

# 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**

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### **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**

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2021 **NIFA Predoctoral Fellowship**, United States Department of Agriculture, \$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

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### 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

### Certified Carpentries Instructor (in progress)

THE CARPENTRIES

Ithaca, NY  
April 2021

- Instructor training course completed, check-out process in progress

### 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

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### 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

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### 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 JOURNALS

Various

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

## 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

*Ithaca, NY*

*Aug. 2018 - Aug. 2019*

## Github Respository Manager

BUCKLEY LAB | CORNELL UNIVERSITY

- Managed Buckley lab github repository
- Updated 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
- Instructed children and visitors 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*

### "Breathe"

MATERIALS: SOIL AND CLAY

- 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 and impacts of climate change showcasing art themed around melting 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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### 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

*Ithaca, NY*

*2018, 2019*

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

## Organizer & Volunteer

SCIENCE BOUND | IOWA STATE UNIVERSITY

*Ames, IA*

*2016, 2017*

- 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

## Volunteer & Panelist

MICROBIOLOGY CASE STUDY WORKSHOP | IOWA STATE UNIVERSITY

*Ames, IA*

*Aug. 2016*

- 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

## 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 University</i> |
| 2020 | <b>Linear Models: Regression and ANOVA</b> , two-day workshop, Cornell Statistical Consulting Unit       | <i>Cornell University</i> |
| 2020 | <b>Intermediate Statistical Analysis Using R</b> , one-day workshop, Cornell Statistical Consulting Unit | <i>Cornell University</i> |
| 2018 | <b>Principle Components Analysis</b> , one-day workshop, Cornell Statistical Consulting Unit             | <i>Cornell University</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>                |