

# GEOFF ZAHN, PHD

Translational microbial ecology | Microbiomes and symbiosis



## PROFESSIONAL APPOINTMENTS

Current  
|  
2023

### Associate Professor

Utah Valley University

📍 Orem, UT

2023  
|  
2017

### Assistant Professor

Utah Valley University

📍 Orem, UT

Current  
|  
2020

### Private Consulting

Forensic Bioinformatics

📍 Various

2021  
|  
2018

### Director of Environmental Biology

GeoDataCrawler Research Institute

📍 Athens, GA

2017  
|  
2015

### Postdoctoral Associate

University of Hawai`i at Manoa

📍 Honolulu, HI



## EDUCATION

2015

### University of Arkansas

Ph.D. in Biology

📍 Fayetteville, AR

2010

### Missouri State University

B.S. in Ecology, Evolution, and Systematics

📍 Springfield, MO



## SELECTED FUNDING AND AWARDS

Total funding: \$1,182,738

2023  
|  
2018

### PI: Faculty-Mentored Experiences for Improving Undergraduate Biology Student Outcomes

\$972,287

📍 NSF (DUE - 1833880)

2022

### College of Science Dean's Award of Excellence for Scholarship

\$2,750

📍 Utah Valley University

## CONTACT INFO

✉ [gzahn@uvu.edu](mailto:gzahn@uvu.edu)

🌐 [github.com/gzahn](https://github.com/gzahn)

🏠 <https://gzahn.github.io>

## SKILLS

### 💻 Computational:

R  
Bash  
SQL  
Python  
Unix admin  
High-performance  
computing  
Metagenomics /  
Metabarcoding

### 🧪 Wet-lab:

DNA (extraction/prep/seq/etc.)  
Culturing (Fungi and 'Protists')  
Microscopy  
(BF/DIC/Fluor/SEM)  
Soil analysis  
Microcosms

### 📖 Academic:

Course and program design  
Active learning  
Course-based  
undergraduate research  
Mentoring  
Lab management  
Grants management

2020	●	<b>College of Science Dean's Award of Excellence for Scholarship</b> \$2,750	📍 Utah Valley University
2019	●	<b>Presidential Fellowship for Faculty Scholarship</b> \$8,000	📍 Utah Valley University
2018   2017	●	<b>PI: SEED: Engaging undergraduates in advanced research</b> \$30,000	📍 Utah Valley University
2018	●	<b>PI: New methods to survey fungal endophytes in endangered cacti</b> \$2,550	📍 Capitol Reef National Park
2018	●	<b>Co-PI: Assessing Undergraduate Research Teams at an Open Enrollment Institution</b> \$29,327	📍 Utah Valley University
2016	●	<b>Translational Mycology Postdoctoral Award</b> Plant conservation from a microbial perspective	📍 Mycological Society of America
2015	●	<b>Co-PI: Restoration of endangered plants by manipulating foliar fungal symbionts</b> \$40,500	📍 Oahu Army Natural Resources Program
2014	●	<b>Japan Society for the Promotion of Science Travel Award</b> \$750	📍 Washington, D.C.
2013	●	<b>PI: The Importance of microbial interactions to soil carbon cycling on a warming planet</b> \$12,570	📍 NSF (OISE-1308856) / JSPS (SP01363)
Current   2017	●	<b>Student Mentee Funding Awards</b> 122 mentees funded from a variety of internal and external programs	



## TEACHING AND MENTORING

- **Designed a new Bioinformatics Degree Program**  
Experienced with univ. curriculum processes and accreditation
- **R for Biologists**  
Intro to R language and data science, including dataviz & modeling (designed and taught)
- **Bioinformatics Data Skills**  
Unix/Bash and HPC use for bioinformatics (designed and taught)

## ● **Mycology**

Research-based mycology (designed and taught)

## ● **Microbiome Boot Camp**

Advanced R, numerical ecology, community ecology, scientific writing (designed and taught)

## ● **Bioinformatics Capstone**

Project-based (designed and taught)

## ● **Organismal Biology**

Intro biology II (taught)

## ● **Developed online lab for non-major's biology**

University of Arkansas - asynchronous pedagogy practices



## PUBLICATIONS

2023

### ● **The core mangrove microbiome reveals shared taxa potentially involved in nutrient cycling and promoting host survival.**

Wainwright BJ, Millar T, Bowen L, Semon L, Hickman KJE, Lee JN, Yeo ZY, & Zahn G. *Environmental Microbiome* 10.1186/s40793-023-00499-5.

