-based epidemiology during the SARS-CoV-2 pandemic. She is currently working on better understanding the transmission of influenza. Furthermore, in all her work she is recognized as being a careful and diligent researcher who develops robust methods and applies them to topics with substantial impact to large populations

of people. Professor Wigginton has had a substantial national and global impact with her research, and her research activity remains very high.

Professor Wigginton has a strong scholarly record. She has published over 65 archival journal articles in high impact journals; over 35 of these have been published since her last promotion. She is a highly cited environmental engineer with over 6,000 citations. Most of her papers are published with her mentees, a reflection of her effectiveness as a research mentor. Her former mentees have secured jobs in industry and top research programs in academia. Her grantsmanship is extremely strong with total funding over $25M, 27% of which is her share. She currently oversees $3.3M in funding. Her sources of funding are quite diverse, including the NSF, EPA, and the Michigan Department of Health and Human Services.

Recent and Significant Publications:

Rockey, N., Henderson, J., Chin, K., Raskin, L. and Wigginton, K. "Predictive Modeling of Virus Inactivation by UV," *Environmental Science & Technology*, 2021; 55(5): 3322-3332.

Crossette, E., Gumm, J., Langenfeld, K., Raskin, L., Duhaime, M. and Wigginton, K. "Metagenomic Quantification of Genes with Internal Standards," *mBio*, 2021; 12(1).

Wolfe, M., Duong, D., Bakker, K., Ammerman, M., Mortenson, L., Hughes, B., Arts, P., Lauring, A., Fitzsimmons, W., Bendall, E., Hwang, C., Martin, E., White, B., Boehm, A. and Wigginton, K., **"**Wastewater-Based Detection of Two Influenza Outbreaks," *Environmental Science and Technology Letters*, 2022; 9(8): 687-692.

Rockey, N., Arts, P., Li, L., Harrison, K., Langenfeld, K., Fitzsimmons, W., Lauring, A., Love, N., Kaye, K., Raskin, L., Roberts, W., Hegarty, B. and Wigginton, K., "Humidity and Deposition Solution Play a Critical Role in Virus Inactivation by Heat Treatment of N95 Respirators," *mSphere*, 2020; 5(5).

Szczuka, A., Horton, J., Evans, K., DiPietri, V., Sivey, J. and Wigginton, K., "Chloride Enhances DNA Reactivity with Chlorine under Conditions Relevant to Water Treatment," *Environmental Science & Technology*, 2022; 56(18): 13347-13356.

Service: Professor Wigginton has demonstrated a commitment to others and a willingness to share her knowledge, expertise, and time through both internal and external service. She has been invited to prestigious external service roles (journal associate editor, National Academy committee) and is known to be a dedicated member. She has volunteered her time to support early career faculty develop competitive research proposals and practices through workshops at national conferences. In CEE, she has served as the associate chair and chair of the graduate committee, over a period that saw the department increase student enrollments and overall diversity among recruits.

External Reviewers:

Reviewer A: "I have worked with environmental engineers my entire career and I have never met one with Dr. Wigginton's ability to communicate so well across disciplines. I certainly would place her at the top of my field of health-related water microbiology. She always seems to be at the cutting edge."

Reviewer B: "Her most important and high impact contributions have related to the treatment and fate of coronaviruses in water, -a topic on which she was almost the sole researcher prior to the occurrence of the COVID-19 pandemic. When the pandemic began (2019) and as it escalated (2020), Wigginton's work in this area became an extremely important source of understanding."

Reviewer C: "She has definitely made unique and impactful scholarly contributions, and in my opinion is one of the world's leading experts in mechanisms of disinfection and innovations in pathogen detection."

Reviewer D: "Dr. Wigginton is at the forefront of developing the methodologies for surrogate crediting including frameworks for treatment processes that are currently not credited or under-credited. Her work…ensures widespread dissemination and adoption (and)….places her among a select group of researchers on guidance for direct potable reuse."

Reviewer E: "The emergence of SARS-CoV-2 and the subsequent opportunity to apply molecular tools to detect the virus in sewage put her in the enviable position of being one of only a handful of researchers with sufficient skill sets to rapidly develop the highest quality science and actionable surveillance data. She has established herself as a pioneer in this quickly expanding field."

Reviewer F: "Her publication record at the stage of tenure has not only been sustained, but there are large increases in both the number of publications and the citations of these publications."

Summary of Recommendation: Professor Wigginton's efforts and achievements across all facets of faculty expectations are excellent and impactful. She is highly engaged in multiple areas of inquiry, education, and service. She is a valued colleague, an important and valued contributor in all she does, and a star in her field. It is with the support of the College of Engineering Executive Committee that I recommend Krista R. Wigginton for promotion to professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering.

Steven L. Ceccio, Ph.D.
Interim Dean of Engineering
Vincent T. and Gloria M. Gorguze Professor
of Engineering
College of Engineering

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