

DANIEL E. WILLIAMS

4233 Wells Road
Knoxville, TN 37920

(865)385-0118
dwilli34@utk.edu

SUMMARY: Dedicated scientist with over thirty years of experience in laboratory and field research. Possess strong diagnostic and problem-solving skills. Have great interpersonal skills and a proven ability to work effectively with individuals on all levels.

EXPERIENCE

Governor's Chair for Civil Environmental Biotechnology 2020-Current
Center for Environmental Biotechnology 2002-2022
University of Tennessee Knoxville, TN
Research Associate

- Design and optimize quantitative PCR techniques for the detection of microbial pathogens in surface waters.
- Construct 16s libraries of *Bacteroides* from various sources.
- Primary operator and trainer for the MiSeq.
- Proven success at preparing libraries for 16S, metagenomic, and transcriptomic sequencing.
- Conduct groundwater field research at Y-12 for ENIGMA program.

Summitec, Oak Ridge National Labs Oak Ridge, TN
Technical Writer 2002-2008

- Review aquatic toxicology reports for the USEPA-OECD's public right-to-know, high production volume, chemical program.

PAI-SAIC-SoBran, USEPA-AWBERC Cincinnati, OH
Aquatic Biologist/Biochemist 1996 –2002

- Developed, optimized and analyzed quantified RT-PCR experiments for *metallothionein*, *cytochrome P-450*, and *vitellogenin* expression in *H.azteca*, *O. mykiss* juveniles/adult tissues and *P.promelas* embryos/larvae/adults, which had been exposed to various known compounds or environmental waters.
- Responsible for the planning and successful execution of the biomarker portion of several extensive USEPA studies: 1999 Large River Method Comparison (LRMC), 1998 spring and fall sampling for the Lake Erie River Mouth (LERM), 1997-1998 Mid-Atlantic Integrated Assessment (MAIA), 1996 Regional Estuarine Monitoring and Assessment Program (REMAP) of the Ohio eastern corn-belt plain.
 - Field season responsibilities varied for each study: Helped coordinated equipment and field crews, trained personnel, and acted as crew leader for groups of 3 to 6 aspiring field scientists. Participated in periphyton, aquatic macro-invertebrate, fish, water and sediment collections. Assessed and documented physical habitat and identified fish. On site fish tissue collection included dissection of plasma/muscle/bile samples and field processing, centrifuging, freezing, shipping, labeling for biomarker, chemical (metals/organic compounds) and genetic diversity research.
 - Laboratory work included Biomarker Analysis performed on frozen fish samples: Hepatic tissue for microsomal preparation and kinetic EROD (cytochrome P450) activity, fish plasma for various blood chemistries, fish bile for naphthalene (NAPH) and benzo[a]pyrene (BAP) metabolites.
- Participated in developing an ELISA assay for the CYP 1A1 protein. Performed aquatic toxicity tests on *C.dubia*, *D.magna*, *L.minor*, and *P.promelas* and chlorophyll analyses on *L.minor*.

DANIEL E. WILLIAMS

4233 Wells Road
Knoxville, TN 37920

(865)385-0118
dwilli34@utk.edu

Dyncorp-TAI, USEPA-AWBERC/Newtown

Cincinnati, OH
1989-1996

Biologist

- Coordinated, trained personnel, and supervised biomarker field expeditions in conjunction with the Ohio EPA for five years. These studies focused on point source discharges at some of Ohio's most polluted streams and Lake Erie river mouth studies in the spring and fall of 1990-1993 and REMAP 1995. Analyzed data and wrote technical reports on biomarker results for the Sheboygan, Ottawa, and Tuscarawas River studies.
- Developed, optimized and trained personnel on end point and kinetic EROD assays for several species of freshwater fish. Assisted in developing and optimizing glutathione assays and heat shock protein westerns for fish.
- Cultured and performed aquatic toxicity tests on freshwater vertebrates, invertebrates and plants.

Department of Ophthalmology, University of Tennessee

Memphis, TN.
1985-1986

Technician

- Prepared samples and printed photographs for various electron microscopy studies.
- Performed corneal and retinal research on *R. rattus*.

EDUCATION

UNIVERSITY OF CINCINNATI

Cincinnati, OH

Continuing Education: Microbiology, Pathogenic Micro, Environmental Chemistry, etc.

