

# MARC PAUL VERHOUGSTRAETE

## CURRICULUM VITAE

The University of Arizona, Mel and Enid Zuckerman College of Public Health  
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### CHRONOLOGY OF EDUCATION

- 2001-2005 Lansing Community College, Lansing, MI, Associates Degree: Natural Science – Magnum Cum Laude
- 2005-2007 Michigan State University, East Lansing, MI, College of Natural Science, Department of Zoology: B.S.: Environmental Biology and Zoology
- 2007-2012 Michigan State University, East Lansing, MI, College of Agriculture and Natural Resources, Department of Fisheries and Wildlife: Ph.D.  
Advisor: Joan B. Rose  
Dissertation title: Measuring microbial water quality responses to land and climate using fecal indicator bacteria and molecular source tracking in rivers and near-shore surface waters of Michigan.

### CHRONOLOGY OF EMPLOYMENT

- 2005- 2010 Professional Assistant: State of Michigan, Department of Environmental Quality. Water Bureau, P.O. Box 30273, Lansing, Michigan 48909
- 2007- 2012 Research Assistant: Michigan State University, Department of Fisheries and Wildlife. 480 Wilson Road, East Lansing, MI 48824
- 2012- 2013 Post-doctoral Research Associate: University of North Carolina at Chapel Hill, Institute of Marine Sciences. 3431 Arendell Street, Morehead City, NC 28557
- 2013-2015 Post-doctoral Research Associate: The University of Arizona, College of Public Health. 1295 N. Martin, Tucson, AZ 85724
- 2015-2016 Assistant Professor – Career Track: The University of Arizona, College of Public Health. 1295 N. Martin, Tucson, AZ 85724
- 2016-Present Assistant Professor – Tenure Track: The University of Arizona, College of Public Health. Co-Director of Environment, Exposure Science, and Risk Assessment Center. 1295 N. Martin, Tucson, AZ 85724
- 2018-Present Visiting scientist: Southern California Coastal Water Research Project. 3535 Harbor Blvd., Suite 110, Costa Mesa, CA 92626

### HONORS AND AWARDS

- 2010 International travel award (Michigan State University)
- 2012 Travel grants (Montana Rural Drinking Water)

2014 University of Arizona Open Access Publishing Award

## **SERVICE/OUTREACH**

### **Local/State/National Outreach**

2016-2018 Water Resources Research Center annual meeting student poster judge.  
2014-2019 Park-Euclid/7th Street & Arizona Avenue Water Quality Assurance Revolving Fund Site Community Advisory Board. Arizona Department of Environmental Quality. Committee Chair  
2016-2019 CONSERVE (COordinating Nontraditional Sustainable watER use in Variable climatEs), A Center of Excellence at the Nexus of Sustainable Water Reuse, Food, and Health. Extension Advisory Committee member  
2018-2019 University of North Carolina Water Microbiology meeting. Advisory board  
2018-2019 Arizona Health Education Association (AHEC) Scholar program. Faculty mentor  
2019 TenWest. Breaking down scientific silos: Using one health to address the world's wicked problems. Scientific panel member

### **National/International**

#### *Manuscript Reviewer*

Water Science and Technology: 2012, 2017  
North Pacific Research Board: 2013  
Encyclopedia of Agricultural, Food, and Biological Engineering: 2013  
Journal of Great Lakes Research: 2012, 2013, 2014, 2015, 2016, 2017  
Environmental Science and Technology: 2012, 2013, 2015, 2016, 2017  
Journal of Water and Health: 2012, 2016, 2018  
Environmental Monitoring and Assessment: 2012, 2016  
International Journal of Environmental Research and Public Health: 2015, 2016, 2017  
Current Environmental Engineering: 2016  
Critical Reviews in Environmental Science and Technology: 2016  
US Environmental Protection Agency – manuscript technical reviewer: 2017  
Journal of Environmental Management: 2018  
Water Research: 2018

#### *Proposal Reviewer*

National Science Foundation: 2014  
USDA Critical Agricultural Research and Extension (CARE) grant program: 2017  
Rose Fellowship: 2017  
Maryland Sea Grant Graduate Research Fellowship: 2018  
Research, Discovery, and Innovation (RDI), Faculty seed grants, University of Arizona: 2017, 2018

### **Departmental Committees**

Peer review committee: 2016  
Sabbatical review committee (2 associate professors): 2016  
Graduate student admissions review: 2016, 2017, 2018

## **College Committees**

2009-2012	Michigan State University, Department of Fisheries and Wildlife seminar committee
2014	Mel and Enid Zuckerman College of Public Health Graduate Research Poster Forum Judge
2016	Faculty mentoring development
2016-2017	Mel and Enid Zuckerman College of Public Health Research Advisory Council. Member
2016-2019	Mel and Enid Zuckerman College of Public Health Poster Forum committee. Faculty advisor
2016-2020	Mel and Enid Zuckerman College of Public Health Faculty Mentoring evaluation committee. Member
2019	Mel and Enid Zuckerman College of Public Health Faculty search committee. Member
2019-2020	Mel and Enid Zuckerman College of Public Health communications direction search committee. Member

## *Guest Lectures*

2014	CPH 459 (Principles of Infectious Disease Epidemiology)
2014	CPH 609 (Evaluating Public Health Literature)
2014	CPH 585 (Fundamentals of Industrial and Environmental Health)
2014	CPH 603 (Applied Analysis of Environmental Data)
2015	EPID 479 (Infectious Disease Epidemiology)
2015	CPH 375 (Introduction to Environmental and Occupational Health)
2016	EPID 479 (Infectious Disease Epidemiology)
2016	CPH 575 (Environmental and Occupational Health)
2016	EPID 660 (Infectious Disease Epidemiology)
2016	CPH 400 (Contemporary Community Health Problems)
2017	PH 700D (Seminar in Public Health: Environmental Health, San Diego State University)
2017	EHS 696R (Environmental and Occupational Health seminar)
2017-2018	CPH 575 (Environmental and Occupational Health)
2018	HPS 559 (Special topics in public health)

## **University Committees and Services**

2017-2019	RDI's Faculty seed grant proposal reviewer, University of Arizona
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## **Professional Memberships**

2008-2010	International Association of Great Lakes Research, member
2004-2011	Blue Lake-Cold Springs Lake Civic Association, Michigan, member
2007-2012	Michigan Branch of the American Society for Microbiology, member
2008-2012	Grand Traverse Watershed Beach Monitoring Stakeholders group
2008-2012	Michigan State University Fisheries and Wildlife Graduate Student Organization, seminar leader
2007-2017	American Society for Microbiology, member
2009-Present	International Water Association, member
2009-Present	Health Related Water Microbiology, member
2007-Present	Great Lakes Beach Association, member
2013-Present	University of Arizona Food Safety Consortium, member

2014-Present	University of Arizona Environment, Exposure Science, and Risk Assessment Center, Co-Director
2014-Present	University of Arizona One Health Consortium, member
2016-Present	American Association for the Advancement of Science, member
2016-Present	University of Arizona Center for Rural Health, member
2017-Present	University of Arizona Public Safety Institute, member
2019-2020	American Water Works Association, member

## PUBLICATIONS/CREATIVE ACTIVITY

### Chapters in Scholarly Books and Monographs

**Verhougstraete, M.P.**, J. Sexton, and K. Reynolds. (2015). Recreational Water Exposure. In. J. Bartrum. (Ed.). *Handbook for Water and Health*. EarthScan.

