Andrew Morris, PhD

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EDUCATION

PhD Biology, (2022) *University of Oregon* — Eugene, OR

MS Soil Science, (2017) *The Pennsylvania State University* — State College, PA

BS Plant Sciences, (2014) *Cornell University* — Ithaca, NY

SKILLS

Languages and Tools: R, Bash, Git, Python, GNU Make, Linux

Selected Coursework:

- *Advanced Biological Statistics I & II* - Core concepts and methods in frequentist and Bayesian analysis using R and Stan
- *Strategies and Techniques for Analyzing Microbial Community Population Structures* - Bioinformatics and statistical training to practitioners of molecular microbial ecology and genomics

EXPERIENCE

University of Oregon — Aug 2017-Present

Post-doctoral Scholar (Mar 2022-Present) — Eugene, OR, USA

NSF Graduate Research Fellow (Aug 2017-Mar 2022)

- Published multiple scientific papers in peer-reviewed journals
- Authored and co-authored funded grant proposals including a $3 million (USD) award from NSF
- Performed DNA extraction and library prep for Illumina sequencing
- Analyzed data from next-generation sequencing (NGS) technologies including Illumina shotgun metagenomics and amplicon sequencing
- Developed bioinformatics pipelines using sequencing databases and software including BLAST, Bowtie, and SAMtools
- Performed quality control, error correction, mapping, assembly, and annotation on short read sequencing data
- Presented research results to diverse audiences including the general public, industry partners, and scientific specialists
- Mentored early career scientists in data analysis with R as well as written and oral communication
- Maintained data pipelines using GNU make, git, and slurm in a HPC cloud computing environment

The Pennsylvania State University — Aug 2015-Jul 2017

Graduate Research Assistant — State College, PA, USA

- Conducted industry-partnered experiments with interdisciplinary research teams
- Delivered data analysis results that guided on-farm practices to balance profitability with environmental impacts using sustainable agriculture
- Presented research to farmers, industry partners, and scientists at farmer advisory board meetings, on-farm field days, and scientific meetings

University of Delaware — Feb 2015-Jul 2015

Research Assistant — Newark, DE, USA

- Supervised construction and data collection for a field experiment with graduate and undergraduate research assistants
- Managed daily lab work, handled procurement, and contributed to a scientific publication

PROJECT PORTFOLIO

Prediction of greenhouse gas emissions from soil microbiome composition — July 2023

- Conducted an artificial selection experiment to develop microbiomes that perform a high rate of methane consumption.
- Modeled microbial community performance using regression and beta-binomial models.

Applying genotype-phenotype mapping to microbial ecosystem functions — March 2020

- Demonstrated the use of agnostic search and controlling for data stratification to identify microorganisms associated with important ecosystem functions such as greenhouse gas emissions.

Selected Publications

1. **Morris AH**, Isbell SA, Saha D, and Kaye JP. 2021. Mitigating nitrogen pollution with undersown legume-grass cover crop mixtures in winter cereals. *Journal of Environmental Quality* doi: 10.1002/jeq2.20193
2. **Morris AH**, Meyer KM, Bohannan BJM. 2020. Linking microbial communities to ecosystem functions: what we can learn from genotype-phenotype mapping in organisms. *Philosophical Transactions of the Royal Society B* doi: 10.1098/rstb.2019.0244