MEMPHIS STATE UNIVERSITY

Memphis, TN

Master of Science, Biology, Graduate Teaching and Research Assistant

1986-1991

Thesis: The Joint Toxic Effect of Two Herbicides on *Ceriodaphnia dubia* and *Pimephales promelas*.

Honor: Sigma Xi Research in Aid Grant for Graduate School

GRINNELL COLLEGE

Grinnell, IA

Bachelor of Arts, Biology

1981-1985

Activities: Pep Band Trombone, Basketball, Cross Country, ΣΠΟ Society of Displaced Memphians.

PUBLICATIONS & PRESENTATIONS

Fukai*, I., K. Ash, D. Williams, A. P. Arkin, and T. C. Hazen. Invited NNSA Webinar. Microbial Signatures of Nuclear Fuel Cycle Activities in the Environment. June 17, 2022. Online. MTV DOE NNSA 2022 University Program Review (UPR) invited by Sean C. Stave PNNL.

Fukai*, I., K. Ash, D. Williams, A. P. Arkin, and T. C. Hazen. Invited. Microbial Signatures of Nuclear Fuel Cycle Activities in the Environment. June 6-8, 2022. Ann Arbor, MI. MTV DOE NNSA 2022 University Program Review (UPR).

Li*, Y., K. Ash, D. C. Joyner, D. E. Williams, I. Alamilla, P. McKay, C. Iler, B. Green, F. Kara-Murdoch, C. Swift, F. Löffler, and T. C. Hazen. Contributed. Decay of SARS-CoV-2 RNA at 4° and 20°C in raw university student residence for wastewater-based epidemiology. Washington, DC. June 9-13, 2022. ASM Microbe 2022.

Hazen, T. C., Y. Li, K. Ash, D. C. Joyner, D. E. Williams, P. McKay, I. Alamilla, and C. North. Invited. Raw wastewater surveillance for SARS-CoV-2 in the University of Tennessee student residential buildings. April 6, 2022. Charlotte, NC. 2022 Global EnviroSummit.

(<https://www.envirosummit.com/schedule/>).

DANIEL E. WILLIAMS

4233 Wells Road
Knoxville, TN 37920

(865)385-0118
dwilli34@utk.edu

Ash, K. T., Y. Li, D. C. Joyner, D. E. Williams, I. Alamilla, P. McKay, B. Green, C. Iler, F. Kara-Murdoch, C. Swift, F. Löffler, and T. C. Hazen. Contributed. Miles Away From Ordinary: Raw Wastewater Surveillance For The Novel SARS-CoV-2 Virus On The University of Tennessee - Knoxville Campus. World Microbe Forum, Online, June 20-24, 2021. American Society for Microbiology and Federation of European Microbiological Societies. World Microbe Forum <meetingsmarketing@asmusa.org>

Wu Xiaofen, Chauhan A, Layton AC, Lau Vetter MCY, Stackhouse BT, Williams DE, Whyte L, Pfiffner SM, Onstott TC, Vishnivetskaya TA. 2021 Comparative Metagenomics of the Active Layer and Permafrost from Low-Carbon Soil in the Canadian High Arctic. Environ Sci Technol. 2021 Sep 21;55(18):12683-12693. doi: 10.1021/acs.est.1c00802. Epub 2021 Sep 2. PMID: 34472853.

Ash, K. T., I. Alamilla, I., Y. Li, D. C. Joyner, D. E. Williams, P. J. McKay, B. M. Green, C. Iler, S. E. DeBlander, F. Kara-Murdoch, C. M. Swift, and T. C. Hazen. 2021. Coding-Complete Genome Sequence of SARS-CoV-2 obtained from Raw Sewage on University of Tennessee Knoxville Campus. Microbiology Resource Announcements 10(47):e01049-21. <https://doi.org/10.1128/MRA.01049-21>. (0.19, 1).

