Allison R Mason, PhD

MICROBIOLOGIST

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Summary ____

I'm a microbial ecologist with experience in computational biology and management of multivariate projects. My research encompasses soil microbial ecology and terrestrial vertebrate decomposition. I have experience with multiple programming languages, with an expertise in R and execution of microbiome data analysis and package development. I'm passionate about open source science, reproducible research, and teaching computational skill to individuals of all levels.

Skills and Expertise _____

Computational	Research	Laboratory
R – R Markdown – R Package Development – Quarto –Git/Github – Conda – Unix/zsh	Soil sampling/Field research – Amplicon Sequencing – Data Analysis/Visualization – Soil microbiome/necrobiome – Metatranscriptomics – Metabolomics – Biostatistics – Reproducible Research – Machine learning	DNA/RNA extraction – PCR/qPCR/RT-qPCR – Cell culture - Fluorometric assays – Cell enumeriation – media/solution preparation – Cloning – Gel electrophoresis – Western blot

<u>lılı</u> Experience _____

BiologistU.S. Geological Survey

RESTON MICROBIOLOGY LAB

Nov 2024 - Feb 2025

- Conducted laboratory experiments to better understand microbial manganese-cycling in ecosystems impacted by oil and gas production.
- Conducted laboratory experiments to better underdtand microbial suflur-cycling in ecosystems impacted by acid mine drainage.
- Created a center code club to teach early career scientits R language skills.
- Oversaw laboratory operations.
- · Developed, mananged, and executed data anlaysis workflows.

Postdoctoral Research Fellow (remote)

Univeristy of Michigan

Sep 2022 - Nov 2024

SCHLOSS LAB

- Development of an R package for microbiome and multi-omics research/data analytics.
- · Project Team Lead, including oversight and management of progress for masters-level bioinformaticians.
- Expanded foundational knowledge of metabolomics.
- Cultivated skills in reproducible research, markdown, git/github, quarto, data analysis.
- Taught computational skills to coding beginners at institutional workshops.

Graduate Research Assistant

University of Tennessee-Knoxville

DEBRUYN LAB

Aug 2017 - Aug 2022

- Conducted DNA extractions and 16S/ITS amplicon sequencing to characterize soil microbial succession during terrestrial vertebrate decomposition.
- Led a project characterizing soil microbial gene expression via metatranscriptomics.
- · Managed multivariate datasets while gaining computational skills including Mothur, R, unix, conda, etc.
- Developed and executed methods for soil and fluid samples collection.
- Measured soil physical and chemical parameters via soil extractions and fluorometric assays.
- · Managed and collaborated on multiple field experiments: responsible for preparing and executing field sampling.
- · Navigated, communicated, and collaborated with interdisciplinary research groups to accomplish grant aims and publication.

Intern (biology)

U.S. Geological Survey

OHIO WATER MICROBIOLOGY LABORATORY

Jul 2015 - Jul 2017

- Handled and prepared water and environmental samples from across the country for various tests such as: enumeration of enterococci, aerobic endospores, and virus plaques (1601 and 1602) and multiple source tracking.
- Analyzed and reported test results.
- Prepared solutions and media and maintained the lab.

Boris-Lawrie Lab Jan 2014 - May 2015

- · Learned about protein-protein interactions to understand a suspected gene splicing product.
- Applied techniques such as cell culture and gene cloning (plasmid and site directed mutagenesis).
- Acquired skills in RT-PCR, western blotting, gel electrophoresis, and maintaining cell lines.