2023

### ● **Inclusion of database outgroups reduces false positives in fungal metabarcoding taxonomic assignments.**

Rawson C, & Zahn G. *Mycologia* 10.1080/00275514.2023.2206931

2022

### ● **Long-term soil fungal community recovery after fire is impacted by climate change.**

McGee S, Tidwell A, Riggs E, Veltkamp H, & Zahn G. *Western North American Naturalist*

2022

### ● **Marker Genes (16S and ITS) Protocol for Plant Microbiome Analyses.**

Zahn G. *BIO-PROTOCOL* 10.21769/BioProtoc.4395

2022

### ● **Global patterns in endemism and vulnerability of soil fungi.**

Tedersoo L, Mikryukov V, Zizka A, Bahram M, Hagh-Doust N, Anslan S, Prylutskyi O, Delgado-Baquerizo M, Maestre FT, ... Abarenkov K. *Global Change Biology* 10.1111/gcb.16398

2021

### ● **The Global Soil Mycobiome consortium dataset for boosting fungal diversity research.**

Tedersoo L, Mikryukov V, Anslan S, Bahram M, Khalid AN, Corrales A, Agan A, Vasco-Palacios A-M, Saitta A, ... Abarenkov K. *Fungal Diversity* 10.1007/s13225-021-00493-7

- 2021 ● **Examination of host-taxon, environment, and distance effects on leaf fungal endophytes in the dominant woody genus, *Metrosideros*, on O'ahu.**  
Sur GL, Zahn G, & Stacy EA. *Fungal Ecology* 10.1016/j.funeco.2021.101093
- 2021 ● **Biogeographic structure of fungal communities in seagrass *Halophila ovalis* across the Malay Peninsula.**  
Quek ZBR, Zahn G, Lee NLY, Ooi JLS, Lee JN, Huang D, & Wainwright BJ. *Environmental Microbiology Reports* 10.1111/1758-2229.13003
- 2021 ● **Restoration of the mycobiome of the endangered Hawaiian mint *Phyllostegia kaalaensis* increases its resistance to a common powdery mildew.**  
Egan CP, Koko JH, Muir CD, Zahn G, Swift SOI, Amend AS, & Hynson NA. *Fungal Ecology* 10.1016/j.funeco.2021.101070
- 2021 ● **Hawaiian Fungal Amplicon Sequence Variants Reveal Otherwise Hidden Biogeography.**  
Tipton L, Zahn GL, Darcy JL, Amend AS, & Hynson NA. *Microbial Ecology* 10.1007/s00248-021-01730-x
- 2021 ● **Essential oil, insect, and microbe relationships in *Juniperus osteosperma* (Cupressaceae) trees killed by wildfire.**  
Wilson T, Poulson A, Packer C, Carlson R, Davis R, Dey M, Owen N, Smalley S, Dodge R, ... Stevens M. *Phytologia*
- 2020 ● **Host age is not a consistent predictor of microbial diversity in the coral *Porites lutea*.**  
Wainwright BJ, Zahn GL, Afiq-Rosli L, Tanzil JTI, & Huang D. *Scientific Reports* 10.1038/s41598-020-71117-4
- 2020 ● **Fungal communities living within leaves of native Hawaiian dicots are structured by landscape-scale variables as well as by host plants.**  
Darcy JL, Swift SOI, Cobian GM, Zahn GL, Perry BA, & Amend AS. *Molecular Ecology* 10.1111/mec.15544
- 2019 ● **Fungal aerobiota are not affected by time nor environment over a 13-y time series at the Mauna Loa Observatory.**  
Zahn G, Tipton L, Datlof E, Kivlin SN, Sheridan P, Amend AS, & Hynson NA. *Proceedings of the National Academy of Sciences* 10.1073/pnas.1907414116
- 2019 ● **Foliar fungi alter reproductive timing and allocation in *Arabidopsis* under normal and water-stressed conditions.**  
Zahn G, & Amend AS. *Fungal Ecology* 10.1016/j.funeco.2019.04.002

