MICHAEL J. SIELER JR.

Summary

· Microbiome scientist with 5+ years of experience developing and applying high-throughput molecular, computational, and statistical research methods to analyze 1000's of zebrafish gut microbiome samples

· Research how multiple environmental factors interact with 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 take leadership in cross-laboratory experiments and extra-curricular projects

· Experienced in written, oral and visual communication across scientific and public audiences

EDUCATION

2020 | estimated 2025

Ph.D. Microbiology, minor in Biological Data Sciences
Oregon State University — Corvallis, Oregon

2017 | 2020

B.Sc. Bioresource Research, options in Bioinformatics and Genomics
Oregon State University — Corvallis, Oregon

WORK EXPERIENCE

May 2022 | Present

Owner
MJSieler Consulting — Corvallis, Oregon
Activities: Designed, developed, and deployed educational video game software for clients to fulfill grant requirements for communicating scientific research.
Projects: Virtual Fish

Sep. 2020 | Present

Graduate Research Student
Sharpton Lab (Oregon State University) — Corvallis, Oregon
Activities: Investigate how environmental factors (diet, pollutants, pathogens, etc.) interact with the gut microbiome to influence host health using the zebrafish model organism.
Projects: Impacts of diet & infection, temperature & infection, and chronic antibiotic exposure on gut microbiome

Nov. 2018 | Sep. 2020

Undergraduate Research Student
Sharpton Lab (Oregon State University) — Corvallis, Oregon
Activities: Developed novel gnotobiotic microbiome methods using 1,500+ zebrafish to assess the impact of environmental toxicants on their gut microbiomes and neurophysiological health.
Projects: Benzo[a]pyrene effect on zebrafish gut microbiome

Nov. 2017 | Nov. 2018

Undergraduate Research Student
Mahmud Laboratory (Oregon State University) — Corvallis, Oregon
Activities: Assist PhD students and Post-docs with research projects.
Projects: Discovering novel antibiotics

CONTACT INFO

PhD Student
Oregon State University
Corvallis, Oregon
sielerjm [at] oregonstate.edu
MichaelSieler.com
0000-0002-8332-3408
mjsielerjr
sielerjm

SKILLS

Programming: R, Python (OOP, Numpy, SciKit, TensorFlow), C# (Unity), Git, bash/shell, SQL, HTML/CSS, Markdown/LaTeX and C++
Analysis: Hypothesis testing, Big data querying, Advanced applied statistics, Multivariate linear regression, Machine learning and Model building and selection
Bioinformatics: 16S sequencing, Metagenomics and Transcriptomics
Lab: Zebrafish husbandry and Bacterial culturing, extraction and amplification
Other: Microsoft Office Suite and Adobe Suite
Language: English, German (C1) and Spanish (A2)

Last updated on 2022-08-27.

RESEARCH EXPERIENCE

Measure the effect of nanoplastics on the mouse gut microbial community
Co-authored a paper and contributed a statistical, microbiome analysis on nanoplastic exposure impact on mouse gut microbial communities
Tools: *R, DADA2*

Szule (2022)

Meta-analysis of zebrafish gut microbiomes phylogeny
Co-authored a meta-analysis on environmental exposure impact on zebrafish gut microbiome. Identified, collated, and processed 1000's of 16S sequences from 8 studies for the meta-analysis.
Tools: *Python, R, DADA2*

Sharpton (2021)

Built and maintain Microbial Bioinformatics Hub to collaboratively share microbiome bioinformatic resources
Website for sharing knowledge, methods and tools related to analyzing microbiological data
Tools: *GitLab, Sphinx and Read the Docs*

MicrobialBioinformaticsHub

Developed high-throughput molecular biological and computational pipelines to interrogate gut microbiome
Developed novel, high-throughput gnotobiotic microbiome methods to simultaneously process +1000 zebrafish embryos for microbiome and toxicological research
Tools: *R, DADA2*

Stagaman (in-development)

Measure resilience of gut microbiome to chronic exposure of antibiotics
Exposed 100+ adult zebrafish to varying combinations of antibiotics to assess chronic antibiotic exposure on the gut microbiomes of zebrafish
Tools: *R, DADA2*

Sieler (in-development)

Assess gut microbiome resiliency to anthropological impacts such as temperature and pathogenic exposure
Exposed 100+ zebrafish to extreme temperatures and parasite exposure to assess anthropological impacts of climage change to the gut microbiomes of zebrafish
Tools: *R, DADA2*

Sieler (in-development)

Investigate the joint interaction effects of pathogen exposure and diet on gut microbiome succession
Administered 100+ zebrafish one of three commonly used laboratory diets and exposed half to a common pathogen to assess diet-pathogen effect on gut microbiome
Tools: *R, DADA2*

Sieler (in-prep)

AWARDS (2)

2020 | Present

Science Communication Fellow
Oregon Museum of Science and Industry (OMSI) — Portland, Oregon
Recognized for my early significant contributions to scientific research, I was awarded the prestigious ARCS Scholar grant

ARCSFoundation.org

2020
|
2023

ARCS Scholar

ARCS Foundation

Corvallis, Oregon

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

OMSI.edu

CERTIFICATES (1)

2021

Data Science and Machine Learning Bootcamp with R
Udemy
Program with R to wrangle, clean, analyze, and visualize data. Apply advanced statistics and machine learning to gain useful insights.

Certificate

ORAL COMMUNICATIONS (2)

2021

Zebrafish laboratory diets differentially alter gut microbiota composition
3rd Intl. Fish Microbiota Workshop *Chinese Academy of Agriculture Sciences*
Online (Beijing, China)

MichaelSieler.com

2022

Effects of diet on growth and the microbiome
Zebrafish Husbandry Workshop
Online (San Diego, CA)
Aquaculture

MichaelSieler.com

POSTER COMMUNICATIONS (2)

2019

The Gut Microbiome Drives Benzo[a]pyrene's Impact on Zebrafish Behavioral Development
CAS Student Showcase *Oregon State University*
Corvallis, Oregon

2019

The Gut Microbiome Drives Benzo[a]pyrene's Impact on Zebrafish Behavioral Development
2nd Intl. Fish Microbiota Workshop *University of Oregon*
Eugene, Oregon

PUBLICATIONS (3)

Jul. 2022

Early Enteric and Hepatic Responses to Ingestion of Polystyrene Nanospheres from Water in C57BL/6 Mice
Joseph A. Szule, Lawrence R. Curtis, Thomas J. Sharpton, Christiane V. L"ohr, Susanne Brander, Stacey Harper, Jamie Pennington, Sara J. Hutton, Michael J. Sieler Jr. and Kristin D. Kasschau

Frontiers in Water

Feb. 2022

Revealing General Patterns of Microbiomes That Transcend Systems: Potential and Challenges of Deep Transfer Learning
Maude M. David, Christine Tataru, Quintin Pope, Lydia J. Baker, Mary K. English, Hannah E. Epstein, Austin Hammer, Michael Kent, Michael J. Sieler Jr., Ryan S. Mueller, Thomas J. Sharpton, Fiona Tomas, Rebecca Vega Thurber and Xiaoli Z. Fern

mSystems

Jan. 2021

Phylogenetic Integration Reveals the Zebrafish Core Microbiome and Its Sensitivity to Environmental Exposures
Thomas J. Sharpton, Keaton Stagaman, Michael J. Sieler Jr., Holly K. Arnold and Edward W. Davis

Toxics