<u>m</u> Education _

PhD Microbiology

University of Tennessee-Knoxville

Aug 2017 - Aug 2022

DEPARTMENT OF MICROBIOLOGY• Advisor: Jennifer DeBruyn

BS MicrobiologyThe Ohio State University

Aug 2013 - May 2017

Aug 2022 - Jan 2023

2021 - 2022

COLLEGE OF ARTS AND SCIENCES

• Minor: Forensic Science

UNIVERSITY OF TENNESSEE-KNOXVILLE

Teaching and Mentorship

Teaching

Workshop on R, the Unix Shell, & Git/GitHub

U-M CARPENTRIES Dec 2023

Workshop on R, the Unix Shell, & Git/GitHub

U-M CARPENTRIES Mar 2023

BIOL160 Cellular and Molecular Biology

Department of Biochemistry &

Cellullar & Molecular Biology

BIOL229 General Microbiology Laboratory

Department of Biological Sciences

University of Tennessee-Knoxville Aug 2021 - Jan 2023

BIOL229 General Microbiology LaboratoryDepartment of Biological Sciences

University of Tennessee-Knoxville Aug 2018 - Jan 2019

MICR210 Allied Health Microbiology

Department of Microbiology

University of Tennessee-Knoxville

Aug 2017 - May 2018

Mentorship

Brooke Tally (Honors Undergraduate Student)

University of Tennessee-Knoxville

Victoria Beard (Honors Undergraduate Student)

University of Tennessee-Knoxville

DEPARTMENT OF MICROBIOLOGY 2019 - 2020

Publications

DEPARTMENT OF MICROBIOLOGY

- 1. **Allison R. Mason**, Lois S. Taylor, Naomi Gilbert, Steven S. Wilhelm, Jennifer M. DeBruyn. (2025). Microbial Communities Collectively Recycle Cadavers Over One Year of Human Decomposition. *Nature Communications (submitted)*.
- 2. **Allison R. Mason**, Gregory Johnson, Jr, Joseph Krampen, Jennifer N. T. Nguyen, Marcy J. Balunas, Patrick D. Schloss. (2025). mpactR: an R adaptation of the metabolomics peak analysis computational tool (MPACT) for use in reproducible data analysis pipelines. *mSphere*. doi: 10.1128/mra.00997-24
- 3. **Allison R. Mason**, Hayden S. McKee-Zech, Dawnie W. Steadman, Jennifer M. DeBruyn. (2024). Environmental predictors impact microbial-based postmortem interval (PMI) estimation models within human decomposition soils. *PLoS ONE*. doi: 10.1371/journal.pone.0311906
- 4. Lois S. Taylor, **Allison R. Mason**, Hannah Noel, Michael Essington, Mary Davis, Veronica Brown, Dawnie W. Steadman, Jennifer M. DeBruyn. (2024). Transient hypoxia drives soil microbial community dynamics and biogeochemistry during human decomposition *FEMS Microbiology Ecology*. doi: 10.1093/femsec/fiae119

- 5. **Allison R. Mason**, Lois S. Taylor, Jennifer M. DeBruyn. (2023). Microbial ecology of vertebrate decomposition in terrestrial ecosystems. *FEMS Microbiology Ecology*. doi: https://doi.org/10.1093/femsec/fiad006
- 6. **Allison R. Mason**, Hayden S. McKee-Zech, Katharina M. Hoeland, Mary C. Davis, Shawn R. Campagna, Dawnie W. Steadman, Jennifer M. DeBruyn. (2022). Body mass index (BMI) impacts soil chemical and microbial response to human decomposition. *mSphere*. doi: https://doi.org/10.1128/msphere.00325-22
- 7. Sarah W. Keenan, Alexandra L. Emmons, Lois S. Taylor, Gary Phillips, **Allison R. Mason**, Amy Z. Mundorff, Ernest C. Bernard, Jennifer M. DeBruyn. (2018). Spatial impacts of a multi-individual grave on microbial and microfaunal communities and soil biogeochemistry. *PLoS ONE*. doi: https://doi.org/10.1371/journal.pone.0208845

Presentations ___

Talks

An investigation of intrinsic and extrinsic factors that influence soil microbial succession during human decomposition.

The University of Tennessee-Knoxville

DISSERTATION DEFENSE

JUN 2022

Body mass index (BMI) impacts on soil chemical and microbial responses during human decomposition.

Seattle, WA

AMERICAN ACADEMY OF FORENSIC SCIENCES (AAFS)

FEB 2022

Human-associated Microbes in a Subsurface Human Decomposition System.

University of Tennesse-Knoxville

WOMEN IN STEM SYMPOSIUM

NOV 2018

Posters

Tuning microbial succession-based post-mortem interval estimation models: effect of environmental parameters on model prediction.