### Refereed Journal Articles (accepted)

1. **\*Verhougstraete, M.P.**, M.N. Byappanahalli, R.L. Whitman, and J.B. Rose. (2010). *Cladophora* in the Great Lakes: Impacts on beach water quality and human health. *Water Sci. and Tech.*62: 68-76.  
<http://www.iwaponline.com/wst/06201/wst062010068.htm>
2. **\*Verhougstraete, M.P.** And J. Rose. (2014). Microbial investigations of water, sediment, and algae mats the mixed use watershed of Saginaw Bay, Michigan. *Journal of Great Lakes Research* 40: 75-82.  
<http://www.sciencedirect.com/science/article/pii/S0380133013001718>
3. **Verhougstraete, M.P.**, S. Brothers, W. Litaker, and R. Noble. (2015). Lessons learned from implementing a wet laboratory molecular training workshop for beach water quality monitoring. *PLOS ONE*. DOI: 10.1371/journal.pone.0121214  
<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0121214>
4. Lothrop, N., S. Wilkinson, **M.P. Verhougstraete**, A. Sugeng, M. Loh, W. Klimecki, and P. Beamer (2015). Home Water Treatment Habits and Effectiveness in a Rural Arizona Community. *Water. Multidisciplinary Digital Publishing Institute*. DOI:10.3390/w7031217  
<http://www.mdpi.com/2073-4441/7/3/1217/htm>
5. **\*Verhougstraete, M.**, S. Martin, A. Kendall, D. Hyndman, and J. Rose. (2015). Microbial responses to land, physical, chemical, environmental, and hydrological factors. *PNAS* 112(33): 10419-10424.  
<http://www.pnas.org/content/112/33/10419.full>
6. Lamparelli, C.C., K. Pogreba-Brown, **M. Verhougstraete**, M.I.Z. Sato, T. Wade, and J.N.S. Eisenberg. (2015). A prospective cohort study of risks associated with beaches in Brazil. *Water Research* 87: 59-68.  
<http://www.sciencedirect.com/science/article/pii/S004313541530213X>
7. **Verhougstraete, M.** (2016). On Tap: Water Issues: Global Concerns and Global Issues. *Water Conditioning & Purification International*. Trade journal article peer reviewed by a technical advisory committee.

<http://www.wcponline.com/2016/01/15/on-tap-water-issues-global-concerns-and-global-issues/>

8. **Verhoughstraete, M.** and K. Reynolds. (2016). Use of a portable air disinfecting system to remove seeded coliphage in hospital rooms. *American Journal of Infection Control* 44 (6) 714-715.
9. Lothrop N, Bright KR, Sexton J, Pearce-Walker J, Reynolds KA, **Verhoughstraete M.P.** (2018). Optimal strategies for monitoring irrigation water quality. *Agriculture Water Management*. 2018;199:86-92. doi:10.1016/j.agwat.2017.12.018.
10. Reynolds, KA, **Verhoughstraete, M.** (2018). On Tap: Developing predicative models to quantify future POU needs and benefits. *Water Conditioning & Purification International*. Trade journal article peer reviewed by a technical advisory committee: <http://www.wcponline.com/2018/10/15/developing-predictive-models-quantify-future-pou-needs-benefits/>
11. Jean Pierre Nshimyimana, J.P., S.L. Martin, M. Flood, **M.P. Verhoughstraete**, D.W. Hyndman, J.B. Rose. (2018). Regional Variations of Bovine and Porcine Fecal Pollution as a Function of Landscape, Nutrient, and Hydrological Factors. *Journal of Environmental Quality*. doi:10.2134/jeq2017.11.0438
12. Canales, R.A., A.M. Wilson, J.I. Pearce-Walker, **M.P. Verhoughstraete**, K.A. Reynolds. (2018). Methods for Handling Left-Censored Data in Quantitative Microbial Risk Assessment. *Appl. Environ. Microbiol., AEM*. 01203-18
13. Alshammari, M., Reynolds, K.A., **M.P. Verhoughstraete**, M.K O'Rourke. (2018). Comparison of Perceived and Observed Hand Hygiene Compliance in Healthcare Workers in MERS-CoV Endemic Regions. *Healthcare* 6, 122.
14. Munoz-Gutierrez, K., R.A. Canales, K.A. Reynolds, **M.P. Verhoughstraete**. (2019). Floor and environmental contamination during glove disposal. *Journal of Hospital Infections*. 101 (3), 347-353
15. **Verhoughstraete, M.P.**, J.K. Gerald, C.P. Gerba, K.A. Reynolds. (2019). Cost-benefit of point-of-use devices for lead reduction. *Environ. Res.* 171, 260–265.
16. Wilson, A.M., R.A. Canales, **M.P. Verhoughstraete**, K.A. Reynolds. (2019). Validation of a Stochastic Discrete Event Model Predicting Virus Concentration on Nurse Hands. *Risk Analysis*. 39(8), 1812-1824.
17. V. Madera-Garcia, M. Weir, P. Beamer, J. Werner, **M.P. Verhoughstraete**. (2019). *Legionella pneumophila* as a Health Hazard to Miners: A Pilot Study of Water Quality and QMRA. *MDPI Water* 11(8), 1528.
18. **Verhoughstraete, M.P.**, K. Progreba-Brown, C.C. Lamparelli, M.I,Z. Sato, T. Wade, and J.N.S. Eisenberg (2019). A critical analysis of recreational water guidelines developed from temperate climate data and applied to the tropics. *Water Research* 159, 135-144.

19. Pearce-Walker, J. D.J. Troup, R. Ives, L.A. Ikner, J.B. Rose, M.A. Kennedy, **M.P. Verhougstraete** (Accepted). UVGI system impact on airborne indicators of common veterinary pathogens. American Journal of Veterinarian Research.
20. Pearce-Walker, J., K. Bright, R. Canales, A. Wilson, **M.P. Verhougstraete** (Accepted). Managing leafy green safety from adenoviruses and enteroviruses in irrigation water. Agriculture Water Management

\* Indicates manuscript substantially based on work done as a graduate student

### Technical Reports

Singh, S., **M.P. Verhougstraete**, and J.B. Rose. 2007. Investigation of water quality and sediment quality associated with the Muskegon County Wastewater Management System.

<http://cws.msu.edu/projects/documents/MuskegonWWTPFinalReport.pdf>

Rose, J.B., **M.P. Verhougstraete**, S. Singh, and T. Shibata. 2007. Study of Silver Lake Water Quality.

<http://cws.msu.edu/projects/documents/SilverLake2007FinalReport.pdf>

**M.P. Verhougstraete** and J.B. Rose. 2008. A new toolbox for testing Michigan waters.

<http://cws.msu.edu/projects/documents/CommunitySummary.pdf>

**M.P. Verhougstraete**, S. Srinivasan, R. Ives, and J.B. Rose. 2008. Preliminary report for Pigeon River fish kill.

<http://cws.msu.edu/projects/documents/Fishkillpreliminaryreportfinal.pdf>

**M.P. Verhougstraete** and J.B. Rose. 2008. Investigation of water quality and sources associated with the Buck Creek Watershed.

<http://cws.msu.edu/projects/documents/BuckCreekFinalReport.pdf>

**M.P. Verhougstraete** and J.B. Rose. 2008. Barberry Drain at West Lake Preliminary Water Quality Testing. For West Lake Improvement Association.

<http://cws.msu.edu/projects/documents/WestLakereportFINAL.pdf>

**M.P. Verhougstraete**, S. Singh, and J.B. Rose. 2008. Investigation of water quality in the Coldwater River Watershed.

<http://cws.msu.edu/projects/documents/ColdwaterCreekFinalreport.pdf>

**M.P. Verhougstraete**, T. Shibata, and J.B. Rose. 2009. Background levels of viable bacteria and fungi in the indoor air and on surfaces in Ingham Regional Medical Center “before and after” the UVGI-HVAC installation. For Ingham Regional Medical Center.

