

Michael Sieler

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Summary

- Microbiome scientist with 5+ years of experience developing high-throughput molecular, computational and statistical methods and experiments to understand how environmental factors impact the gut microbiome to influence host health.
- Robust data analytic skills in multivariate statistics and machine learning propel research experiments forward and gain data-driven insights
- Demonstrated abilities to collaborate and lead cross-laboratory experiments and extra-curricular projects
- Experienced in written, oral and visual communication across scientific and public audiences

WORK EXPERIENCE

Oregon State University

Sept. 2020 – Present

Graduate Research Assistant

Corvallis, OR

- Contribute to 8+ quantitative research projects by statistically analyzing 1000's of microbiome samples
 - [Publish](#) research findings in 3 peer-reviewed papers, 4 talks & posters at international conferences
- Conduct laboratory experiments and statistical pipelines in R and Python to advance data-driven research goals
- Demonstrate leadership by coordinating cross-laboratory scientific experiments with 10+ researchers

Oregon State University

Nov. 2017 – Sept. 2020

Undergraduate Student Researcher

Corvallis, OR

- Develop novel research methods to analyze 1000's of zebrafish embryos for gut microbiome experiments
- Assist Ph.D. students and post docs research projects by identifying 10+ putative antibiotic compounds

TEACHING EXPERIENCE

Oregon State University: Lab Teaching Assistant

2022

General Microbiology Lab, MB 303

Corvallis, OR

- Graded lab notebooks, homework assignments and exams
- Taught students aseptic technique, gram stains and T-streaking
- Assisted instructor in class prep/set-up/clean-up, and exam proctoring

Oregon State University: Lab Teaching Assistant (virtual)

2021

Introduction to Microbiology Lab, MB 230

Corvallis, OR

- Led weekly lab lecture
- Graded student homework assignments

EDUCATION

Oregon State University

Expected June, 2025

Ph.D. Microbiology, minor: Biological Data Sciences. GPA: 3.95

Corvallis, OR

Oregon State University

June, 2020

B.Sc. Bioresource Research, options: bioinformatics and genomics. GPA: 3.82

Corvallis, OR

- Thesis: "The Gut Microbiome Drives Benzo[a]pyrene's Impact on Zebrafish Behavioral Development"

RESEARCH PROJECTS

- Measure resilience of gut microbiome to anthropogenic impacts (e.g., antibiotics, climate change)
- Investigate the multivariate interaction effects of diet and pathogen exposure on gut microbiome succession
- Assess the effect of nanoplastics on the mouse gut microbial community
- Potential and challenges of deep transfer learning in microbiome science
- Meta-analysis of environmental exposure impact to zebrafish core gut microbiome phylogeny
- The environmental pollutant Benzo(a)Pyrene influences gut microbiome and neurobehavior in juvenile zebrafish

SIDE PROJECTS

[Virtual Fish](#) – Browser based educational video game to share scientific research to students

- Fulfill USDA grant deliverables to communicate scientific research to broader audiences
- Tools used: C#, Unity, Git

[Spotify Genre Visualization](#) – Interactive R Shiny app to explore metadata in a 100,000+ Spotify song database

- Tools used: R, R-shiny, Kaggle

[Microbial Bioinformatics Hub](#) – Open-source site to share bioinformatic research knowledge, methods & tools

- Tools used: Sphinx/ReadTheDocs, HTML/CSS, Git

COURSEWORK

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|---|------------------------------|---------------------------------|
| • Genetics | • Applied Bioinformatics | • Intro Computer Science I & II |
| • Microbial Genetics | • Microbial Bioinformatics | • Programming & Data Structures |
| • Methods of Data Analysis I, II, & III | • Analytical Workflows | • Python I & II |
| • Applied Statistics | • Command Line Data Analysis | • Statistical Programming in R |
| | • Data Visualization | • Intro Unix/Linux |

SKILLS

Programming: R, Python (OOP, Numpy, TensorFlow), C# (Unity), Git, Unix/Linux, SQL, command line tools, HTML, CSS, C++, LaTeX, Markdown, APIs, JSON

Analysis: hypothesis testing, multivariate linear regression, machine learning, model building and testing, big data query, data management, data visualization

Bioinformatics: 16S sequencing (Phyloseq, DADA2), metagenomics (HMMR, FastTree), genomic (BLAST, NCBI, NGS),

Laboratory: Zebrafish husbandry, bacterial culturing, DNA extraction, PCR, gel electrophoresis, aseptic technique

Other: Microsoft Office Suite, Adobe Photoshop & Illustrator

Languages: German (C1), Spanish

PUBLICATIONS

Joseph A. Szule, ..., **Michael J. Sieler Jr.** (2022). "[Early Enteric and Hepatic Responses to Ingestion of Polystyrene Nanospheres from Water in C57BL/6 Mice.](#)" *Front. Water*.

David, Maude M., ..., **Michael J. Sieler Jr.** (2022). "[Revealing General Patterns of Microbiomes That Transcend Systems: Potential and Challenges of Deep Transfer Learning.](#)" *Msystems*.

Sharpton, Thomas J., ..., **Michael J. Sieler Jr.** (2021). "[Phylogenetic integration reveals the zebrafish core microbiome and its sensitivity to environmental exposures.](#)" *Toxics*.

PRESENTATIONS

Zebrafish Husbandry Workshop

Aquaculture

"Effects of diet on growth and the microbiome"

2022

San Diego, CA

3rd International Fish Microbiota Workshop

Chinese Academy of Agriculture Sciences

"Zebrafish laboratory diets differentially alter gut microbiota composition"

2022

Beijing, China (Virtual)

POSTERS

2nd International Fish Microbiota Workshop

University of Oregon

"The Gut Microbiome Drives Benzo[a]pyrene's Impact on Zebrafish Behavioral Development"

2019

Eugene, OR

College of Agriculture Science Showcase

Oregon State University

"The Gut Microbiome Drives Benzo[a]pyrene's Impact on Zebrafish Behavioral Development"

2019

Corvallis, OR

FELLOWSHIPS & AWARDS

Science Communication Fellow

Oregon Museum of Science and Industry

Received certified training in informal science education and engagement with public audiences to increase their understanding of STEM research

2020-Present

ARCS Scholar

ARCS Foundation

Recognized for my early significant contributions to scientific research

2020

LEADERSHIP

Microbiology Graduate Student Association

Oregon State University

Corvallis, OR

President

2022-2023

CERTIFICATES

Data Science and Machine Learning with R

Udemy

[completion](#)

2021

[Certificate of](#)

REFERENCES

Thomas J Sharpton, Ph.D.

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Oregon State University

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