Seattle, WA

AMERICAN ACADEMY OF FORENSIC SCIENCES (AAFS)

FEB 2022

Inter-Individual Variation in Soil Chemistry and Microbial Ecology During Human Decomposition.

Virtual

AMERICAN ACADEMY OF FORENSIC SCIENCES (AAFS)

FFB 2021

Variability in Soil Chemistry and Microbial Ecology During Early Stages of Human Decomposition

Virtual

SOIL SCIENCE SOCIETY OF AMERICA (SSSA)

NOV 2020

Assessment of Variability in Soil Chemistry and Microbial Ecology During Early Stages of Human Decomposition.

Virtual
JUN 2020

AMERICAN SOCIETY OF MICROBIOLOGY (ASM)

Spatial Impact of a Multi-individual Grave on Soil Biochemistry and Microbial Ecology.

San Diego, CA

SOIL SCIENCE SOCIETY OF AMERICA (SSSA)

JAN 2019

Spatial Impact of a Multi-individual Grave on Soil Biochemistry and Microbial Ecology.

Atlanta, GA

AMERICAN SOCIETY OF MICROBIOLOGY (ASM)

JUN 2018

Collaborator Products

- 1. Lois Taylor, **Allison Mason**, Jennifer DeBruyn (FEB 2025). Seasonal Patterns of Fly-Associated Ignatzschineria in Human Decomposition- Impacted Soils. American Academy of Forensic Sciences (AAFS) Baltimore, MD
- 2. Hayden S McKee-Zech, Erin A. Patrick, **Allison R. Mason**, Katha Hoeland, Charity Owings, Sarah T Schwing, Thomas Delgado, Amanda May, Mary C. Davis, Jennifer Debruyn, Shawn Campagna, Dawnie W Steadman (AUG 2024). Field Data Collection Protocols for NIJ Grant The Impact of Drugs on Human Decomposition and the Postmortem Interval: Insect, Scavenger and Microbial Evidence.
- 3. **Allison R. Mason**, Lois S. Taylor, Jennifer M. DeBruyn (NOV 2022). Metatranscriptomics Reveals Soil Microbial Functional Succession over One Year of Human Decomposition. ASA, CSSA, SSSA International Annual Meeting NA
- 4. Lois S. Taylor, **Allison R. Mason**, Jennifer M. DeBruyn (FEB 2022). Seasonal comparisons between soil fungal and bacterial communities impacted by human decomposition. American Academy of Forensic Sciences (AAFS) NA