- 2019 ● **Characterization of fungal biodiversity and communities associated with the reef macroalga *Sargassum ilicifolium* reveals fungal community differentiation according to geographic locality and algal structure.**  
Wainwright BJ, Bauman AG, Zahn GL, Todd PA, & Huang D. *Marine Biodiversity* 10.1007/s12526-019-00992-6
- 2019 ● **Characterisation of coral-associated bacterial communities in an urbanised marine environment shows strong divergence over small geographic scales.**  
Wainwright BJ, Afiq-Rosli L, Zahn GL, & Huang D. *Coral Reefs* 10.1007/s00338-019-01837-1
- 2019 ● **Seagrass-associated fungal communities show distance decay of similarity that has implications for seagrass management and restoration.**  
Wainwright BJ, Zahn GL, Zushi J, Lee NLY, Ooi JLS, Lee JN, & Huang D. *Ecology and Evolution* 10.1002/ece3.5631
- 2018 ● **Seagrass-associated fungal communities follow Wallace's line, but host genotype does not structure fungal community.**  
Wainwright BJ, Zahn GL, Arlyza IS, & Amend AS. *Journal of Biogeography* 10.1111/jbi.13168
- 2017 ● **Foliar microbiome transplants confer disease resistance in a critically-endangered plant.**  
Zahn G, & Amend AS. *PeerJ* 10.7717/peerj.4020
- 2017 ● **Uncovering unseen fungal diversity from plant DNA banks.**  
Datlof EM, Amend AS, Earl K, Hayward J, Morden CW, Wade R, Zahn G, & Hynson NA. *PeerJ* 10.7717/peerj.3730
- 2017 ● **Fungi associated with mesophotic macroalgae from the 'Au'au Channel, west Maui are differentiated by host and overlap terrestrial communities.**  
Wainwright BJ, Zahn GL, Spalding HL, Sherwood AR, Smith CM, & Amend AS. *PeerJ* 10.7717/peerj.3532
- 2016 ● **The effects of amoebal bacterivory on carbon and nitrogen dynamics depend on temperature and soil structure interactions.**  
Zahn G, Wagai R, & Yonemura S. *Soil Biology and Biochemistry*
- 2014 ● **Ecological distribution of protosteloid amoebae in New Zealand.**  
Zahn G, Stephenson SL, & Spiegel FW. *PeerJ*
- 2014 ● **First records of Protosteloid Amoebae (Eumycetozoa) from the Democratic Republic of the Congo.**  
De Haan M, Cocquyt C, Tice A, Zahn G, & Spiegel FW. *Plant Ecology and Evolution*

2011

**Pil1, an eisosome organizer, plays an important role in the recruitment of synaptojanins and amphiphysins to facilitate receptor-mediated endocytosis in yeast.**

Murphy ER, Boxberger J, Colvin R, Lee SJ, Zahn G, Loor F, & Kim K. *European Journal of Cell Biology*



## SELECTED INVITED PRESENTATIONS

2023

**Translating mentored undergraduate research into student retention and success**

National Science Foundation S-STEM Symposium

📍 Washington, D.C.