<http://cws.msu.edu/projects/documents/UVGIfinalsummarymv2-2.pdf>

**M.P. Verhougstraete**, A. Aslan-Yilmaz, and J.B. Rose. 2009. Upper Peninsula Groundwater Sampling Menominee County, Michigan. For the Public Health Delta-Menominee Counties.

<http://cws.msu.edu/projects/documents/UPGroundwaterfinalreport.pdf>

**M.P. Verhoughstraete**, E.A. Dreelin, and J.B. Rose. 2009. Investigation of Water Quality and Source Tracking at Whites Beach Arenac County, Michigan. For the Central Michigan District Health Department and the Michigan Department of Environmental Quality.  
<http://cws.msu.edu/projects/documents/WhitesBeachFinal7-10-09.pdf>

**M.P. Verhoughstraete**, E.A. Dreelin, and J.B. Rose. 2009. Investigation of Water Quality and Source Tracking at Bay City State Recreation Area Beach Bay County, Michigan. For the Bay County Health Department and the Michigan Department of Environmental Quality.  
<http://cws.msu.edu/projects/documents/BayCityFinal7-10-09.pdf>

**M.P. Verhoughstraete**, E.A. Dreelin, and J.B. Rose. 2009. Investigation of Water Quality and Source Tracking at Port Crescent State Park day use Beach Huron County, Michigan. For the Huron County Health Department and the Michigan Department of Environmental Quality.  
<http://cws.msu.edu/projects/documents/PortCrescentFinal7-10-09.pdf>

**M.P. Verhoughstraete**, E.A. Dreelin, and J.B. Rose. 2009. Investigation of Water Quality and Source Tracking at Caseville County Park Beach Huron County, Michigan. For the Huron County Health Department and the Michigan Department of Environmental Quality.  
<http://cws.msu.edu/projects/documents/CasevilleFinal7-10-09.pdf>

**M.P. Verhoughstraete** and J.B. Rose. 2009. Investigation of Water Quality and Source Tracking in Gull Lake Watershed, Michigan. For the Four Township Water Resources.  
<http://cws.msu.edu/projects/documents/GullLakereportfinal.pdf>

**M.P. Verhoughstraete** and J.B. Rose. 2010. Investigation of Water Quality and Source Tracking at Grand Traverse Bay and Mitchell Creek Grand Traverse County, Michigan. For The Watershed Center Grand Traverse Bay and Sarah U'Ren.  
<http://cws.msu.edu/projects/documents/TraverseCityReportFinal.pdf>

**M.P. Verhoughstraete** and K. Reynolds. 2014. Hospital Field Study of T1 Air Disinfectant Recirculator Efficacy Against Viral Tracers. For Aerobiotix, Inc. and Brent Lloyd and David Kirschman.

Lothrop, N., K. Bright, J. Sexton, K. Reynolds, **M.P. Verhoughstraete**. 2016. Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. For Center for Produce Safety.

**Verhoughstraete, M.P.**, K., Reynolds, A. Tamimi, and C. Gerba. 2016. Cost benefit of point-of-use devices in reduction of health risks from drinking water. For Water Quality Research Foundation.

Pogreba-Brown, K., S. Barnes, K. Bright, and **M. Verhoughstraete**. 2017 Produce safety risk assessment data gaps. For Arizona Department of Agriculture.

Pearce-Walker, J., **M. Verhoughstraete**, and K. Bright. 2017. Enteric viruses as new indicators of human and cattle fecal contamination of irrigation waters. For The Center for Produce Safety.

J. Pearce-Walker, **M. Verhougstraete**, A. Nematollahi, M. Pountain, and P. Beamer. 2019. Environmental Toxic Substance Assessment: Per- and Polyfluoroalkyl Substances (PFAS) in Pima County Water. For Pima County, Arizona.

## **WORK IN PROGRESS**

### **Refereed Journal Articles (Submitted or in preparation)**

Wilson, A., **M.P. Verhougstraete**, S.L. Martin, A.D. Kendall, J.B. Rose, M.L. Bell, D.W. Hyndman (Submitted). Explaining *Bacteroides thetaiotaomicron* and *Escherichia coli* concentrations in Michigan watersheds with adaptive LASSO linear regression models. *Science of the Total Environment*.

Kurgat, E., A. Norman, D. Quintanar, **M. Verhougstraete** (Submitted). A novel approach to quantify climate change effects on drinking water quality. *Journal of Water and Health*.

**Verhougstraete, M.P.**, K. Reynolds, J. Pearce-Walker, C. Gerba (In preparation). Cost benefits of point-of-use devices to reduce waterborne diseases. *Journal of Water and Health*.

Pearce-Walker, J., D. Troup, P. De La Cruz, M. Weir, **M. Verhougstraete** (In preparation). Hand-to-fomite viral transfer based on dryness of microbial suspension solution. *International Journal of Environmental Research and Public Health*.

Pearce-Walker, J., **M. Verhougstraete**, and K. Reynolds (In preparation). Point of use water treatment filters as a tool for quantitative microbial risk assessment of drinking water. *Journal of Water and Health*

Troup, D., **M. Verhougstraete**, K. Reynolds (In preparation). Impact of a passive air purification unit on microbial contamination in a controlled chamber environment: A brief report. *Journal of Infection Control*

Cooksey, E., J. Pearce-Walker, and **M.P. Verhougstraete** (In preparation). A summary of surface water used for irrigation in the SW United States. *Environmental Science: Processes & Impacts*.

### **Grants and Contracts (Submitted or in preparation)**

Co-Principal Investigator. Collaboration between Planktos Instruments, LLC and the University of Arizona to create a passive water quality monitoring instrument. USDA Small Business Innovation Research Program (SBIR) (\$100,000) 2017-2018. (Not funded)

Co-Principal Investigator. National molecular public health consortium. National Institute of Health (\$1,000,000) 2017-2020. (Not funded)

Co-Principal Investigator. Sewage Forensics for early detection of biological threats or source tracking. Department of Defense-DTRA (\$750,000) 2017-2020. (Not funded)

Co-principal investigator. Identification and evaluation of new viral indicators for agriculture water. US Department of Agriculture (\$500,000). 2017-2020. (Not funded)

Co-Investigator. The Impact of a Persistent Antimicrobial Silver Ion Textile Treatment on Patient Outcomes in a Hospital Setting. National Institutes of Health. (\$1,654,030) 2017-2020. (Not funded)

Co-Principal Investigator. Management of natural habitat adjacent to agricultural fields to reduce large mammal intrusions into produce fields. Center for Produce Safety (\$190,000) 2018-2019. (Not funded)

Co-Principal Investigator. Management of natural habitat adjacent to agricultural fields to reduce large mammal intrusions into produce fields. Center for Produce Safety (\$190,000) 2018-2019. (Not funded)

Primary-Investigator. A novel approach to trace listeria movement in a produce facility. Center for Produce Safety (\$88,382) 2018. (Not funded)

Co-Principal Investigator. Reducing Healthcare Acquired Infections: Optimization of Cleaning & Monitoring Practices Through Surface Sampling, Behavior Characterization, and Computational Modeling. Agency for Healthcare Research and Quality (\$2,500,000) 2018-2023. (Not funded)

Principal investigator. Cross-contamination of leafy greens from animal feces and irrigation. US Department of Agriculture (\$500,000). 2018-2021. (Not funded)

Principal investigator. Quenching the Need for Biocontrol Strategies in Beer Brewing. Brewers Association (\$40,000). 2017-2018 (Not Funded)

Principal investigator. The Caribbean Sea Expedition: Exploring human's effect on blue holes. The Simons Foundation. (\$200,000). (Not funded)