- 5. Dawnie W. Steadman, Jennifer M. DeBruyn, Shawn R. Campagna, **Allison R. Mason**, Hayden S. McKee, Katharina M. Hoeland, Sarah T. Schwing, Erin A. Patrick, Mary C. Davis, Amanda L. May, Thomas A. Delgado (FEB 2021). The Impact of Drugs on Human Decomposition and the Postmortem Interval: Insect, Scavenger and Microbial Evidence. National Institute of Justice (NIJ) Forensic Science Research and Development Symposium Virtual
- 6. Lois S. Taylor, **Allison R. Mason**, Jennifer M. DeBruyn (FEB 2021). Seasonal Differences in Soil Fungal Community Successional Patterns Impacted by Long-term Human Decomposition. American Academy of Forensic Sciences (AAFS) Virtual
- 7. Katharina M. Hoeland, Amanda L. May, Hayden S. McKee, Mary C. Davis, Sarah T Schwing, Thomas A. Delgado, Charity G. Owings, **Allison R. Mason**, Shawn R. Campagna, Jennifer M. DeBruyn, Dawnie W. Steadman, Russel L. Zaretzki (FEB 2021). Expanding Frontiers in Postmortem Toxicology: Drug Tracing in Different Postmortem Matrices during Human Decomposition using Ultra-High-Performance Liquid Chromatography-High Resolution Mass Spectrometry (UHPLC-HRMS). American Academy of Forensic Sciences (AAFS) Virtual
- 8. Amanda L. May, Katharina M. Hoeland, Hayden S. McKee, **Allison R. Mason**, Sarah T. Schwing, Charity G. Owings, Thomas A. Delgado, Mary C. Davis, Russel L. Zaretki, Jennifer M. DeBruyn, Dawnie W. Steadman, Shawn R. Campagna (FEB 2021). Using Metabolomics to Gain a Deeper Understanding of Human Decomposition. American Academy of Forensic Sciences (AAFS) Virtual
- 9. Hayden S. McKee, Charity G. Owings, Katharina M. Hoeland, Liesel Schneider, **Allison R. Mason**, Kristi Bugajski, Shawn R. Campagna, Jennifer M. DeBruyn, Dawnie W. Steadman (NOV 2020). Prescription Drugs detected in humans postmortem impact Phormia regina Meigen (Diptera: Calliphoridae) larval length. Entomological Society of America (ESA) 2020 Virtual
- 10. Victoria V. Beard, **Allison R. Mason**, Jennifer M. DeBruyn (APR 2020). Changes in Antibiotic Resistance of Soil Microbes During Human Decomposition. The Exhibition of Undergraduate Research and Creative Achievement (EUReCA) University of Tennesse-Knoxville
- 11. Katharina M. Hoeland, Amanda L. May, Hayden S. McKee, Thomas A. Delgado, Sarah T. Schwing, **Allison R. Mason**, Shawn R. Campagna, Jennifer M. DeBruyn, Dawnie W. Steadman (FEB 2020). Utilizing Metabolomics Toward Time-Dependent Metabolite Monitoring in Different Postmortem Specimens during Human Decomposition. American Academy of Forensic Sciences (AAFS) Anaheim, CA
- 12. Lois S. Taylor, **Allison R. Mason**, Ernest C. Bernard, Mary C. Davis, Dawnie W. Steadman, Jennifer M. DeBruyn (FEB 2020). Seasonal Differences in Soil Chemistry and Biology Impacted by Long-term Human Decomposition. American Academy of Forensic Sciences (AAFS) Anaheim, CA
- 13. Lois S. Taylor, **Allison R. Mason**, Ernest C. Bernard, Jennifer M. DeBruyn (AUG 2019). Nematode successional patterns in soils impacted by human decomposition. Entomological Society of America (ESA) 2019 NA

PAwards

STAR Award for Performance	2025
GEOLOGY ENERGY & MINERAL SCIENCE CENTER, U.S. GEOLOGICAL SURVEY	
Graduate Student Senate Travel Award	2022
THE UNIVERSITY OF TENNESSEE-KNOXVILLE	
Graduate Student Senate Travel Award	2019
THE UNIVERSITY OF TENNESSEE-KNOXVILLE	
Outstanding Absract Award	2018
AMERICAN SOCIETY FOR MICROBIOLOGY	
ASM Student ad Postdoctoral Travel Award	2018
AMERICAN SOCIETY FOR MICROBIOLOGY	
Graduate Student Sentate Travel Award	2018
THE UNIVERSTITY OF TENNESSEE-KNOXVILLE	

Specialized Training

R in Production workshop at posit::conf	Aug 2024
Seattle, WA	
Software Carpentries Instructor Training	Nov 2023
The University of Michigan	
Introduction to Package Development workshop at posit::conf	Sep 2023
CHICAGO, IL	

Package Development Masterclass workshop at posit::conf

MICR606 Entering Mentoring

KNOXVILLE, TN

CHIGACO, IL

Jan 2022 - May 2022

Sep 2023

Apr 2014



Instructor Nov 2023 - Present SOFTWARE CARPENTRY Member Jan 2023 - Nov 2024 U-M CARPENTRIES **Vice President** Aug 2019 - May 2021 MICROBIOLOGY GRADUATE STUDENT ASSOCIATION **Symposium Judge** Apr 2020, Apr 2019 University of Tennessee Exhibition of Undergraduate Research and Creative Achievement (EURECA) Instructor Jul 2019, Jul 2018 University of Tennessee KidsU Fun with Forensics, Adventures in Chemistry **Regional Judge** May 2017 HEALTH OCCUPATIONS STUDENTS OF AMERICA (HOSA) OHIO REGIONAL

Symposium JudgeEASTLAND-FAIRFIELD BIOSCIENCE TECHNOLOGIES CAPSTONE SYMPOSIUM