Moon, J.-W., C. J. Paradis, D. C. Joyner, F. von Netzer, E. L. Majumder, E. Dixon, M. Podar, G. Xiaoxuan, P. J. Walian, H. J. Smith, X. Wu, G. M. Zane, K. S. Walker, M. P. Thorgersen, F. L. Poole II, L. Lui, B. G. Adams, K. B. De León, S. S. Brewer, D. E. Williams, K. A. Lowe, M. Rodriguez, Jr., T. L. Mehlhorn, S. M. Pfiffner, R. Chakraborty, A. P. Arkin, J. D. Wall, M. W. Fields, M. W. W. Adams, D. A. Stahl, D. A. Elias and T. C. Hazen. 2020. Chemosphere 255:126951. <https://doi.org/10.1016/j.chemosphere.2020.126951>. (8.943, 8).

Moon, J.-W., C. J. Paradis, D. C. Joyner, F. von Netzer, E. L. Majumder, E. Dixon, M. Podar, G. Xiaoxuan, P. J. Walian, H. J. Smith, X. Wu, G. M. Zane, K. S. Walker, M. P. Thorgersen, F. L. Poole II, L. Lui, B. G. Adams, K. B. De León, S. S. Brewer, D. E. Williams, K. A. Lowe, M. Rodriguez, Jr., T. L. Mehlhorn, S. M. Pfiffner, R. Chakraborty, A. P. Arkin, J. D. Wall, M. W. Fields, M. W. W. Adams, D. A. Stahl, D. A. Elias and T. C. Hazen. 2019. Integrated characterization of subsurface media from locations up- and down-gradient of a uranium-contaminated aquifer J. bioRxiv <https://doi.org/10.1101/712562>. (NA, 0)

Layton, Alice, A. Smartt, A. Chauhan, S. Ripp, D. Williams, W. Burton, S. Moser, J. Phillips, A. Palumbo, G. Saylor 2012. Ameliorating risk: Culturable and metagenomic monitoring of the 14 year decline of a genetically engineered microorganism at a bioremediation field site. OMICS J. Bioremed. Biodegrad.. S1:009. 10.4172/2155-6199.S1-009.

Ferguson, Andrew, A. Layton, B. Mailloux, P. Culligan, D. Williams, A. Smartt, Abby & Saylor, Gary & Feighery, John & McKay, Larry & Knappett, Peter & Alexandrova, Ekaterina & Arbit, Talia & Emch, Michael & Escamilla, Veronica & Ahmed, Kazi Matin & Alam, Md Janahgir & Streatfield, Peter & Yunus, Mohammad & van Geen, Alexander. 2012. Comparison of fecal indicators with pathogenic bacteria and rotavirus. The Science of the total environment. 431. 314-22. 10.1016/j.scitotenv.2012.05.060.

Knappett, P., L. McKay, A. Layton, D. Williams, J. Alam, Md. Huq, J. Mey, J. Feighery, P. Culligan, B. Mailloux, J. Zhuang, V. Escamilla, M. Emch, E. Perfect, G. Saylor, K.M. Ahmed, A. van Geen. 2011. Implications of Fecal Bacteria Input from Latrine-Polluted Ponds for Wells in Sandy Aquifers. Environmental science & technology. 46. 1361-70. 10.1021/es202773w.

Knappett, P., V. Escamilla, A. Layton, L. McKay, M. Emch, D. Williams, R. Huq, J. Md. Alam, L. Farhana, B. Mailloux, A. Ferguson, G. Saylor, K.M. Ahmed, A. van Geen 2011. Impact of Population and Latrines on Fecal Contamination of Ponds in Rural Bangladesh. The Science of the total environment. 409. 3174-82. 10.1016/j.scitotenv.2011.04.043.

DANIEL E. WILLIAMS

4233 Wells Road
Knoxville, TN 37920

(865)385-0118
dwilli34@utk.edu

Knappett, P., A. Layton, L. McKay, D. Williams, B. Mailloux, M.R. Huq, Md. J. Alam, K.M. Ahmed, Y. Akita, M. Serre, G. Sayler, A. van Geen. 2011. Efficacy of Hollow-Fiber Ultrafiltration for Microbial Sampling in Groundwater. *Ground Water*. 49. 53 - 65. 10.1111/j.1745-6584.2010.00712.x.

Chauhan, Archana, A. Layton, D. Williams, A. Smartt, S. Ripp, K. Karpinets, S. Brown, G. Sayler 2011. Draft Genome Sequence of the Polycyclic Aromatic Hydrocarbon-Degrading, Genetically Engineered Bioluminescent Bioreporter *Pseudomonas fluorescens* HK44. *Journal of bacteriology*. 193. 5009-10. 10.1128/JB.05530-11.

