

Cassandra Wattenburger

MICROBIAL ECOLOGY · SOIL AND PLANT HEALTH · BIOINFORMATICS
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Education

Cornell University, Ph.D. (in progress)

SOIL SCIENCE, MINORS IN GENOMICS AND MICROBIOLOGY

Ithaca, NY

Jan. 2018 - present

Iowa State University, M.S.

MICROBIOLOGY

Ames, IA

Sept 2015 - Dec 2017

Western Washington University, B.S.

CELLULAR AND MOLECULAR BIOLOGY, MINOR IN CHEMISTRY, HONORS PROGRAM

Bellingham, WA

Sept 2010 - June 2014

Research Experience

Graduate Research Assistant (Ph.D.)

CORNELL UNIVERSITY | ADVISOR DR. DANIEL BUCKLEY

Ithaca, NY

Jan. 2018 - present

- Dissertation topic: Using in situ growth dynamics to delineate and understand microbial life history strategies relevant to carbon cycling

Graduate Research Assistant (M.S.)

IOWA STATE UNIVERSITY | ADVISORS DR. LARRY HALVERSON & DR. KIRSTEN HOFMOCKEL

Ames, IA

Sept. 2015 - Dec. 2017

- Thesis topic: Understanding the role of bacterial and fungal root-associated communities in agricultural management for nitrogen use efficiency

Student Undergraduate Learning Internship Intern

PACIFIC NORTHWEST NATIONAL LABORATORY | MENTOR DR. VANESSA BAILEY

Richland, WA

Summers 2011 - 2014

- Project 1: Fungal and bacterial community contributions to soil respiration in arid agricultural soils
- Project 2: Method development for extracting DNA from soil community within single aggregates of soil
- Project 3: Effect of gradual warming on cellulose-decomposing soil community structure and exometabolite production

Young Women in Science Intern

PACIFIC NORTHWEST NATIONAL LABORATORY | MENTOR DR. VANESSA BAILEY

Richland, WA

Summers 2010

- Project: Culture condition optimization for cellobiose-degrading soil bacteria isolates

Publications

(in-prep) Wattenburger, C.J., Buckley, D.H., Assessing individual, in-situ bacterial growth in cropped and successional soils using an internal standard. Target Journal: Soil Biology and Biochemistry.

(submitted) Foxx, A.J. Franco Meléndez, K.P., Kozik, K.J., Oli, M., Hariharan, J., Wattenburger, C.J., Rivers, A.R. An inclusive and international training agenda to empower the next generation of microbiome scientists. *mSystems* (2021).

Karig, D.E., Mayers, C.G., **Wattenburger, C.J.,** Southon, J., 2020. Contamination of Radiocarbon Analyses of Plant Samples by Fungal Hyphae. *Radiocarbon* 1–8. (2020)

Wattenburger, C. J., Gutknecht, J., Zhang, Q., Brutnell, T., Hofmockel, K. S., Halverson, L. J. The rhizosphere and cropping system, but not arbuscular mycorrhizae, affect ammonia oxidizing archaea and bacteria abundances in two agricultural soils. *Applied Soil Ecology* 151, 103540 (2020).

Wattenburger, C. J., Halverson, L. J. Hofmockel, K. S. Agricultural Management Affects Root-Associated Microbiome Recruitment Over Maize Development. *Phytobiomes Journal* 3, 260–272 (2019).

Presentations

TALKS

Predicting microbial life history traits from their growth dynamics in soil

SOIL AND CROP SCIENCES SEMINAR SERIES | CORNELL UNIVERSITY

Ithaca, NY

Sept. 2020

The root-associated microbiome and agricultural nitrogen use efficiency

M.S. EXIT SEMINAR | IOWA STATE UNIVERSITY

Ames, IA

Nov. 2017

Spatio-temporal dynamics of root-associated prokaryotic communities in two contrasting agroecosystems

INTERDEPARTMENTAL MICROBIOLOGY PROGRAM RETREAT | IOWA STATE UNIVERSITY

Ames, IA

Oct. 2017

Spatio-temporal dynamics of root-associated prokaryotic communities in two contrasting agroecosystems

IOWA STATE UNIVERSITY

Ames, IA

Oct. 2017

Soil Microorganisms, Climate Change, and Soil Quality

HONORS THESIS PRESENTATION | WESTERN WASHINGTON UNIVERSITY

Bellingham, WA

March 2014

Studying individual soil aggregates as discrete habitats for microbial communities

STUDENT UNDERGRADUATE LEARNING INTERNSHIP SYMPOSIUM | PACIFIC NORTHWEST NATIONAL LABORATORY

Richland, WA

Aug. 2014

POSTERS

Comparing in-situ, individual bacterial community growth rates in cropped and successional soils using a 16S rRNA internal standard