Principal investigator. Cross-contamination of leafy greens from animal feces and irrigation. Center for Produce Safety (\$233,000). 2018-2021. (Not funded)

Primary Investigator. Use of Predictive Models to Quantify Future POU Needs and Benefits. Water Quality Research Foundation (\$50,000) (Not funded)

Primary Investigator. Quantifying carcinogenic metals and microbe in Navajo Nation water. University of Arizona Cancer Center. (\$29,821). (Not funded)

Primary Investigator. Navajo region drinking water: Metals, microbe, and corrective actions (\$27,929). (Not funded)

Primary Investigator. Water quality assessment and community empowerment in rural Northern Navajo Nation. Center for Indigenous Environmental Health Research (\$15,206). (Submitted - Withdrawn)

Primary Investigator. Winchester Heights: An Enhanced Drinking Water Quality Assessment. Western Center for Agricultural Health and Safety (\$29,914). (Not funded)

Co-Primary Investigator. Southwest Irrigation Water Alliance (SIWA): Modern irrigation water quality data network. USDA-Sustainable Agriculture Systems (\$10,000,000). (Not Funded)

Principal investigator. Quantifying the occurrence and source of microbial water quality in Río Armería using a toolbox approach. Grupo Alta Divine Flavor: (\$200,000) (Submitted-pending)

Primary Investigator. Novel methods for disinfection of produce containers. Arizona Iceberg Lettuce Growers Center. (\$60,000). (Not Funded).

Primary Investigator. Environmental investigations and risk assessment of heavy metals and radionuclides in the Rio Grande near Santa Fe, New Mexico. Amigos Bravos (\$20,000). (Submitted-pending)

Primary-Investigator. Implications for *H. pylori* infectivity from mixed exposures to arsenic and uranium. National Institute of Environmental Health Sciences (\$392,845). (Submitted-pending)

## **MEDIA**

Nature, Mixed reviews for US Clean Water Act, 14 November 2012: <http://www.nature.com/news/mixed-reviews-for-us-clean-water-act-1.11809>

North Carolina Science Now- UNC-TV, Rapid Water Test, September 2013: <http://science.unctv.org/content/rapid-water-test>

Michigan State University, Septic tanks aren't keeping poo out of rivers and lakes, 3 August 2015: <http://msutoday.msu.edu/news/2015/septic-tanks-arent-keeping-poo-out-of-rivers-and-lakes/>

Water Online, Septic Tanks Aren't Keeping Poo Out Of Rivers And Lakes, 3 August 2015: <http://www.wateronline.com/doc/septic-tanks-aren-tkeeping-poo-rivers-lakes-0001>

Science Daily, Septic tanks aren't keeping feces out of rivers, lakes, 3 August 2015: <http://www.sciencedaily.com/releases/2015/08/150803154850.htm>

Laboratory Equipment, Septic Tanks Don't Help Rivers, Lakes Stay Clean, 4 August 2015: <http://www.laboratoryequipment.com/news/2015/08/septic-tanks-dont-help-rivers-lakes-stay-clean>

Infection Control Today, Septic Tanks Aren't Keeping Human Sewage Out of Rivers and Lakes, 5 August 2015: <http://www.infectioncontroltoday.com/news/2015/08/septic-tanks-arent-keeping-human-sewage-out-of-rivers-and-lakes.aspx>

University of Arizona, UA Public Health Researchers Work to Keep U.S. Food Crops Safe, 26 August 2015: <http://uaahs.arizona.edu/news/ua-public-health-researchers-work-keep-us-food-crops-safe>

KNST Tucson, University of Arizona researchers help keep food safe, 09 September 2015

KJZZ Tucson, University of Arizona Study Will Help Produce Farmers Reduce *E. coli*, 10 September 2015: <http://science.kjzz.org/content/189765/university-arizona-study-will-help-produce-farmers-reduce-e-coli>

Great Lakes Echo, Septic tanks flush water quality down the tubes, 24 September 2015: <http://greatlakesecho.org/2015/09/24/septic-tanks-are-flushing-water-quality-down-the-tubes/>

Use of portable air disinfecting system to remove seeded coliphage in hospital rooms, 13 April 2016, Association of Schools & Programs of Public Health.

Irrigation Water – Keeping it Clean. 17 February 2017. Vegetable Growers News

UA researcher focuses on preventing health-care-associated infections. 16 October 2019. News Medical Life Sciences: <https://www.news-medical.net/news/20191016/UA-researcher-focuses-on-preventing-health-care-associated-infections.aspx>

Preventing health-care-associated infections focus of UA health sciences researcher. 16 October 2019. AAAS EurekaAlert: [https://www.eurekaalert.org/pub\\_releases/2019-10/uoa-phi101619.php](https://www.eurekaalert.org/pub_releases/2019-10/uoa-phi101619.php)

WQA Radio podcast #138 Cost benefit study. October 2019: <https://soundcloud.com/user-141188699/wqa-radio-138-cost-benefit-study>

## CONFERENCE PRESENTATIONS

### Colloquia Invited

**Verhougstraete, M.P.** and R.T. Noble. Ambient water quality in the Southeastern US: Trends and advancements in water quality management. November 12, 2012. 33<sup>rd</sup> Annual Society of Environmental Toxicology and Chemistry meeting, Long Beach, California, USA.

Martin, S., E. Luszcz, **M. Verhougstraete**, A. Kendall, and D. Hyndman. Estimating statewide septic system locations and linkages to pathogens. March 21, 2013. Michigan Environmental Health Association annual education conference, Rochester, Michigan, USA.

**M. Verhougstraete**, S. Martin, A. Kendall, D. Hyndman, and J. Rose. Microbial tipping points of *Escherichia coli* and human specific bacteria in Great Lakes river systems. May 19, 2014. Joint Aquatic Sciences Meeting, Portland, Oregon, USA.

**M. Verhougstraete**, K. Bright, K. Reynolds, C. Rock. Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. June 23, 2015. Center for Produce Safety annual meeting, Atlanta, Georgia, USA.

**M. Verhougstraete**, S. Martin, A. Kendall, D. Hyndman, and J. Rose. Linking fecal bacteria in rivers to landscape, geochemical, and hydrologic factors and sources at the basin scale. November 30, 2015. Michigan Department of Environmental Quality. Lansing, Michigan, USA.

**M. Verhoughstraete**, S. Martin, A. Kendall, D. Hyndman, and J. Rose. Linking fecal bacteria in rivers to landscape, geochemical, and hydrologic factors and sources at the basin scale. February 4, 2016. Arizona Department of Environmental Quality. Maricopa, Arizona, USA

**M. Verhoughstraete**. Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. June 30, 2016. Center For Produce Safety annual meeting, Seattle, Washington, USA.

**M. Verhoughstraete**. Practical tips for effective water sampling. December 6, 2016. Washington State Fruit Tree Association annual meeting. Wenatchee, Washington, USA.

**M. Verhoughstraete**. Irrigation water knowledge gaps. December 13, 2017. Center for Produce Safety, Yuma, Arizona, USA

**M. Verhoughstraete**. Environmental Health and Justice. June 27, 2018. National Organization of State Office of Rural Health. Little Rock, Arkansas, USA

**M. Verhoughstraete**. Environmental Health and Justice in Arizona. July 26, 2018. Arizona State Office of Rural Health. Flagstaff, Arizona, USA

**M. Verhoughstraete**. Costs associated with POU's and thinking outside the box. May 24, 2018. University of North Carolina Water Microbiology. Chapel Hill, North Carolina, USA.

**M. Verhoughstraete**. Agriculture water concerns in the southwest United States. December 4, 2018. University of California Irvine agriculture extensions – Arid desert agriculture summit. Imperial, California, USA.

