Eunice A. Varughese, Microbiologist, in EPA's National Exposure Research Laboratory

Exposure Methods and Measurements Division
Mailing Address

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Area of Expertise: Develop innovative and sustainable methods for detection of multiple microbes in recreational, drinking, and wastewater matrices. Expertise is in using cell culture (in vitro) methods to improve the detection of waterborne protozoan parasites and utilizing proteomics to determine exposure factors involved in virulence on the host side and pathogen side. In addition, I work on development of molecular methods for detection of viruses and parasites, improving methods to determine occurrence of viruses and parasites in water, molecular applications in determining efficiency of disinfectants on bacterial spores and parasites. To perform my work, I use a variety of tools, such as microscopy, PCR platforms, flow cytometry, and robotics to perform high-throughput analysis for molecular applications.

Select Publications:

Fout GS, Cashdollar JL, Griffin SM, Brinkman NE, Varughese EA, Parshionikar SU. EPA Method 1615. Measurement of Enterovirus and Norovirus Occurrence in Water by Culture and RT-qPCR. Part III. Virus Detection by RT-qPCR. J Vis Exp. 2016 Jan 16;(107).

Varughese EA, Kasper S, Anneken EM, Yadav JS. SHP-2 Mediates *Cryptosporidium parvum* Infectivity in Human Intestinal Epithelial Cells. PLoS One. 2015 Nov 10; 10(11):e0142219. doi: 10.1371/journal.pone.0142219.

Fout GS, Cashdollar JL, Varughese EA, Parshionikar SU, Grimm AC. EPA Method 1615. Measurement of enterovirus and norovirus occurrence in water by culture and RT-qPCR. I. Collection of virus samples. J Vis Exp. 2015 Mar 28;(97). doi: 10.3791/52067.

Varughese EA, Bennett-Stamper CL, Wymer LJ, Yadav JS. A new in vitro model using small intestinal epithelial cells to enhance infection of *Cryptosporidium parvum*. J Microbiol Methods. 2014 Nov;106:47-54. doi: 10.1016/j.mimet.2014.07.017.

Varughese EA, Cashdollar JL, Anneken EM, Shaw N, Muhammad N, Silva G, Namboodiri V. Evaluation of a Multi-Barrier Treatment System for the Removal of Adenovirus 2 and *Cryptosporidium parvum* from Drinking Water. 2014. U.S. Environmental Protection Agency, Washington, DC, EPA/600/XX-15/006.

Cashdollar JL, Brinkman NE*, Griffin SM*, McMinn BR*, Rhodes ER*, Varughese EA*, Grimm AC, Parshionikar SU, Wymer L, Fout GS. Development and evaluation of EPA method 1615 for detection of enterovirus and norovirus in water. Appl Environ Microbiol. 2013 Jan;79(1):215-23. doi: 10.1128/AEM.02270-12. *=contributed equally

View more research publications by Eunice Varughese.

Education:

- Ph.D., Environmental Genetics & Molecular Toxicology, University of Cincinnati School of Medicine, part-time (2005-2015)
- M.S., Microbiology, Baylor University, Waco, TX, 1999
- B.S., Biology, Baylor University, Waco, TX, 1997

Professional Experience:

- Microbiologist, USEPA, ORD, NERL-MCEARD, Cincinnati, OH, 2003 – Present
- Microbiologist, Apyron Technologies, Inc., Atlanta, GA, 2000 – 2002
- Research Associate, Baylor College of Medicine, Houston, TX, 1999 – 2000

Honors and Awards:

- US EPA Scientific and Technological Achievement Award (STAA), 2013
- Project Advisory Committee Member, Water Research Foundation, 2008-2013
- ORD Honor Award, Outstanding Technical Assistance to Regions or Program Offices, US EPA, 2012
- Mentor for Student Contractor, US EPA, 2012-2015
- Bronze Medal for Commendable Service, US EPA, 2011
- US EPA Scientific and Technological Achievement Award (STAA), 2011
- Ohio Valley Society of Toxicology, Best Poster Presentation, 2010
- US EPA Scientific and Technological Achievement Award (STAA), 2009
- NERL Quality Assurance Award, NERL Honor Awards, US EPA, 2009