

Adina Chuang Howe

Assistant Professor

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Education

Ph.D. Environmental Engineering, 2009
University of Iowa

M.S. Civil & Environmental Engineering, 2005
Purdue University

B.S. Mechanical Engineering, 2003
Purdue University

Awards

Black and Veatch Building a World of Difference
Faculty Fellowship, 2015

Recent Publications

Graham, D., Bergeron, G., Bourassa, M., Dickson, J., Gomes, F., Howe, A., Kahn, L., Morley, P., Scott, H.M., Simjee, S., Singer, R., Smith, R., Storrs, C., and Wittum, T. Complexities in understanding antimicrobial resistance across domesticated animal, human, and environmental systems. *Annals of the NYAS* (2019).

Rieke, Elizabeth L., Michelle L. Soupir, TB Moorman, Fan Yang, and Adina Howe. Temporal dynamics of bacterial communities in soil and leachate water after swine manure application. *Frontiers in Microbiology* (2018).

Choi, Jinylung, Elizabeth Rieke, Thomas Moorman, Michelle Soupir, Heather K. Allen, Schuyler D. Smith, and Adina Howe. Practical implications of erythromycin resistance gene diversity on surveillance and monitoring of resistance. *FEMS Microbiology Ecology*, 94, no. 4 (2018).

Žifčáková, Lucia, Tomáš Větrovský, Adina Howe, and Petr Baldrian. "Microbial Activity in Forest Soil Reflects the Changes in Ecosystem Properties between Summer and Winter." *Environmental Microbiology* 18 (2015).

Howe, Adina+, Michael Howe+, Amy L. Kaleita+, and D. Raj Raman+. "Imagining Tomorrow's University in an Era of Open Science." *F1000Research* 6 (2017).

Teaching

ABE316 Applied Numerical Methods

ABE516X Data Science Research
Methods

Research

Dr. Howe leads the Genomics and Environmental Research in Microbial Systems (GERMS) Laboratory. The goal of the GERMS Lab (www.germslab.org) is to understand and manage the impacts of microbiology as we continuously change the environment that we live in. Our research provides data that is needed to inform our decisions and policy by developing innovative scientific methods that detect and quantify microbial activity in the environment. Our broad interests include the production, resilience, and safety of food, energy, and water resources; the impacts of land management strategies; the connection of environmental and animal microbiomes; and the large-scale detection of biomarkers for environmental health. Our past and present research includes identifying microbial drivers of biogeochemical cycling and their response to climate change; understanding contributions of microbial genes, individuals, and groups to population function and dynamics; detection of antibiotic genes and pathogen biomarkers; scalability of increasingly large sequencing datasets through the application of advanced computational approaches; and leveraging high throughput, next-generation metagenomic and metatranscriptomic sequencing to investigate interactions within environmental microbial communities. Dr. Howe is also a part of Iowa State University's Environmental Science Program, Interdepartmental Microbiology Program, and Bioinformatics and Computational Biology Program. The GERMS Lab is currently supported by Iowa State University; the USDA National Institute of Food and Agriculture; the National Science Foundation; the Environmental Protection Agency; and the U.S. Department of Energy, Office of Biological and Environmental Research.

Professional Engagement

Dr. Howe is a member of the American Society of Agricultural and Biological Engineers (ASABE), the Association of Environmental Engineers and Science Professors (AEESP), the American Society of Engineering Education (ASEE), the American Society of Microbiologists (ASM), and Software Carpentry and Data Carpentry.

