

# Cassandra Wattenburger

706 Bradfield Hall, Cornell University, Ithaca NY, 14853, USA

☎ (509) 391-0841 | ✉ [cjwattenburger@gmail.com](mailto:cjwattenburger@gmail.com) | 🏠 [cjwattenburger.rbind.io](http://cjwattenburger.rbind.io) | 📷 [cwatt](#)

## Education

### Cornell University, Ph.D. (in progress)

SOIL SCIENCE, MINORS IN GENOMICS AND MICROBIOLOGY

*Ithaca, NY*

*Jan. 2018 - Aug. 2023*

### 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

### Graduate Research Assistant (Ph.D.)

CORNELL UNIVERSITY | ADVISOR DR. DANIEL BUCKLEY

*Ithaca, NY*

*Jan. 2018 - present*

Dissertation: Measuring in-situ soil bacterial population dynamics to delineate and understand life history strategies affecting soil carbon cycling

### Graduate Research Assistant (M.S.)

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

*Ames, IA*

*Sept. 2015 - Dec. 2017*

Thesis: The role of bacterial and fungal maize root-associated communities in modulating agricultural 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 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*

*Summer 2010*

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

## Grants & Awards

2021	<b>AFRI Pre-Doctoral Fellowship</b> , USDA NIFA, \$120,000	<i>USA</i>
2019	<b>SNIPS Small Grant Award</b> , Cornell University, Co-PI with Kyle Martin, \$8,511	<i>Ithaca, NY</i>
2016	<b>NSF GRFP</b> , Ecology, National Science Foundation Fellowship, \$138,000	<i>USA</i>
2016	<b>Brown Graduate Fellowship</b> , Iowa State University, \$10,000	<i>Ames, IA</i>
2015	<b>Diane-Brandt Scholarship</b> , Iowa State University, \$5,000	<i>Ames, IA</i>
2015	<b>CALS+Presidential Fellowship</b> , Iowa State University, \$25,000	<i>Ames, IA</i>
2013	<b>Hodgson Family Scholarship</b> , Western Washington University, \$1,000	<i>Bellingham, WA</i>
2010	<b>President's Scholarship</b> , Western Washington University, \$4,000	<i>Bellingham, WA</i>

## Publications

**Wattenburger CJ**, Buckley DH. Land-use alters bacterial growth dynamics in soil. Submitted. **(2023)**

Foxx AJ, Franco Meléndez KP, Hariharan J, Kozik AJ, **Wattenburger CJ**, 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**

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### TALKS

#### **Bacterial growth and death dynamics during litter decomposition indicate shifts in life history strategy**

NEMPET22

*Blue Mountain Lake, NY*

June 2022

#### **Predicting microbial life history traits from their growth dynamics in soil**

SOIL AND CROP SCIENCES SEMINAR SERIES | CORNELL UNIVERSITY

*Ithaca, NY*

Sept. 2020

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

ECOLOGICAL SOCIETY OF AMERICA

*Virtual*

Aug. 2021

#### **Professionalism in Graduate School**

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

*Virtual*

July 2020

#### **Data Visualization Toolkit**

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

*Virtual*

March 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

#### **Population dynamics of soil bacterial communities during litter decomposition**

ISME18

*Lausanne, Switzerland*

Aug. 2022

#### **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

## **Teaching & Mentoring**

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### **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

- Assisted workshop organizers and answered attendee questions

*Virtual*

*Feb. 2021*

## Undergraduate Mentor

IOWA STATE UNIVERSITY AND CORNELL UNIVERSITY

- Seven undergraduate students
- Trained students in lab, field-work, and bioinformatics skills
- Oversaw honors thesis research project for Cornell Biology student
- Provide ongoing career advice post-graduation and have 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 lab activities
- Designed and presented short lecture on PCR

*Bellingham, WA*

*Winter 2014*

## Leadership

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### Data Leader

VACCINATION CONVERSATIONS WITH SCIENTISTS | DATA LEADERSHIP | CORNELL UNIVERSITY

- Processed and prepared data collected by phone-banking software to derive insights regarding COVID vaccine rates, common vaccination concerns, and phone-banking efficacy, visualized findings
- Created reproducible analysis workflow in R Markdown and GitHub
- Collaborated with other data leaders to identify analysis priorities and data limitations
- Communicated findings to broader leadership and organization members

