**Michael Sieler**

sielerjm@oregonstate.edu • (208) 867-7109 • Corvallis, OR • [LinkedIn](https://www.linkedin.com/in/mjsielerjr/) • [MichaelSieler.com](https://michaelsieler.com/)

**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
  + [Communicate](https://michaelsieler.com/en/latest/Publications/publications.html) 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 process 1000’s of zebrafish embryos for gut microbiome experiments
* Assist Ph.D. students and post docs research projects by identifying 10+ putative antibiotic compounds

**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](https://github.com/OSU-Edu-Games/Virtual-Fish) – Browser based educational video game to communicate scientific research to students

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

[Spotify Genre Viz](https://michael-sieler.shinyapps.io/Spotify_heatmap/) – Interactive R Shiny app to **explore metadata** in a 100,000+ Spotify song database

* Tools used: R, R-shiny, Kaggle

[Microbial Bioinformatics Hub](https://microbial-bioinformatics-hub.readthedocs.io/en/latest/index.html) – Open-source site to **share bioinformatic research** knowledge, methods & tools

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

**COURSEWORK**

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| --- | --- | --- |
| • Genetics  • Microbial Genetics  • Methods of Data Analysis I, II, & III  • Applied Statistics | • Applied Bioinformatics  • Microbial Bioinformatics  • Analytical Workflows  • Command Line Data Analysis  • Data Visualization | • Intro Computer Science I & II  • Programming & Data Structures  • Python I & II  • Statistical Programming in R  • 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.”](https://bit.ly/3OyI7oi) 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.”](https://bit.ly/3IXaefQ) Msystems.

Sharpton, Thomas J., …, **Michael J. Sieler Jr.** (2021). [“Phylogenetic integration reveals the zebrafish core microbiome and its sensitivity to environmental exposures.”](https://bit.ly/3BaF7LX) Toxics.

**PRESENTATIONS**

**Zebrafish Husbandry Workshop 2022**

*Aquaculture* *San Diego, CA*

“Effects of diet on growth and the microbiome”

**3rd International Fish Microbiota Workshop**  **2022**  
*Chinese Academy of Agriculture Sciences Beijing, China (Virtual)*

“Zebrafish laboratory diets differentially alter gut microbiota composition”

**POSTERS**

**2nd International Fish Microbiota Workshop**  **2019**

*University of Oregon Eugene, OR*

“The Gut Microbiome Drives Benzo[a]pyrene’s Impact on Zebrafish Behavioral Development”

**College of Agriculture Science Showcase**  **2019**

*Oregon State University Corvallis, OR*

“The Gut Microbiome Drives Benzo[a]pyrene’s Impact on Zebrafish Behavioral Development”

**HONORS & AWARDS**

**Science Communication Fellow 2020-Present**

*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

**ARCS Scholar 2020**

*ARCS Foundation*

Recognized for my early significant contributions to scientific research

**REFERENCES**

**Thomas J Sharpton, Ph.D.** Ph.D. Advisor

*Oregon State University Corvallis, OR*

[thomas.sharpton@oregonstate.edu](mailto:thomas.sharpton@oregonstate.edu)

541-737-8623

**Stephen Aitkinson, Ph.D.** Project Collaborator

*Oregon State University Corvallis, OR*

[stephen.atkinson@oregonstate.edu](mailto:stephen.atkinson@oregonstate.edu)

541-737-1861

**Katharine Field, Ph.D.** Undergraduate Advisor & Program Director

*Oregon State University Corvallis, OR*

[kate.field@oregonstate.edu](mailto:kate.field@oregonstate.edu)

541-737-1837