

# Cassandra Wattenburger

SOIL & PLANT · MICROBIOME · DATA SCIENCE

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## Skills

<b>Research</b>	hypothesis generation, experimental design, field & greenhouse experiments, high-throughput sequencing
<b>Statistics</b>	hypothesis testing, linear & mixed models, multivariate analysis, permutation, metagenomics data
<b>Data Science</b>	R, Python, SQL, reproducible workflows, data wrangling & vis., algorithm dev., unsupervised clustering

## Work Experience

### RESEARCH

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

*Ithaca, NY*

CORNELL UNIVERSITY | ADVISOR DR. DANIEL BUCKLEY

*Jan. 2018 - present*

- Researched the role of soil bacterial population dynamics in the carbon cycling of agricultural and natural soil systems
- Developed a sequence library preparation method to measure changes in bacterial species abundances in soil
- Created an algorithm to estimate bacterial species growth and death from time series data
- Used unsupervised clustering methods to group bacterial species based on their growth and death traits
- Four non-thesis collaborative research projects within and outside of Cornell University

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

*Ames, IA*

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

*Sept. 2015 - Dec. 2017*

- Researched the impact of agricultural practices on maize root-associated microbial communities and their function, with a focus on nitrogen-use and nitrification
- Designed and conducted greenhouse and field-based plant experiments, analyzed microbiome sequence data
- Initiated and lead collaboration with scientists at the Donald Danforth Plant Science Center

#### Research Intern

*Richland, WA*

PACIFIC NORTHWEST NATIONAL LABORATORY | SUPERVISOR DR. VANESSA BAILEY

*Summers 2010 - 2014*

- Conducted research in multiple microbial ecology and soil carbon cycling projects
- Responsibilities included culturing, cloning, DNA and protein extractions from culture and soil, qPCR, GCMS operation

### DATA SCIENCE

#### Data Leader

*Ithaca, NY*

VACCINATION CONVERSATIONS WITH SCIENTISTS | DATA LEADERSHIP | CORNELL UNIVERSITY

*Mar. 2022 - present*

- Student-led organization using phone-banking to reach rural citizens and discuss COVID vaccine concerns
- Processed, analyzed, and visualized phone-banking data to derive insights regarding COVID vaccination rates and vaccination concerns in rural areas
- Created reproducible analysis workflow in R Markdown and GitHub
- Communicated findings to broader leadership by creating data reports and visualizations

#### Server Administrator (Linux)

*Ithaca, NY*

BUCKLEY LAB | CORNELL UNIVERSITY

*Jan. 2022 - present*

- Responsible for managing server user accounts and file permissions
- Wrote general-use scripts in Bash, Python, and Jupyter Notebooks for common data analysis needs
- Created step-by-step server on-boarding instructions and made accessible via GitHub

#### GitHub Repository Manager

*Ithaca, NY*

BUCKLEY LAB | CORNELL UNIVERSITY

*Jan. 2018 - present*

- Responsible for updating, making accessible, and the version-control of Buckley lab protocols
- Created organized spreadsheets of lab sequencing and barcoding primer sequences
- Wrote detailed instructions for sequence library sample submission to Cornell BRC

## COMMUNICATION & LEADERSHIP

### IDP Fellow

INTERGROUP DIALOGUE PROJECT | CORNELL UNIVERSITY

*Ithaca, NY*  
*Aug. 2021 - present*

- Trained in communication techniques by Cornell Intergroup Dialogue Project
- Organized and facilitated workshop to teach Cornell students, post-docs, and staff communication skills
- Taught skills such as LARA and strategic and generative questioning

### President & Treasurer

SOIL AND CROPS SCIENCES GRADUATE STUDENT ASSOCIATION | CORNELL UNIVERSITY

*Ithaca, NY*  
*Aug. 2019 - 2022*

- Lead meetings and group events as President (2021-2022), created and managed budgets as Treasurer (2019-2021)
- Organized and hosted virtual/in-person Soil and Crops Sciences graduate student recruitment events

### Advisory Board Member

CAREERS BEYOND ACADEMIA | CORNELL UNIVERSITY

*Ithaca, NY*  
*Aug. 2020 - 2021*

- Helped guide Careers Beyond Academia programming
- Designed and presented webinars on professional development with other board members, topics: professionalism and data visualization
- Organized and hosted two career panels highlighting non-academic career paths for scientists

## Education

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### 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*

## Major Awards

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

*USA*

2016 **NSF Graduate Research Fellowship**, Ecology, NSF GRFP, \$138,000

*USA*

## Relevant Training

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2022 **Penalized Regression with Ridge and LASSO**, Cornell Statistical Consulting Unit workshop

*Cornell U.*

2022 **Intro. to Bayesian Statistical Methods**, Cornell Statistical Consulting Unit workshop

*Cornell U.*

2022 **Missing Data**, Cornell Statistical Consulting Unit workshop

*Cornell U.*

2021 **Exploratory Factor Analysis**, Cornell Statistical Consulting Unit workshop

*Cornell U.*

2021 **Carpentries Instructor**, certification to teach programming workshops

*The Carpentries*

2021 **Statistical Learning**, audit, 10 week course, supervised and unsupervised methods

*edX Stanford*

2020 **Collaborative and Reproducible Data Science in R**, 2 credit graduate-level course

*Cornell U.*

2020 **Repeated Measures**, Cornell Statistical Consulting Unit workshop

*Cornell U.*

2018 **Principle Components Analysis**, Cornell Statistical Consulting Unit workshop

*Cornell U.*

2016 **Statistical Design and the Analysis of Experiments**, 4 credit course

*Iowa State U.*

2015 **Statistical Methods for Research Workers**, 4 credit course

*Iowa State U.*