

# 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: Measuring in situ population dynamics to 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 the soil community within single soil aggregates
- 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

Foxx AJ, Franco Meléndez KP, Hariharan J, Kozik AJ, **Wattenburger, C.J.**, Godoy-Vitorino F, Rivers AR. Advancing Equity and Inclusion in Microbiome Research and Training. *mSystems* 0:e01151-21. **(2021)**

Karig DE, Mayers CG, **Wattenburger CJ**, Southon J. Contamination of Radiocarbon Analyses of Plant Samples by Fungal Hyphae. *Radiocarbon* 1–8. **(2020)**

**Wattenburger CJ**, Gutknecht J, Zhang Q, Brutnell T, Hofmockel KS, Halverson, LJ, 2020. 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 CJ**, Halverson LJ, Hofmockel KS. Agricultural Management Affects Root-Associated Microbiome Recruitment Over Maize Development. *Phytobiomes Journal* 3, 260–272 **(2019)**.

## Presentations

### TALKS

#### Land use and resource amendment impact in situ bacterial growth responses in soils

ECOLOGICAL SOCIETY OF AMERICA

*Virtual*

*Aug. 2021*

#### 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

## **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**

2021 **AFRI Pre-doctoral Fellowship**, USDA NIFA, \$120,000

USA

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**

### **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

## Mentor

IOWA STATE UNIVERSITY AND CORNELL UNIVERSITY

- Interviewed, hired, and trained six undergraduate students in basic lab techniques and/or bioinformatics skills
- Overseeing honors-thesis research project for Cornell biology undergraduate
- Provided career advice post-graduation and served as reference on job applications

*Various*

*2017 - present*

## Undergraduate Teaching Assistant

BIOL 205 | WESTERN WASHINGTON UNIVERSITY

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

*Bellingham, WA*

*Winter 2014*

## Leadership

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### Advisory Board Member

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

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

*Ithaca, NY*

*2019 - present*

### President & Treasurer

SOIL AND CROP SCIENCES GRADUATE STUDENT ASSOCIATION | CORNELL UNIVERSITY

- Organized meetings and graduate student recruitment events
- Created and managed organization budget and finances
- Coordinated invited speaker visit to campus for departmental seminar series

*Ithaca, NY*

*2019 - present*

### President & Treasurer

MICROBIOLOGY GRADUATE STUDENT ORGANIZATION | IOWA STATE UNIVERSITY

- 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

*Ames, IA*

*2015, 2016*

### Vice-President & Treasurer

ASSOCIATION OF WOMEN IN SCIENCE | WESTERN WASHINGTON UNIVERSITY

- Created and managed organization budget and finances
- Assisted president with meeting and event planning
- Started and raised money for small scholarship to be offered to women at Western Washington University

*Bellingham, WA*

*2013, 2014*

## Service

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### Data Visualization and Science Art Panelist

COMSciCON-NY 2021

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

*Virtual*

*May 2021*

### Careers in Data Visualization Panel Organizer

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

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

*Ithaca, NY*

*April 2021*

### Non-academic Careers Alumni Panel Organizer

BESS GSA | CORNELL UNIVERSITY

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

*Ithaca, NY*

*April 2020*

### Peer Reviewer

VARIOUS JOURNALS

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

*Various*

### Recruitment Planner

SOIL AND CROP SCIENCES SECTION | CORNELL UNIVERSITY

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

*Virtual*

*Feb 2021*

## Newsletter Editor

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

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

*Ithaca, NY*

*Aug. 2018 - Aug. 2019*

## GitHub Respository Manager

BUCKLEY LAB | CORNELL UNIVERSITY

- Managed Buckley lab GitHub repository
- Updated and wrote standard operating protocols

*Ames, IA*

*2017 - present*

## Curriculum Committee Member

INTERDEPARTMENTAL MICROBIOLOGY PROGRAM | IOWA STATE UNIVERSITY

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

*Ames, IA*

*2015*

## Outreach & Sci. Comm.

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### Organizer & Volunteer

USA SCIENCE FESTIVAL

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

*Washington DC, USA*

*March 2018*

### Organizer & Volunteer

WHO'S IN YOUR FOOD? | IOWA STATE UNIVERSITY

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

*Ames, IA*

*Feb. 2017*

### EcoDay Science Fair Judge

NEVADA ELEMENTARY SCHOOL

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

*Nevada, IA*

*May 2015*

### Organizer & Volunteer

EDWARDS ELEMENTARY SCIENCE NIGHT

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

*Ames, IA*

*2015, 2016*

### Soils Session Leader

WHITEROCK BIOBLITZ | THE WHITEROCK CONSERVANCY

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

*Coon Rapids, IA*

*2015, 2016*

### "Soil Breathes"

MATERIALS: SOIL AND CLAY

- [Link to image of art piece](#)
- 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

*Bellingham, WA*

*March 2014*

### "Seeing through the Ice"

INVITED SPEAKER | WHATCOM MUSEUM

- Short talk to the general public explaining the science of climate change using art of glaciers

*Bellingham, WA*

*Feb 2014*

### Science Club Instructor

BOYS AND GIRLS CLUB

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

*Bellingham, WA*

*Summer 2014*

## Diversity, Equity, & Inclusion

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### Facilitator

INTERPERSONAL DIALOGUE PROGRAM | CORNELL UNIVERSITY

- Facilitated workshops training Cornell students and staff to use inclusive practices
- Taught skills such as communication across difference, strategic and generative questioning, recognition of social identities

*Ithaca, NY*

*Aug. 2021-present*

## Volunteer

DIVERSITY PREVIEW WEEKEND | CORNELL UNIVERSITY

- Provided feedback and individual mentoring on graduate school application materials
- Served on panels to answer questions about applying for research fellowships

*Ithaca, NY*

*Sept. 2020*

## Volunteer

EXPANDING YOUR HORIZONS | CORNELL UNIVERSITY

- Escorted young participants to activities around campus
- 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 microbes and general microbiology
- Included activities such as leaf-press culturing, live pond-water microscopy station, fermented food trivia, antibiotic resistance dodge ball, etc.

*Ames, IA*

*2016, 2017*

## Volunteer & Panelist

MICROBIOLOGY CASE STUDY WORKSHOP | IOWA STATE UNIVERSITY

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

*Ames, IA*

*Aug. 2016*

## Blog Contributions

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### 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

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