**M. Verhoughstraete**. There's we in water. 22 April 2019. Georgia Southern Environmental Health Graduate seminar. Statesboro, Georgia, USA.

**M. Verhoughstraete**, J. Pearce-Walker, A. Nematollahi, M. Pountain, K. Tham, and P. Beamer. PFAS report update. 24 April 2019. Pima Board of Health. Tucson, Arizona, USA.

**M. Verhoughstraete**, J. Gerald, K. Reynolds, and C. Gerba. Cost-Benefit of Point of Use Devices for Lead Reductions. 12 June 2019. American Water Works Association ACE 2019. Denver, Colorado, USA.

### **Colloquia Submitted**

Shibata T., **M. Verhoughstraete**, and J. Rose. Background Levels of Viable Bacteria and Fungi in the Indoor Air and on Surfaces in a Hospital before a UVGI-HVAC Installation. *October 13, 2007*. Michigan Branch of the American Society for Microbiology fall meeting. Traverse City, Michigan, USA

Srinivasan, S., **M.P. Verhoughstraete**, and J.B. Rose. *S. Bacteroides*, a new alternative indicator. *April 12, 2008*. Michigan Branch of the American Society for Microbiology spring Meeting. Mt. Pleasant, Michigan, USA

McNinch, R.M, **Verhoughstraete, M.P.**, and J.B. Rose. Using Fecal Indicator, Source Tracking, and GIS Tools to Assess Fecal Contamination in Michigan's Waters. *May 20, 2008*.

- International Association of Great Lakes Research 51<sup>st</sup> Annual Conference on Great Lakes Research. Peterborough, Ontario, Canada
- Verhougstraete, M.P.** and J.B. Rose. Saginaw Bay and *Escherichia Coli*. *September 5, 2008*. Saginaw Bay Coastal Initiative Speaker Series. Bay City, Michigan, USA
- Verhougstraete, M.P.** and J.B. Rose. Using a toolbox approach to investigate Cladophora, muck, sediment, and water around Saginaw Bay. *September 6, 2008*. Great Lakes Beach Association Annual meeting. Portage, Indiana, USA
- Verhougstraete, M.P.** and J.B. Rose. Water Quality and Pollution Characterization of Saginaw Bay. Michigan. *February 13, 2009*. Michigan State University Department of Fisheries and Wildlife Graduate Student Symposium. East Lansing, Michigan, USA
- Verhougstraete, M.P.** and J.B. Rose. Water Quality of Saginaw Bay. *March 12, 2009*. Huron County Water Quality Forum. Port Austin, Michigan, USA
- Verhougstraete, M.**, S. Martin, A. Kendall, D. Hyndman, and J. Rose. A Biological Survey: Understanding Water Quality Using a Process Based Approach. *September 19, 2011*. 16<sup>th</sup> International Symposium on Health-Related Water Microbiology-International Water Association. Rotorua, New Zealand
- Verhougstraete, M.P.** and J.B. Rose. Water Quality and Fecal Contamination of Saginaw Bay, Michigan. *March 19, 2009*. Michigan Environmental Health Association. Traverse City, MI, USA
- Verhougstraete, M.P.** and J.B. Rose. Recreational water quality assessment of Saginaw Bay beaches using fecal indicator bacteria and source tracking methods on samples from shallow and deep waters, sediment, and muck. *May 19, 2009*. International Association of Great Lakes Research 52<sup>nd</sup> Annual Conference on Great Lakes Research. Toledo, Ohio, USA
- Verhougstraete, M.P.** and J.B. Rose. Using Fecal Indicator Bacteria And Source Tracking Markers During Spatial And Temporal Sampling Of Sediments, Swash Zone, Swimming Water, And Muck To Assess Saginaw Bay, Michigan, United States. *June 1, 2009*. 15<sup>th</sup> International Symposium on Health-Related Water Microbiology-International Water Association. Naxos, Greece
- Verhougstraete, M.P.** and J.B. Rose. The Muck and Human Health. *July 1, 2009*. Michigan Farm Bureau Regional Policy Development Meeting. Frankenmuth, Michigan, USA
- Verhougstraete, M.P.**, J.B. Rose, and S. U'Ren. Healthy Beaches Program Grand Traverse Bay Region. *September 30, 2009*. 9<sup>th</sup> Annual Great Lakes Beach Association Joint Conference. Milwaukee, Wisconsin, USA
- J.B. Rose and **M.P. Verhougstraete**. Source Tracking in the Saginaw Bay and Great Lakes Application. *October 26, 2009*. Fourth Annual Ottawa County Water Quality Forum. Grand Rapids, Michigan, USA

**Verhoughstraete, M.P.** and J.B. Rose. Microbial and Molecular Survey of Grand Traverse Bay Watershed. *April 6, 2010*. Michigan Branch of the American Society for Microbiology spring meeting. Kalamazoo, Michigan, USA

Aslan, A. and **M. Verhoughstraete**. Climate Change and Water Quality. *April 26, 2010*. Bioeconomy and Global Climate Change, Climate Change Vulnerabilities and Opportunities: Michigan and Beyond Symposium. East Lansing, Michigan, USA.

**Verhoughstraete, M.P.** and J.B. Rose. A Water Quality Comparison between Grand Traverse Bay and Saginaw Bay, Michigan, United States. *September 20, 2010*. International Water Association World Water Congress and Exhibition. Montreal, Quebec, Canada

**Verhoughstraete, M.P.** and J.B. Rose. A Water Quality Comparison between Grand Traverse Bay and Saginaw Bay, Michigan, United States. *October 9, 2010*. Michigan Branch of the American Society for Microbiology fall meeting. East Lansing, Michigan, USA

**Verhoughstraete, M.P.** and J.B. Rose. A Water Quality Comparison between Grand Traverse Bay and Saginaw Bay, Michigan, United States. *October 20, 2010*. 10<sup>th</sup> Annual Great Lakes Beach Association Conference. Presque Isle, Pennsylvania, USA

**Verhoughstraete, M.P.**, Y. Huang, and J.B. Rose. Public Health Tipping Points for Water Quality. *April, 19, 2011*. NOAA and EPA Tipping Point Project meeting. Chicago, IL, USA

**Verhoughstraete, M.P.** Public Health Issues of the 21<sup>st</sup> Century Workshop. *February 22, 2012*. 33<sup>rd</sup> Annual Montana Rural Water Systems, Great Falls, Montana, USA

**Verhoughstraete, M.P.** and J.B. Rose. Saginaw Bay ‘muck’: Current understanding, research, and protective measures. *March 16, 2012*. 2012. Saginaw Bay Watershed Conference, Bay City, MI, USA

**Verhoughstraete, M.P.** and J.B. Rose. Microbial responses to land, physical, chemical, environmental, and hydrological factors. *October 18, 2012*. 12<sup>th</sup> Annual Great Lakes Beach Association Conference. Mackinac Island, MI, USA

Froelich, D., R. Gonzalez, D. Blackwood, M. Greene, R. Guajardo, S. Brothers, **M. Verhoughstraete**, R. Luettich, H. Paerl, J. Oliver, and R. Noble. Pathogenic *Vibrio* species in the Neuse River Estuary. *October 25, 2012*. Research Coordination Networks symposium, Oregon, USA.

B.A. Froelich, R.A. Gonzalez, A.D. Blackwood, R.P. Boyles, A.H. Snedecker, **M.P. Verhoughstraete**, and R.T. Noble. Multi-year changes in *Vibrio* populations in the Neuse River Estuary of North Carolina, USA. *April 1, 2014*. *Vibrio* 2014 Conference, Edinburgh, Scotland.

