Allison R Mason, PhD

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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. 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 - 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>III</u> Experience _

Postdoctoral Research Fellow (remote)

Univeristy of Michigan

Sep 2022 - present

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.
- Expanding foundational knowledge of metabolomics.
- Cultivating skills in reproducible research, markdown, git/github, quarto, data analysis.
- Teaching 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 decompo-
- 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) United States 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.

Undergraduate Researcher

The Ohio State University

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.

m Education _

PhD Microbiology

BORIS-LAWRIE LAB

University of Tennessee-Knoxville

Aug 2017 - Aug 2022

DEPARTMENT OF MICROBIOLOGY · Advisor: Jennifer DeBruyn COLLEGE OF ARTS AND SCIENCES

· Minor: Forensic Science

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

BIOL160 Cellular and Molecular Biology

University of Tennessee-Knoxville

University of Tennessee-Knoxville

University of Tennessee-Knoxville

Department of Biochemistry & Cellullar & Molecular Biology

Aug 2022 - Jan 2023

Mar 2023

Aug 2013 - May 2017

MICR229 General Microbiology Laboratory

Department of Biological Sciences

Aug 2022 - Jan 2023

BIOL229 General Microbiology Laboratory

Department of Biological Sciences

Aug 2021 - May 2022

BIOL229 General Microbiology Laboratory

Department 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

DEPARTMENT OF MICROBIOLOGY 2021 - 2022

Victoria Beard (Honors Undergraduate Student)

University of Tennessee-Knoxville

DEPARTMENT OF MICROBIOLOGY 2019 - 2020

Publications

- 1. **Allison R. Mason**, Lois S. Taylor, Naomi Gilbert, Steven S. Wilhelm, Jennifer M. DeBruyn. (2024). Soil microbial functional succession over one year of human decomposition. (*in prep*). doi:
- 2. **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 (submitted)*. doi:
- 3. 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 (in review)*. doi:
- 4. **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
- 5. **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
- 6. 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.

DISSERTATION DEFENSE

The University of Tennessee-Knoxville

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

Seattle, WA

ILIN 2022

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)

FEB 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

AMERICAN SOCIETY OF MICROBIOLOGY (ASM)

JUN 2020

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

San Diego, CA

Soil Science Society of America (SSSA) $\,$

Atlanta, GA

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

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AMERICAN SOCIETY OF MICROBIOLOGY (ASM)

JUN 2018

Collaborator Products

- Allison R. Mason, Lois S. Taylor, Jennifer M. DeBruyn (NOV 2022). [Metatranscriptomics Reveals Soil Microbial Functional Succession over One Year of Human Decomposition.] (https://scisoc.confex.com/scisoc/2022am/meetingapp.cgi/Paper/142 ASA, CSSA, SSSA International Annual Meeting NA
- 2. 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
- 3. 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
- 4. 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
- 5. 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
- 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
- 7. 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

- 8. 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
- 9. 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
- 10. 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
- 11. Lois S. Taylor, **Allison R. Mason**, Ernest C. Bernard, Jennifer M. DeBruyn (AUG 2019). [Nematode successional patterns in soils impacted by human decomposition.](https://eco.confex.com/eco/2019/meetingapp.cgi/Paper/79167) Entomological Society of America (ESA) 2019 NA

PAwards_

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 University of Tennessee-Knoxville	

Specialized Training

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

Sep 2023

CHIGACO, IL

MICR606 Entering Mentoring

Jan 2022 - May 2022

Knoxville, TN



Member Jan 2023 - Present

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

 $\label{thm:equations} \textbf{Health Occupations Students of America (HOSA) Ohio Regional}$

Symposium Judge Apr 2014

EASTLAND-FAIRFIELD BIOSCIENCE TECHNOLOGIES CAPSTONE SYMPOSIUM