DOE GENOME SCIENCES PROGRAM MEETING

Virtual

Feb. 2021

Arbuscular mycorrhizae alter soil inorganic and plant nitrogen but have little effect on ammonia oxidizing community abundance in two agricultural soils

ECOLOGICAL SOCIETY OF AMERICA CONFERENCE

Portland, OR

Aug. 2017

In contrasting cropping systems, root-associated prokaryotic and fungal communities exhibit distinct shifts at different maize developmental stages

MULTIOMICS FOR MICROBIOMES EMSL INTEGRATION CONFERENCE

Pasco, WA

Aug. 2017

Revisiting fungal-to-bacterial activity ratios in soils ten years later

STUDENT UNDERGRADUATE LEARNING INTERNSHIP SYMPOSIUM | PACIFIC NORTHWEST NATIONAL LABORATORY

Richland, WA

Aug. 2011

NON-SCIENTIFIC

Data Visualization Toolkit

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

Virtual

March 2020

Professionalism in Graduate School

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

Virtual

July 2020

Grants & Awards

2019 **SNIPS Small Grant Award**, Cornell University, Co-PI with Kyle Martin, \$8,511

Ithaca, NY

2016 **NSF GRFP**, Ecology, National Science Foundation Fellowship, \$138,000

USA

2016 **Brown Graduate Fellowship**, Iowa State University, \$10,000

Ames, IA

2015 **Diane-Brandt Scholarship**, Iowa State University, \$5,000

Ames, IA

2015 **CALS+Presidential Fellowship**, Iowa State University, \$25,000

Ames, IA

2013 **Hodgson Family Scholarship**, Western Washington University, \$1,000

Bellingham, WA

2010 **President's Scholarship**, Western Washington University, \$4,000

Bellingham, WA

Teaching & Mentoring

Mentor

IOWA STATE UNIVERSITY AND CORNELL UNIVERSITY

Various
2017 - present

- Interviewed, hired, and trained five undergraduate students in basic lab techniques and computational skills
- Oversaw honors-thesis research project for Cornell biology undergraduate
- Provided career advice post-graduation and served as reference on job applications

Carpentries Instructor

THE CARPENTRIES

Ithaca, NY
April 2021

- Certified instructor for Software and Data Carpentries workshops

Moderator

INTRODUCTION TO R WORKSHOP | WOMEN IN SOIL ECOLOGY

Virtual
Feb. 2021

- Assisted workshop organizers and answered attendee questions

Undergraduate Teaching Assistant

BIOL 205 | WESTERN WASHINGTON UNIVERSITY

Bellingham, WA
Winter 2014

- Cell and Molecular Biology Lab
- Guided student learning and answered questions during labs
- Designed and taught short lecture on polymerase chain reaction

Leadership

Advisory Board Member

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

Ithaca, NY
Jan 2019 - present

- Provided input for Careers Beyond Academia program planning
- Planned and organized events, panels, and webinars for Cornell community aimed at professional development

Treasurer

SOIL AND CROP SCIENCES GRADUATE STUDENT ASSOCIATION | CORNELL UNIVERSITY

Ithaca, NY
2019-2020

- Created and managed organization budget and finances
- Coordinated invited speaker visit to campus for departmental seminar series

President & Treasurer

MICROBIOLOGY GRADUATE STUDENT ORGANIZATION | IOWA STATE UNIVERSITY

Ames, IA
2015, 2016

- Created and managed organization budget and finances
- Lead monthly meetings and planned meeting agendas
- Lead committee to update constitution to improve carry-over of responsibilities
- Invited and hosted external speakers for invited seminar

Vice-President & Treasurer

ASSOCIATION OF WOMEN IN SCIENCE | WESTERN WASHINGTON UNIVERSITY

Bellingham, WA
2013, 2014

- Created and managed organization budget and finances
- Assisted president with meetings and organizing planned events
- Started and raised money for small scholarship to be offered to women at Western Washington University

Service

Data Visualization and Science Art Panelist

COMSciCON-NY 2021

Virtual
May 2021

- Volunteered as expert panelist to discuss questions about effective ways to engage with audiences using data visualization and science art

Careers in Data Visualization Panel Organizer

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

Ithaca, NY
April 2021

- Organized and hosted zoom panel interviewing scientists in data visualization careers

Non-academic Careers Alumni Panel Organizer

BESS GSA | CORNELL UNIVERSITY

Ithaca, NY
April 2020

- Biogeochemistry, Environmental Science, and Sustainability Graduate Student Organization
- Organized and hosted zoom panel of three Cornell alumni in non-academic careers

Peer Reviewer

Various

VARIOUS JOURNALS

- Peer reviewed four manuscripts
- Journals: Soil Biology and Biochemistry, Microbial Ecology, SOIL

Recruitment Planner

Virtual

SOIL AND CROP SCIENCES SECTION | CORNELL UNIVERSITY

Feb 2021

- Lead virtual tour of Ithaca and Cornell's campus
- Organized online social for prospective and current students

Newsletter Editor

Ithaca, NY

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

Aug. 2018 - Aug. 2019

- Published monthly newsletter distributed to over 400 people using MailChimp
- Interviewed Cornell students and staff for spotlight pieces

Github Respository Manager

Ames, IA

BUCKLEY LAB | CORNELL UNIVERSITY

2017 - present

- Managed Buckley lab github repository
- Updated standard operating protocols

Curriculum Committee Member

Ames, IA

INTERDEPARTMENTAL MICROBIOLOGY PROGRAM | IOWA STATE UNIVERSITY

2015

- Conducted research and gave feedback to faculty to improve graduate program curriculum

Outreach & Sci. Comm.