*Ithaca, NY*

*Mar. 2022 - present*

### President & Treasurer

SOIL AND CROPS SCIENCES GRADUATE STUDENT ASSOCIATION | CORNELL UNIVERSITY

- Created and managed budgets as Treasurer, lead association activities as President
- Coordinated external speaker visit to Soil and Crop Sciences section seminar series
- Planned and hosted 2020 and 2021 Soil and Crops Sciences graduate student recruitment and tour events, virtually and in-person

*Ithaca, NY*

*Aug. 2019 - 2022*

### Advisory Board Member

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

- Guided Careers Beyond Academia programming
- Designed and presented webinars for professional development, including professionalism and data visualization
- Organized and hosted two career panels, one featuring Cornell-alumn in non-academic careers and one on data visualization careers

*Ithaca, NY*

*Aug. 2020 - 2021*

### President & Treasurer

MICROBIOLOGY GRADUATE STUDENT ORGANIZATION | IOWA STATE UNIVERSITY

- Created and managed budget as Treasurer, lead monthly meetings as President
- Organized and volunteered in science outreach events for Iowan students
- Invited and hosted Interdepartmental Microbiology program seminar speakers

*Ames, IA*

*Aug. 2015 - 2017*

### 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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### Server Administrator (Linux)

BUCKLEY LAB | CORNELL UNIVERSITY

- Created step-by-step server on-boarding instructions and made accessible via GitHub
- Created new user accounts and managed access to files and data stored on server
- Wrote general-use scripts in bash, Python, and Jupyter Notebook for common needs

*Ithaca, NY*

*Jan. 2022 - present*

### Data Visualization and Science Art Panelist

COMSciCON-NY 2021

- Invited as expert panelist to discuss 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 Review

VARIOUS JOURNALS

- Six manuscripts
- Journals: Soil Biology and Biochemistry, Microbial Ecology, SOIL

*Various*

### 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 Repository Manager

BUCKLEY LAB | CORNELL UNIVERSITY

- Responsible for organizing and making accessible Buckley lab protocols and scripts
- Wrote and updated standard operating protocols in markdown using version control

*Ithaca, NY*

*Jan. 2018 - 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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Note: See the Diversity, Equity, & Inclusion section below for DEI-specific outreach items, which has been my focus in recent years.

### Booth Organizer & Volunteer

USA SCIENCE AND ENGINEERING EXPO

- Created and organized activities for a microbiome-themed educational booth
- Educated children and adults about environmental microbiology and microscopy
- Collaborated with microbiologists to create a microbiome-themed board game as a booth activity

*Washington DC, USA*

*March 2018*

### Activity 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*

### Activity Organizer & Volunteer

EDWARDS ELEMENTARY SCIENCE NIGHT

- Created hands-on activities to teach children about microorganisms
- 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 geared to the 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 face casts made of soil collected from campus grounds depicting soil respiration
- Displayed in the Western Gallery at Western Washington University

Bellingham, WA

March 2014

## Invited Speaker

"SEEING THROUGH THE ICE" | WHATCOM MUSEUM

- Short talk to the general public explaining the science of climate change featuring contemporary 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 activities

Bellingham, WA

Summer 2014

## Diversity, Equity, & Inclusion

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### Pen Pal

WRITE A RESEARCHER | CORNELL UNIVERSITY

- Goal to pair girls with female role-models in the sciences and to demystify science and science as a career
- Exchanged letters with two girls over the course of several months, discussing their career interests and my own career as a scientist

Ithaca, NY

2022-2023

### IDP Fellow

INTERGROUP DIALOGUE PROJECT | CORNELL UNIVERSITY

- Organized and facilitated workshops to teach Cornell students, post-docs, and staff communication and social-identity recognition skills
- Taught skills such as communication across difference and strategic and generative questioning

Ithaca, NY

Aug. 2021 - present

### Volunteer & Panelist

DIVERSITY PREVIEW WEEKEND | CORNELL UNIVERSITY

- Student-led program to help underrepresented high school students with graduate school applications
- Provided feedback and individual mentoring on student practice graduate school application materials
- Served on panels to answer questions about and offer advice on applying for graduate school fellowships

Ithaca, NY

2020, 2021

### Volunteer

EXPANDING YOUR HORIZONS | CORNELL UNIVERSITY

- Student-led program to stoke interest in science for middle-school aged girls via demonstrations and one-on-one interaction with a female graduate student
- "Buddied" with participants for a day and chaperoned to activities around campus

Ithaca, NY

2018, 2019, 2023

### 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 a panel to answer student 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