D. Blackwood, S. Brothers, **M. Verhoughstraete**, W. Litaker, and R. Noble. Training the Next Generation of Water Quality Professionals: Lessons Learned from Workshops on Rapid, qPCR-based Methods. *May 5, 2014*. 2014 Water Microbiology Conference, Raleigh, North Carolina, USA.

K. Lauer, **M. Verhoughstraete**, D. Blackwood, and R. Noble. Quantitative analysis of fecal contamination in stormwater conveyance systems in Wrightsville Beach, NC. *May 5, 2014*. 2014 Water Microbiology Conference, Raleigh, North Carolina, USA.

**M. Verhoughstraete**, K. Pogreba-Brown, C.C. Lamparelli, and J.N.S. Eisenberg. A prospective cohort study of risks associated with beaches in Brazil. *May 5, 2014*. 2014. Water Microbiology Conference, Raleigh, North Carolina, USA.

J. Viswasam, **M. Verhoughstraete**, R. Canales, A. Kendall, J. Rose. Investigating the links between precipitation, water quality, and GI illness. *August 12, 2014*. The University of Arizona Minority Health Disparities Program, Tucson, Arizona, USA.

J. Eisenberg, C. Lamparelli, M. Zanolli-Sato, K. Pogreba Brown, **M. Verhoughstraete**, and T. Wade. Recreational water risks in the tropics: A prospective cohort study of risks associated with beaches in Brazil. *October 13, 2014*. Water and Health Conference, Raleigh, North Carolina, USA.

**M. Verhoughstraete**, N. Lothrop, J. Pearce-Walker, J. Sexton, K. Reynolds, K. Bright. Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. *May 18, 2016*. University of North Carolina Water Microbiology conference, Chapel Hill, North Carolina, USA.

D. Troup, K. Reynolds, **M. Verhoughstraete**. Bioaerosol Reduction with a Passive Air Treatment System in a Controlled Chamber. *April 2017*, Mel and Enid Zuckerman College of Public Health Research Poster forum. Tucson, Arizona, USA

**M. Verhoughstraete**, M. Weir, J. Miller. International Risk Consortium side event. *May 2017*. University of North Carolina Water Microbiology conference, Chapel Hill, North Carolina, USA.

**M. Verhoughstraete**. Suitability of *Escherichia coli* as an Indicator of Human Pathogens in Irrigation Water. *June 2018*, International Food Safety Conference.

Jean Pierre Nshimiyimana, J.P., S.L. Martin, M. Flood, **M.P. Verhoughstraete**, D.W. Hyndman, J.B. Rose. Regional Variations of Bovine and Porcine Fecal Pollution as a Function of Landscape, Nutrient, and Hydrological Factors. *June 2018*. International Association of Great Lakes Research, Toronto, CA

V. Madera-Garcia, P. Beamer, J. Werner, **M. Verhoughstraete**. Legionella is a Miner issue. *May 20, 2018*. University of North Carolina Water Microbiology conference, Chapel Hill, North Carolina, USA.

**M. Verhoughstraete**, K. Reynolds, C. Gerba. Cost benefits of point-of-use devices to reduce waterborne diseases. *May 19, 2018*. University of North Carolina Water Microbiology conference, Chapel Hill, North Carolina, USA.

**M. Verhoughstraete**. Suitability of *Escherichia coli* as an Indicator of Human Pathogens in Irrigation Water. *May 18, 2018*. University of North Carolina Water Microbiology conference, Chapel Hill, North Carolina, USA

Pearce-Walker, J., **M. Verhoughstraete**, J. Sexton, R. Canales, A. Wilson, C. Gerba, and K. Bright. Assessment of viral pathogens, their indicators, and the applicability of quantitative microbial risk assessment in irrigation waters. October 9, 2018. International Society for Food and Environmental Virology. Phoenix, Arizona, USA.

M. White, J. Pearce-Walker, A. Zimmer-Faust, **M. Verhoughstraete**. Assessing the Efficacy of Antimicrobial Ear Drops for Microbial Reductions. 16 April 2019. University of Arizona Public Health Poster Forum. Tucson, Arizona, USA.

**M. Verhoughstraete** and A. Zimmer-Faust. Young professionals workshop. 14 May 2019. University of North Carolina Water Microbiology conference, Chapel Hill, North Carolina, USA.

J. Pearce-Walker, A. Wilson, R. Canales, K. Bright, C. Gerba, and **Marc P. Verhoughstraete\***. Adenovirus infection risk from irrigated leafy green consumption. 15 May 2019. University of North Carolina Water Microbiology conference, Chapel Hill, North Carolina, USA.

R. Wagoner and **M. Verhoughstraete**. Addressing Water Quality Alongside Community Health Workers in a Farm Worker Community. 18 August 2019. International Society Of Exposure Science and International Society Of Indoor Air Quality And Climate 2019. Kaunas, Lithuania.

Cooksey, E., A. Zimmer-Faust, J. Griffith, and **M. Verhoughstraete**. Prevalence of pathogenic *V. parahaemolyticus* and *V. vulnificus* in oysters harvested in Newport Bay California. February 17, 2020, American Geophysical Union (AGU), the Association for the Sciences of Limnology and Oceanography (ASLO), and The Oceanography Society (TOS) - Ocean Sciences Meeting 2020. San Diego, California, USA.

Wilson, A., C. Donskey, **M. Verhoughstraete**, and K. Reynolds. Estimating the contribution of a contaminated wheelchair to pathogen spread with an agent-based model. March 27, 2020. The Society For Healthcare Epidemiology Of America Decennial 6th International Conference on Healthcare Associated Infections. Atlanta, Georgia, USA.

### **Courses instructed**

Instructor. CPH 599. Independent Study – Jeannie Pearce-Walker. Summer 2016

Co-Instructor. CPH 597D. Rural Health Service Learning Institute. Summer 2016. 15 enrolled students

Instructor. CPH 491. Preceptorship – Gabriel Manicellis

Instructor. CPH 900. Research independent Study – Siyi Lei. Fall 2016

Instructor. CPH 375. Introduction to Environmental and Occupational Health. Fall 2016. 130 enrolled students.

Co-Instructor. CPH 696. Environmental and Occupational Health seminar. Fall 2016.

Instructor. CPH 597D. Rural Health Service Learning Institute. Summer 2017. 15 enrolled students

Co-Instructor. CPH 696. Environmental and Occupational Health seminar. Spring 2017.

Instructor. CPH 696. Environmental and Occupational Health seminar. Fall 2017.

Instructor. CPH 375. Introduction to Environmental and Occupational Health. Fall 2017. 160 enrolled students.

Instructor. CPH 375. Introduction to Environmental and Occupational Health. Fall 2018. 120 enrolled students.

Instructor. CPH 375. Introduction to Environmental and Occupational Health. Spring 2019. 92 enrolled students.

Instructor. CPH 696. Environmental and Occupational Health seminar. Spring 2018.

Instructor. CPH 597D. Rural Health Service Learning Institute. Summer 2019.

Co-Instructor. CPH 696. Environmental and Occupational Health seminar. Fall 2019.

Instructor. CPH 375. Introduction to Environmental and Occupational Health. Spring 2020. 110 enrolled students.

Instructor. CPH 696. Environmental and Occupational Health seminar. Spring 2020.

Instructor. CPH 597D. Rural Health Service Learning Institute. Spring 2020.

### **Seminar Invited**

K. Pogreba-Brown and **M. Verhoughstraete**. Large cohort study of illness associated with beach exposure in Brazil. *February 6, 2014*. The University of Arizona, College of Public Health, Epidemiological Seminar Series, Tucson, Arizona, USA.