Knappett, Peter, V. Escamilla, A. Layton, L. McKay, M. Emch, B. Mailloux, D. Williams, M. Huq, J. Alam, L. Farhana, A. Ferguson, G. Sayler 2010. Factors Influencing Fecal Contamination in Pond of Bangladesh. AGU Fall Meeting Abstracts.

Johnson, Trisha, L. McKay, A. Layton, S. Jones, G. Johnson, J. Cashdollar, D. Dahling, L. Villegas, G. Fout, D. Williams, G. Sayler, 2010. Viruses and Bacteria in Karst and Fractured Rock Aquifers in East Tennessee, USA. *Ground water*. 49. 98-110. 10.1111/j.1745-6584.2010.00698.x.

Knappett, Peter, L. McKay, A Layton, Alam Md. Janahgir, D. Williams, M. Huq, B. Mailloux, A. Ferguson, J. Feighery, P. Culligan, V. Escamilla, M. Emch 2009. Transport of fecal-derived microorganisms from latrine ponds to aquifers in Bangladesh. AGU Fall Meeting Abstracts.

Lattier DL, Reddy TV, Gordon DA, Lazorchak JM, Smith ME, Williams DE, Wiechman B, Flick RW, Miracle AL, Toth GP 2002. 17alpha-ethynylestradiol-induced vitellogenin gene transcription quantified in livers of adult males, larvae, and gills of fathead minnows (*Pimephales promelas*). *Environ Toxicol Chem*. Nov; 21(11):2385-93.

Lin, E.L.C., T.W. Neiheisel, J. Flotemersch, B. Subramanian, D.E. Williams, M. Millward, S. Cormier 2001. Historical Monitoring of Biomarkers of PAH Exposure of Brown Bullhead in the Remediated Black River and the Cuyahoga River, Ohio. *J. Great Lakes Res*. 27(2):191-198.

Cormier, S., E.L.C. Lin, M. Millward, M.K. Schubauer-Berigan, D.E. Williams, B. Subramanian, R. Sanders, B. Counts, D. Altfater 2000. Using Regional Exposure Criteria and Upstream Reference Data to Characterize Spatial and Temporal Exposures to Chemical Contaminants. *Environ Toxicol Chem* 19:1127-1135.

Tiersch, T.R., S. Cormier, T. Neiheisel, D. Williams 1993. Natural Occurrence of Triploidy in a Wild Brown Bullhead Catfish. *Trans. Am. Fish. Soc.* 122: 390-392.

Williams, D.E., J. Amstutz, R.N. Racine, S.M. Cormier, E.L. Lin 1991. Comparison of Hepatic Ethoxyresorufin-o-deethylase Activities in Atlantic Tomcod (*Microgadus tomcod*) from the Hudson and Royal River. Poster presentation at annual SETAC meeting. Seattle, WA.

Williams, D.E., J. Lazorchak, M. Smith, D. McMullen 1990. Comparison of Two Feeding Regimes to *Ceriodaphnia dubia*. Poster presentation at annual SETAC meeting. Arlington, VA.

Williams, D.E., S.J. Klaine 1989. Effect of Atrazine and Clay Interactions on Metolachlor Toxicity. Poster presentation at annual SETAC meeting. Toronto, Ontario, Canada.

SKILLS

Instrumentation: Illumina MiSeq, Total Organic Carbon Analyzer, Fluoroimager, Gas Chromatograph, HPLC, Hitachi Auto Analyzer, Coulter Counter, fish electroshocking equipment, spectrophotometers, spectrofluorometer, water quality instrumentation

DANIEL E. WILLIAMS

4233 Wells Road
Knoxville, TN 37920

(865)385-0118
dwilli34@utk.edu

Computer: Lotus, Quattro pro, Harvard Graphics, Microsoft Excel, Statgraphics, SAS.

Molecular: Cloning, RT-PCR, electrophoreses and Real Time PCR, RNA and DNA
Isolation/Quantification, DNA unwinding assay

Biochemical: protein determinations, EROD assay, ELISAs and western blots