Organizer & Volunteer

Washington DC, USA

USA SCIENCE FESTIVAL

March 2018

- Created and organized activities for a microbiome-themed educational booth
- Instructed children and visitors about environmental microbiology and microscopy

Organizer & Volunteer

Ames, IA

WHO'S IN YOUR FOOD? | IOWA STATE UNIVERSITY

Feb. 2017

- Gave presentation and designed interactive workshop with fermented food products for local elementary school students

EcoDay Science Fair Judge

Nevada, IA

NEVADA ELEMENTARY SCHOOL

May 2015

- Judged and provided feedback on science fair projects at Nevada Elementary School

Organizer & Volunteer

Ames, IA

EDWARDS ELEMENTARY SCIENCE NIGHT

2015, 2016

- Created hands-on activities to teach children about bacteria
- Lead the "build-a-bacteria" and microscopy stations

Soils Session Leader

Coon Rapids, IA

WHITEROCK BIOBLITZ | THE WHITEROCK CONSERVANCY

2015, 2016

- Created and lead hands-on activities introducing concepts of soil health and ecology to general public

"Breathe"

Bellingham, WA

MATERIALS: SOIL AND CLAY

March 2014

- Collaboration with Bonita Robins and Cecelia Hanford
- Art piece of noses and mouth casts made of soil collected from campus grounds depicting soil respiration
- Displayed in the Western Gallery at Western Washington University

"Seeing through the Ice"

Bellingham, WA

INVITED SPEAKER | WHATCOM MUSEUM

Feb 2014

- Short talk to the general public explaining the science and impacts of climate change showcasing art themed around melting glaciers

Science Club Instructor

Bellingham, WA

BOYS AND GIRLS CLUB

Summer 2014

- Lead afternoon activities to engage children in STEM concepts
- Robotics and microbiology focused

Diversity, Equity, & Inclusion

Volunteer

DIVERSITY PREVIEW WEEKEND | CORNELL UNIVERSITY

- Provided feedback and individual mentoring on graduate school application materials
- Attended socials

Ithaca, NY

Sept. 2020

Volunteer

EXPANDING YOUR HORIZONS | CORNELL UNIVERSITY

- Escorted two EYH attendees on Cornell's campus for a day
- Participated in science workshop and outreach events with attendees

Ithaca, NY

2018, 2019

Organizer & Volunteer

SCIENCE BOUND | IOWA STATE UNIVERSITY

- Organized and lead demonstrations educating students about leaf-associated microbial communities
- Organized and volunteered in microbiology themed workshops
- Included activities such as a live pond-water microscopy station, fermented food trivia, and antibiotic resistance dodge ball

Ames, IA

2016, 2017

Volunteer & Panelist

MICROBIOLOGY CASE STUDY WORKSHOP | IOWA STATE UNIVERSITY

- Taught high-schoolers from underprivileged backgrounds microbiology lab techniques, such as aseptic technique and pipetting
- Participated on panel to answer questions about higher education and STEM majors

Ames, IA

Aug. 2016

Blog Contributions

Write better grants

BLOGGING BEYOND ACADEMIA

Ithaca, NY

Aug. 2019

Explaining science to kids builds vital career skills

BLOGGING BEYOND ACADEMIA

Ithaca, NY

Oct. 2018

Soils have no panda bears

FOOD AND AGRICULTURAL ORGANIZATION

Ames, IA

Sept. 2015

Training

2021	Statistical Learning , ten week course, supervised and unsupervised methods	<i>edX Stanford</i>
2020	Collaborative and Reproducible Data Science in R , semester-long course	<i>Cornell University</i>
2020	Linear Models: Regression and ANOVA , two-day workshop, Cornell Statistical Consulting Unit	<i>Cornell University</i>
2020	Intermediate Statistical Analysis Using R , one-day workshop, Cornell Statistical Consulting Unit	<i>Cornell University</i>
2018	Principle Components Analysis , one-day workshop, Cornell Statistical Consulting Unit	<i>Cornell University</i>
2017	Data Wrasslin' in R , two-day workshop, tidyverse and tidy-data principles	<i>Iowa State U.</i>
2017	Data Visualization , one-day workshop, ggplot2	<i>ESA</i>