2022

**Less content, more context: Research as pedagogy in undergraduate mycology courses**

Mycological Society of America

📍 FL, USA

2021

**Who's there and who cares: the how and why of fungal community structure**

Brigham Young University

📍 UT, USA

2018

**The causes and consequences of fungal community structure**

University of Arkansas/Missouri State University

📍 AR/MO, USA

2016

**Picky Eaters: Prey choice by soil protists is altered by temperature and soil structure**

Cornell University,

📍 NY, USA

2015

**Effects of belowground trophic complexity on carbon cycling under changing climatic and edaphic conditions**

Joint Genome Institute

📍 CA, USA

2015

**The functional and distributional ecology of mycetozoans under changing edaphic and climatic dynamics**

Climate Impact Research Center

📍 Abisko, Sweden

2014

**Picky eaters: climate alters amoeba prey choice and the microbial loop**

NIAES

📍 Tsukuba, Japan

2012










**The Tropical Mycetozoans**

Organization for Tropical Studies

📍 Las Cruces, Costa Rica



## SELECTED CONTRIBUTED PRESENTATIONS

- 2023 • **Aquatic Plant-Associated Fungi Along an Urbanization Gradient**  
Mycological Society of America  AZ, USA
- 2023 • **Metagenomic Tools for Mycobiome Analyses in Model vs. Non-Model Systems**  
Mycological Society of America  AZ, USA
- 2023 • **Improving the Accuracy of Meta-Amplicon Taxonomic Assignments Through the Inclusion of Outgroups in Fungal Databases**  
Mycological Society of America  AZ, USA
- 2022 • **Inspecting the microbiome and metabolomic compartments of Mediterranean sponge holobionts through an integrated 'omics approach**  
International Sponge Symposium  Leiden, Netherlands
- 2016 • **Fungal endophytes and pathogens in endangered hawaiian endemics: Plant conservation from a microbial perspective**  
Mycological Society of America,  CA, USA
- 2014 • **The interactive effects of protozoan predation pressure and environmental factors on carbon and nitrogen cycling in soils under warming conditions**  
International Society for Microbial Ecology  Seoul, South Korea
- 2014 • **Using metagenomics and metatranscriptomics to uncover mechanisms of soil communities' effects on carbon cycling under warming conditions**  
DOE Joint Genome Institute  CA, USA
- 2013 • **The Role of Soil Amoebae in Nutrient Cycling on a Warming Planet**  
Graduate University for Advanced Studies  Soken-dai, Japan
- 2011 • **The Protosteloid Amoebae of New Zealand**  
Mycological Society of America  AK, USA



## SYNERGISTIC ACTIVITIES



### Mentorship

- Graduate committee member (4 MS, 3 PhD)
- Undergrad research mentor (38 students)
- [Lab alumni](#)

## 🍏 Societies & Service

- Editor of *Mycologia*
- Education Committee - Mycological Society of America
- IUCN Species Survival Group - Slime Moulds Specialist
- Member: ISME, MSA, Intl. Soc. for Fungal Conserv., Japan SPS Alumni Assoc.
- NSF GK-12 Teaching Fellow (2011-2012)
- Faculty senator - UVU (2017-2020)
- Devel

## 🤝 Collaborations

- National Univ. of Singapore
- Univ. of Hawaii at Manoa
- Stazione Anton Dorhn
- Washington State Univ.
- SUNY Syracuse
- PNNL
- SoftCell, Inc.
- Young Living, Inc.
- Oxford Univ.
- Univ. of Arkansas

## 🤝 Outreach

- Stockman Grass Farmer Magazine [Article](#)
- ScienceNews [Article](#) featuring work
- [Article](#) on my marine mycology discoveries
- Annual science fair judge
- 6th-grade teacher and inquiry-based lesson planning (2011-2012)

## ✔ Peer review

- NSF panel reviewer
- NSF GRFP
- BARD US-Israel Agr. Dev. Fund
- Journals:
  - Soil Biol. and Biochem. (Distinguished), PeerJ, Pedobiologia (Distinguished), Oikos, ISME Journal, Fungal Ecology (Distinguished), Molecular ecology, Ecology and Evolution, American Fern Journal, New, Phytologist, Phytobiomes