

Geoffrey L. Zahn, Ph.D.

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PROFESSIONAL STATUS

Current Postdoctoral Research Associate
University of Hawaii at Manoa – Botany Department
Lab of: Dr. Anthony Amend

EDUCATION

2015 PhD in Biology – Microbial and Molecular Ecology
University of Arkansas, Fayetteville, AR, USA
Dissertation: "The Functional and Distributional Ecology of Mycetozoans under Changing Edaphic and Climatic Dynamics"
Advisor: Dr. Frederick W. Spiegel

2010 Bachelor of Science in Biology – Ecology, Evolution and Systematics
Missouri State University, Springfield, MO, USA

RESEARCH INTERESTS:

Plant-Microbe interactions
Microbial community responses/feedbacks to climate change
The ecology and ecosystem services of protists and fungi
Factors that shape microbial community formation and function
Linking local microbial and molecular dynamics to global biogeochemical cycles

SKILLS

Software: R, Perl/Python, Bash, Git, SPSS, MEGAN, mothur, MG-RAST, ARB, IMG/M (cert. user), JMP, QIIME (cert. user), Phylip, Galaxy, EcoSim, PC-Ord, Phylip, BioEdit, SigmaPlot, Minitab, MS Office Suite, Adobe Photoshop

Techniques: Soil nucleic acid extraction, NG library prep and sequencing, RT-PCR, Fluorescent microscopy, Microbial culture curation, Primer design, Soil/Plant microcosms, Cryopreservation, Bioinformatics, IR gas analyses, Stable isotope analyses, Greenhouse management, Field work (Ozarks, Alaska, Costa Rica, Hawaii, Sweden, Japan)

PUBLICATIONS

Geoffrey Zahn, Rota Wagai, Seiichiro Yonemura. 2016. The effects of amoebal bacterivory on carbon and nitrogen dynamics depend on temperature and soil structure interactions. *Soil Biology and Biochemistry*, 94: 133-137. DOI: 10.1016/j.soilbio.2015.11.021

Geoffrey Zahn, Steven L. Stephenson, Frederick W. Spiegel. 2014. Ecological distribution of protosteloid amoebae in New Zealand. *PeerJ* 2:e296; DOI 10.7717/peerj.296

Miriam De Haan, Christine Cocquyt, Alex Tice, **Geoffrey Zahn**, Frederick W. Spiegel. 2014. First records of Protosteloid Amoebae (Eumycetozoa) from the Democratic Republic of the Congo. *Plant Ecology and Evolution*, 147:1, 85-92

Erin R. Murphy, Jacob Boxberger, Robert Colvin, Suk Je Lee, **Geoffrey Zahn**, Fred Loor, Kyoungtae Kim. 2011. Pil1, an eisosome organizer, plays an important role in the recruitment of synaptojanins and amphiphysins to facilitate receptor-mediated endocytosis in yeast. *European Journal of Cell Biology*, 90:10, 825-833

In review **Geoffrey Zahn**, Sandeep Sharma, Burt Bluhm. Top-down control of soil bacterial communities by amoebal predation is influenced by warming. In review, August 2016.

Geoffrey Zahn, John Shadwick, Fred Spiegel. Protosteloid amoebae as a flagship group for investigating the global distribution of naked amoebae. In review, July 2016.

In preparation **Geoffrey Zahn**, Anthony Amend. Fungal endophytes restore powdery mildew disease resistance in an endemic Hawaiian plant (Lamiaceae). In preparation, August 2016.

Geoffrey Zahn, Anthony Amend, Patrick Sheridan, Erin Datlof, Nicole Hynson. A decade of air samples from Mauna Loa Observatory reveal widespread global dispersal patterns in major fungal lineages are correlated with climatic events. In preparation, August 2016.

PRESENTATIONS

Invited Seminars:

- 2015** *"Effects of belowground trophic complexity on carbon cycling under changing climatic and edaphic conditions"*
Joint Genome Institute, Walnut Creek, CA, USA
- 2015** *"The functional and distributional ecology of mycetozoans under changing edaphic and climatic dynamics"*
Climate Impact Research Center, Abisko, Sweden
- 2014** *"Public science literacy and targeted environmental initiatives"* NWA Environmental Programs Symposium
- 2014** *"The functional and distributional ecology of slime molds in a changing climate"* NIAES, Tsukuba, Japan
- 2013** *"The Ecology of Soil Mycetozoa"* Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan
- 2012** *"The Mycetozoans"* Organization for Tropical Studies, Las Cruces, Costa Rica

Posters and Talks:

- 2016** "Fungal endophytes and pathogens in endangered hawaiian endemics: Plant conservation from a microbial perspective" Mycological Society of America, Berkeley, CA, USA
- 2014** *"Amoebae in warming soils: interactive effects of the microbial food web and environmental factors on nutrient cycling in a changing climate"* A2C Research Symposium, Fayetteville, AR, 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** *"Application of high-throughput sequencing may explain carbon dynamics under predation and warming gradients via soil community shifts"* JSPS Multidisciplinary Science Forum 4; Washington, D.C., USA
- 2014** *"Using metagenomics and metatranscriptomics to uncover mechanisms of soil communities' effects on carbon cycling under warming conditions"* DOE Joint Genome Institute – Microbial Genomics and Metagenomics Workshop; Walnut Creek, CA, USA
- 2013** *"The Role of Soil Amoebae in Nutrient Cycling on a Warming Planet"* Graduate University for Advanced Studies; Sokendai, Japan
- 2011** *"The Protosteloid Amoebae of New Zealand"* Mycological Society of America; Fairbanks, AK, USA
- 2010** *"Pil1's Role on Regulating Membrane PIP2 Level"* INBRE Conference; Fayetteville, AR, USA
- 2010** *"The Effects of Prescribed Fire on Overwintering Fungal Abundance and Diversity: A Baseline Study"* CNAS Undergraduate Research Symposium; Springfield, MO, USA
- 2009** *"Endocytic Roles of Pil1, the Main Organizer of Eisosomes"* Arkansas INBRE Research Conference; Fayetteville, AR, USA

AWARDS AND FUNDING

- 2016** Mycological Society of America Translational Mycology Award
- 2014** Japan Society for the Promotion of Science (JSPS) Alumnus Travel Award
- 2014** Dept. of Energy Joint Genome Institute IMG Workshop Travel Award
- 2013** JSPS Summer Research Fellowship (JSPS-SP01363)
- 2013** NSF EAPSI Grant (OISE-1308856)

2013 *Clean Air – Cool Planet* Climate Fellowship

2011 Mycological Society of America Travel Award

2011 NSF GK-12 Fellowship

PROFESSIONAL DEVELOPMENT

2015 -- 2016 Endangered species conservation – Collaboration with US Army Environmental Division and the 'Oahu Natural Resources Program, Hawaii

2014 – 2015 Course Development – Online Biology Lab
University of Arkansas

2013
May – Aug. International Research – Soil Physiology and Ecology
National Institute for Agro-Environmental Sciences, Tsukuba, Japan

2013 – 2016 IUCN Species Survival Commission – Myxomycete group

2012
Jul. – Aug. Field Research – Tropical Lichen Ecology
Organization for Tropical Studies, Costa Rica

2011 – 2012 National Science Foundation GK-12 Teaching Fellow
Jun. – May University of Arkansas; Owl Creek Middle School, Fayetteville, AR

2010
Jan. – Dec. Undergraduate Research Assistant – Forest Fire Ecology
Missouri State University Dept. of Biology

2009
Jan. – Dec. Undergraduate Research Assistant – Yeast Genetics
Missouri State University Dept. of Biology

MENTORING AND TEACHING EXPERIENCE

Mentorship Undergraduate student mentor (6 students)
Graduate Student Mentor (4 Masters, 3 PhD)

Courses Principles of Biology (Honors Undergraduate)
Comparative Botany (Graduate level)
Mycology (Graduate level)
Experimental Design (Undergraduate)
6th Grade Science and Math (NSF GK-12 Teaching Fellow)

ACADEMIC AND OTHER SOCIETIES (Active participant)

International Society for Microbial Ecology
Mycological Society of America
International Society for Fungal Conservation
Japan Society for the Promotion of Science Alumni Association
Young Permafrost Researchers Network
International Union for Conservation of Nature (IUCN) – Species Survival Group (Myxomycetes)

SYNERGISTIC ACTIVITIES

2016 Research spotlight at 2016 IUCN Congress - "Using fungi to save endangered plants"

2016 Hawaii GENE-ious K-12 Curriculum Development

2014 Ten Thousand Microscopes Beta Tester – K-12 Content Generator

2011 – 2015 Judge – NWA Regional Science Fair

2008 – 2009 James River Basin Partnership Science Committee, Springfield, MO

2007 Research Technician - Missouri State University Greenhouse

2006 Volunteer Ecologist - Reserva Bosque Nuboso Santa Elena, Costa Rica

LANGUAGES AND PROFICIENCY

English	Native Fluency
Spanish	Working Proficiency
German	Elementary Proficiency
Japanese	Elementary Beginner

RECENT COLLABORATORS

Burton H. Bluhm
University of Arkansas – Plant Pathology

Anthony Amend
University of Hawaii – Botany

Nicole Hynson
University of Hawaii – Botany

Frederick W. Spiegel
University of Arkansas – Biology

Rota Wagai
NIAES Japan – Carbon and Nutrient Cycling Division

Seiichiro Yonemura
NIAES Japan – Division of Agro-Meteorology

Robert Lücking
Botanic Garden and Botanical Museum Berlin-Dahlem

Joel A. Mercado-Diaz
University of Chicago – Committee on Evolutionary Biology

Patrick Sheridan
National Oceanic and Atmospheric Administration (NOAA) – Aerosol Research Group