**M. Verhoughstraete**. Microbial water quality in the Great Lakes. *September 3, 2014*. The University of Arizona, College of Public Health, Environmental Health Sciences seminar series, Tucson, Arizona, USA.

**M. Verhoughstraete**. Students for Sustainability Environmental Health Panel. November 1, 2016. The University of Arizona, Students for Sustainability, Tucson, Arizona, USA.

**M. Verhoughstraete**. Current state of microbial research for produce safety. October 17, 2016. The University of Arizona, School of Animal Comparative Biomedical Sciences (ACBS), Tucson, Arizona, USA.

**M. Verhoughstraete**. Environmental Health Panel. November 21, 2016. The University of Arizona, Students for Sustainability, Tucson, Arizona, USA

**M. Verhougstraete.** Science Café: Health risks of flooding and natural disasters. December 4, 2017. The University of Arizona, Southwest Environmental Health Sciences Center, Tucson, Arizona, USA.

### **Symposia organization**

2007	Center for Water Sciences: Waterborne Pathogens Workshop Series
2009	Center for Water Sciences: Stormy Weather and Stormwater Impacts workshop series
2008, 2009, 2011	CAMRA (Center for Advancing Microbial Risk Assessment) Summer Institute
2011-2012	NOAA Sea Grant climate change workshop
2012	Montana Rural Water Systems annual conference: Our water; Our health
November 2013	Molecular Training Facility Rapid Methods Assessment
March 2013	Molecular Training Facility Rapid Methods Assessment
2016-2018	HITS (Healthcare Infection Transmission Systems). Founding member and Steering committee
2018	Arizona State Office of Rural Health. Planning committee
2018	Quantitative Microbial Risk Assessment Interdisciplinary Innovative Institute
2016-Present	Public Health Risk Assessment Consortium. Founding member
2018-2019	University of North Carolina Water Microbiology meeting. Advisory board

### **Symposia participation**

2007	Center for Advancing Microbial Risk Assessment Institute, East Lansing, Michigan, US
2008	Beach Health Steering Committee-USGS, Portage, Indiana, USA
2009	Multiple Stressors in Saginaw Bay: Navigating the Issues, Ann Arbor, Michigan, USA
2010	International Joint Commission experts meeting, Milwaukee, Wisconsin, USA
2013	Quantitative Microbial Risk Assessment Innovation Institute, Sao Paulo, Brazil
2016	Cochise County public health emergency preparedness infectious disease workshop, Sierra Vista, Arizona, USA
2016	Water Resources Research Center annual meeting, Tucson, Arizona, USA
2017	Water Resources Research Center annual meeting, Tucson, Arizona, USA

### **Symposia speaker**

2008	Saginaw Bay Coastal Initiative Speaker Series
2009	Huron County Water Quality Forum
2009	Ottawa County Water Quality Forum
2012	Saginaw Bay Watershed Conference
2018-2019	QMRA III Workshop
2018	National Organization of State Offices of Rural Health, Little Rock, Arkansas, USA

## AWARDED GRANTS

### Federal

- 2010-2012 Co-Principal Investigator. Land use change and agricultural lands indicators and tipping points. Funded by: NOAA and EPA. Total cost: \$119,748; 50% effort
- 2012-2013 Co-Principal Investigator. Quantifying the impacts of projected climate changes on the Grand Traverse Bay region: An adaptive management framework. Funded by: NOAA Michigan Sea Grant. Total cost: \$106,613; 50% effort
- 2008-2014 Contributing investigator. Collaborative Research: Linkage of Bacterial Pathogens to Human infectious Disease in an Estuary Subjected to Extreme Climatic Events. Funded by: National Science Foundation. Total cost: \$1,541,139; 50% effort
- 2015-2016 Co-Principal Investigator. Responder Safety and Health. Funded by: Center for Disease Control and Prevention through the Arizona Department of Health Services under the Hospital Preparedness Program and Public Health Emergency Preparedness Cooperative Agreements. Total cost: \$240,000; 40% effort
- 2017-2018 Principal investigator. A Water Quality Assessment in a Farm Worker Community. Funded by: NIOSH (2U54OH007550) - Western Center for Agricultural Health and Safety. Total cost: \$30,000; 1% FTE
- 2018-2019 Co-Primary Investigator. Quantitative Microbial Risk Assessment: A Modeling Method to Optimize Healthcare Associated Infection Reduction Nationally. Funded by: Center for Disease Control and Prevention (CDC). Total cost: \$510,000; 20% FTE
- 2018-2020 Investigator. Proyecto Agua Limpia. Funded by: Environmental Protection Agency - Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program. \$120,000. Student research support

### State

- 2008-2009 Lead investigator. Screening level source tracking of *E. coli* and phosphorus in the Saginaw Bay watershed. Funded by: Michigan Department of Environmental Quality. Total cost: \$23,913; 20% effort
- 2009 Lead investigator. Beach monitoring in Grand Traverse Bay. Funded by: Michigan Department of Environmental Quality through the BEACH Act. Total cost: \$5,000; 10% effort
- 2009-2011 Co-Principal Investigator/Lead investigator. Assessment of water quality and health risk in Grand Traverse Bay Watershed. Funded by: Michigan Department of Environmental Quality. Total cost: \$31,955; 50% effort

- 2012-2013 Co-investigator. Training Workshops at Molecular Training Facility in Eastern North Carolina. Funded by: North Carolina Biotechnology Center, Presidential Initiative Award. Total cost: \$40,000; 50% effort
- 2014-2015 Co-Principal Investigator. Spatial/Temporal Sampling of Irrigation Water. Funded by: Arizona Department of Agriculture – Specialty Crop Program. Total cost: \$60,000; 5% effort
- 2015-2016 Co-Principal Investigator. Enteric viruses as new indicators of human and cattle fecal contamination of irrigation waters. Funded by: Center for Produce Safety, University of California Davis. Total cost: \$221,340; 5% effort
- 2015-2016 Principal investigator. Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. Funded by: Center for Produce Safety, University of California Davis. Total cost: \$117,201; 5% effort
- 2015 Co-Principal Investigator. Equipment Grant Award. Funded by: University of Arizona, Water, Environment, and Energy Solutions at The University of Arizona. Total cost: \$16,407; 1% effort
- 2015-2016 Principal investigator. Determining Data Gaps in Risk Assessment for use in Produce Safety. Funded by: Arizona Department of Agriculture. Total cost: \$50,000; 15% effort
- 2016 Principal Investigator. HydroSphere enhancement for improved water quality monitoring. Funded by: Water, Environment, Energy Sustainability (WEES). Total cost: \$6,000; 0% effort
- 2015-2017 Principal investigator. Determining Data Gaps in Risk Assessment for use in Produce Safety. Funded by: Arizona Department of Agriculture. Total cost: \$50,000; 13% effort
- 2016-2017 Principal Investigator. Identifying new surrogates for irrigation water. Funded by: Arizona Department of Agriculture. Total cost: \$65,441; 10% effort
- 2016-2017 Co-Principal Investigator. Pathogen Transport to Produce via Irrigation. Funded by: Arizona Department of Agriculture. Total cost: \$60,000. 10% effort
- 2016-2017 Principal Investigator. A novel approach to quantify climate changes effects on drinking water quality. Funded by: University of Arizona. Total cost: \$8,955; 5% effort

- 2018-2019 Co-Investigator. Investigation into PFAS occurrence in water and health outcomes. Funded by: Pima County, AZ. Total cost: \$30,000; 5% FTE
- 2019-2020 Co-Principal investigator. A mathematical modeling approach to address drinking water quality disparities between rural and urban communities in Arizona. Funded by: Arizona Area Health Education Centers. Total cost: \$4,762; 1% FTE
- 2020 Co-Investigator. Ensuring water, food safety, and public health using the compact Illumina iSeq100 System. Submitted to RII Equipment Enhancement Fund FY20. Under review

### **Industry**

- 2014 Co-Principal Investigator. Hospital Field Study of T1 Air Disinfectant Recirculator Efficacy Against Viral Tracers. Funded by: Aerobiotix Inc. Total cost: \$23,427; 20% effort
- 2016 Co-Principal Investigator. Controlled Laboratory Chamber Study of Antimicrobial Efficacy over Long-term Use. Funded by: Knowles Foundation. Total cost: \$33,911; 25% effort
- 2016 Co-Principal Investigator. Impact of Safeguard on fecal bacterial load on humans and household fomites. Funded by: Procter & Gamble Co. Total cost: \$80,000; 20% effort
- 2016 Co-Principal Investigator. Cost benefits of point of use devices in reduction of health risks from drinking water. Funded by: Water Quality Association (WQA). Total cost: \$60,000; 15% effort
- 2017-2018 Principal investigator. Controlled Laboratory Chamber Study of Antimicrobial Efficacy. Funded by: PetAirapy LLC. Total cost: \$33,000; 10% effort
- 2017-2019 Co-Investigator. Household POU Filters: Tools for Long-Term, Large Volume Monitoring of Tap Water Quality and Human Health Risks. Funded by: Water Quality Research Foundation. Total cost: \$50,000; 3% effort
- 2019-2020 Principal investigator. Method comparison for enumeration of E. coli in agriculture water systems. Funded by: Neogen Corporation. Total cost: \$30,000, 2% effort

### **Private Foundation**

- 2007-2008 Lead investigator. Investigation of water quality in the Coldwater River Watershed. Funded by: Coldwater River Watershed Council. Total cost: \$3840; 5% effort

- 2008 Lead investigator. West Lake Improvement Association Barberry Drain at West Lake preliminary water quality testing. Funded by: West Lake Improvement Association. Total cost: \$1000; 5% effort
- 2008 Lead investigator. Investigation of water quality and sources associated with the Buck Creek Watershed. Funded by: City of Kentwood, Michigan. Total cost: \$4860; 10% effort
- 2009 Lead investigator. Improving Grand Traverse Bay water quality through Healthy Beaches campaign. Funded by: The Watershed Center Grand Traverse Bay. Total cost: \$15,600; 10% effort
- 2009-2010 Lead investigator. Investigation of water quality and source tracking in Gull Lake watershed, Kalamazoo County, Michigan. Funded by: Four Township Water Resources Council. Total cost: \$3790; 10% effort

## **LIST OF COLLABORATORS (LAST 5 YEARS)**

### **Grants and Publications**

Arora, M., The University of Arizona  
 Ashbolt, N., University of Alberta  
 Aslan, A., University of Georgia Southern  
 Bartholic, J., Michigan State University  
 Bartram, J., University of North Carolina  
 Bassett, J., John Bassett Consulting  
 Beamer, P.I., The University of Arizona  
 Bell, M., The University of Arizona  
 Blackwood, A.D., University of North Carolina – Chapel Hill  
 Briggs, S., State of Michigan Department of Environmental Quality  
 Bright, K., The University of Arizona  
 Brothers, S., University of North Carolina – Wilmington  
 Boyles, R.P., University of North Carolina – Chapel Hill  
 Bruni, A.C., Environmental Company of Sao Paulo State  
 Byappanahalli, M.N., United State Geological Survey, Lake  
 Canales, R., The University of Arizona  
 Carlo, L., The University of Arizona  
 Casanova, L., Georgia State University  
 Davey, A., University of Delaware  
 Dreelin, E.A., Michigan State University  
 Edwards, M., Virginia Polytechnic and State University  
 Eisenberg, J.N.S., The University of Michigan  
 Froelich, B.A., University of North Carolina – Chapel Hill  
 Gerba, C., The University of Arizona  
 Gonzalez, R.A., University of North Carolina – Chapel Hill  
 Granillo, B., The University of Arizona  
 Greene, C., NSF International  
 Haas, C., Drexel University  
 Hanrahan, I., Washington State Tree Fruit Associate  
 Hoffmann, M., Food and Drug Administration  
 Huang, Y., Michigan State University

Hyndman, D., Michigan State University  
Ives, R., Michigan State University  
Kahn-Rivadeneira, P., The University of Arizona  
Kendall, A., Michigan State University  
Klimecki, W., The University of Arizona  
Lamparelli, C.C., Environmental Company of Sao Paulo State  
Larson, Marilyn A., University of Nebraska Medical Center Department  
Lauer, K., University of North Carolina – Chapel Hill  
Litaker, W., National Oceanic and Atmospheric Administration  
Loh, M.M., Institute of Occupational Medicine  
Lopez-Galvez, N., The University of Arizona  
Lothrop, N., The University of Arizona  
Lutz, E., The University of Arizona  
Martin, S., Michigan State University  
Medema, G., Delft University of Technology  
Meschke, J., University of Washington  
Miller, J., NSF International  
Mraz, A., Ohio State University  
Munoz, K., University of Arizona  
Noble, R., University of North Carolina – Chapel Hill  
Ozevin, D., University of Illinois at Chicago  
Progreba-Brown, K., The University of Arizona  
Pruden, A., Virginia Polytechnic and State University  
Quintanar, D., Tucson Water  
Ravishankar, S., The University of Arizona  
Reynolds, K., The University of Arizona  
Rivadeneira, P., The University of Arizona  
Rock, C., The University of Arizona  
Roiko, A., Griffith University  
Rose, J., Michigan State University  
Sato, M.I.Z., Environmental Company of Sao Paulo State  
Sexton, J., The University of Arizona  
Snedecker, A.H., University of North Carolina – Chapel Hill  
Sugeng, A., The University of Arizona  
Viswasam, J., Georgia State University  
Wade, T., United States Environmental Protection Agency  
Wagoner, R., The University of Arizona  
Weber, M., The University of Arizona  
Weir, M., The University of Ohio  
Whitman, R.L., United State Geological Survey  
Wilkinson, S.T., The University of Arizona  
Wilson, A., The University of Arizona

**Student advising (Primary research or program advisor)**

*The University of Arizona*

PhD

2014-2015	Steven Hadeed
2016-2017	Valerie Madera-Garcia
2017-2018	Modhi Alshammari

2017-2018 Daniel Troup  
2016-2019 Elkana Kurgat  
2018-present Emily Cooksey

Masters of Science (MS)

2015 Kyle Brown  
2015-2016 Modhi Alshammari  
2016-2017 Amanda Wilson  
2016-2017 Daniel Troup  
2016-2018 Kimberley Munoz  
2017-present Jordan Siena

Masters of Public Health (MPH)

2016-2017 Dametreea Carr  
2016-2017 Siyi Lei  
2017-2018 Claudia Diaz-Combs  
2017-2018 David Contreras  
2017-2018 Fernanda Garavito  
2017-2018 Erik Ornelas  
2018-present Kylie Boyd  
2018-present Sarah Gruzo  
2018-present Andrew Hermanski  
2018-present Tun Nef

Independent studies

2016 Jennie Pearce-Walker

Undergraduate students

2014 Jonathan Viswasam  
2018 Payton De La Cruz  
2018-2019 Mandie White  
2019 Kelsey Camps (Honors College)

*The University of North Carolina-Chapel Hill*

2012 Sara Posey (Undergraduate)  
2013 Kellen Lauer (Masters)

*Michigan State University*

2008-2009 Benjamin Schmidt (Masters)  
2008-2010 Mustafa Mazher (Masters)  
2008, 2009, 2011 Christian Beato Melendez (Undergraduate)