

# Charlotte Francoeur

Microbiology Ph.D. Candidate

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## Education

### University of Wisconsin - Madison

August 2016 - Present

Microbiology Doctoral Training Program  
Laboratory of Dr. Cameron Currie, Department of Bacteriology  
GPA: 4.0/4.0  
2020 WISCIENCE Public Service Fellow

### University of Maryland - College Park

August 2012 - May 2016

Bachelor of Science in Microbiology with a Black Women's Studies Minor  
GPA: 3.905/4.0  
Cum Laude Latin Honors  
Integrated Life Sciences Honors  
Cell Biology and Molecular Genetics Departmental Honors

## Research Experience

### Current

#### Currie Lab, University of Wisconsin - Madison

January 2017-Present

Graduate research assistant in the laboratory of Dr. Cameron Currie investigating bacterial and viral associations in fungus-growing ants. More details can be found at [cfrancoeur.github.io/research/](https://cfrancoeur.github.io/research/)

### Past

#### Wu Lab, University of Maryland - College Park

September 2014 - July 2016

Institute for Bioscience and Biotechnology Research Laboratory  
Volunteer undergraduate research assistant in the laboratory of Dr. Louisa Wu  
Used the *Drosophila* Genetics Research Panel to perform a genome-wide association study (GWAS) to find genes associated with the phagocytosis of fungi in *Drosophila melanogaster*

#### Nou Lab, USDA-ARS

August 2012 - May 2014

Biological Science Aid in the Environmental Microbial and Food Safety laboratory of Dr. Xiangwu Nou  
Investigated biofilm formation between *Ralstonia insidiosa* and foodborne pathogens, *Escherichia coli*, *Salmonella* spp., and *Listeria monocytogenes*  
Resulted in a publication (see below)

#### Martin Lab, USDA-ARS

August 2011 - May 2012

High School Research Intern in the Invasive Insect Biocontrol and Behavior laboratory of Dr. Phyllis Martin  
Investigated bacterial strains pathogenic to the brown marmorated stink bug using 16S rRNA sequencing, Biolog, and phenotypic tests (e.g. optimal growth conditions, hemolytic activity, urease production)

## Peer-Reviewed Publications

**Francoeur, C.B.**, Khadempour, L., Moreira-Soto, R.D., Gotting, K., Book, A.J., Pinto-Tomás, A.A., Keefover-Ring, K., & Currie, C.R. (2020). Bacteria contribute to plant secondary compound degradation in a generalist herbivore system. *mBio* 11:e02146-20. <https://doi.org/10.1128/mBio.02146-20>.

Liu, N. T., Baughan, G. R., **Francoeur, C. B.**, Shelton, D. R., Lo, Y. M., & Nou, X. (2016). *Ralstonia insidiosa* serves as bridges in biofilm formation by foodborne pathogens *Listeria monocytogenes*, *Salmonella enterica*, and Enterohemorrhagic *Escherichia coli*. *Food Control*, 65, 14–20.

## Preprints & Submissions

**Francoeur, C.B.#**, May, D.S.#, Thairu, M., Hoang, D.Q., Panthofer, O., Bugni, T.S., Pupo, M.T., Clardy, J., Pinto-Tomás, A.A., & Currie, C.R. (2021) Burkholderia from fungus gardens of fungus-growing ants produce antifungals that inhibit the specialized

## Awards & Grants

1. Department of Bacteriology Allen-Lee Fellowship Award	September 2020 - 2021
2. UW-Madison CALS Dr. Leonard E. Mortenson Graduate Scholarship, \$1250	April 2020
3. O.N. Allen Soil and Environmental Microbiology Small Grant Recipient, \$4000	August 2019
4. UW-Madison Student Research Travel Grant - Conference, \$1200	June 2019
5. UW-Madison CALS Dr. Leonard E. Mortenson Graduate Scholarship, \$1250	April 2019
6. Dean's List and Academic Honors - University of Maryland	Fall 2012-Spring 2016
7. Senator Pinsky's Senatorial Scholarship	August 2012-May 2013
8. Delegate Anne Healey Scholarship	August 2012-May 2013

## Teaching & Mentoring

### Currie Lab Mentoring

<b>Damayanti Rodriguez Ramos:</b> MDTP rotation student. minION sequencing of fungus garden bacteria.	October 2020
<b>Olivia Panthofer:</b> Undergraduate Research Scholar. Recipient of the <b>UW Genetics and Genomics Distinguished Research Fellowship</b> 2020-2021. Isolation and metagenomic characterization of bacteriophage from fungus gardens.	2018-Present
<b>Jennifer Koehler:</b> REU student. Lipid Production of <i>Streptomyces</i> on Conversion Residue.	Summer 2018
<b>Donny Hoang:</b> MDTP rotation student. Inhibition of <i>Escovopsis</i> by <i>Burkholderia</i> .	January 2018
<b>Josh Daniels:</b> Undergraduate student. Investigation of Bee-Associated <i>Streptomyces</i> species and their ability to produce lipids.	2017-2018
<b>Laura Williams:</b> Undergraduate student. Characterization of <i>Burkholderia</i> sp. isolated from the fungus gardens of fungus farming ants.	2017-2018

### Teaching

<b>Assistant Teacher</b>	September 2017 - December 2017
-Assistant teacher for Pathogenic Bacteriology with Professor Joe Dillard	
-Duties include giving three lectures (Antibiotics + Disinfection, Clostridia, Treponema and Borrelia), writing and grading exams, and meeting with students	
<b>Undergraduate Teaching Assistant</b>	January 2016 - May 2016
-Teacher's assistant for Research Applications in the Life Sciences (HLSC377). Duties included weekly office hours, grading assignments, and aiding discussions about scientific papers	

## Oral Presentations

1. <b>Francoeur, C.B.</b> How Microbes Shape Our Lives, Transform the Environment, and Influence Climate Change. <b>Invited Speaker</b> for the 2021 UW-Madison Arboretum Winter Enrichment Lecture Series.	February 2021
2. <b>Francoeur, C.B.</b> , May, D.S., Thairu, M., Hoang, D.Q., Panthofer, O., Bugni, T.S., Pupo, M.T., Clardy, J., Pinto-Tomás, A.A., & Currie, C.R. Attine fungal garden <i>Burkholderia</i> produce antifungals and inhibit the specialized parasite <i>Escovopsis</i> . <b>Student Speaker</b> at the Entomology 2020 Virtual Annual Meeting.	November 2020
3. <b>Francoeur, C.B.</b> , Khadempour, L., Moreira-Soto, R.D., Gotting, K., Book, A.J., Pinto-Tomás, A.A., Keefover-Ring, K., & Currie, C.R. Bacteria contribute to plant secondary compound degradation in a generalist herbivore system. <b>Winner of the Lightning Talk Competition</b> at the 9th Annual UW-Madison Plant Sciences Symposium.	November 2019
4. <b>Francoeur, C.B.</b> , Khadempour, L., Keefover-Ring, K., & Currie, C.R. Garden bacteria in fungus-farming ants can metabolize plant secondary compounds. <b>Selected Speaker</b> at the Gordon Research Seminar on Animal-Microbe Symbioses.	June 2019
5. <b>Francoeur, C.B.</b> & Currie, C.R. Characterizing microbial associations in leaf-cutter ant fungus gardens. <b>MDTP Student Seminar Series Talk</b> at University of Wisconsin - Madison.	October 2018

6. **Francoeur, C.B.**, Nazario-Toole, A., & Wu., L. Genome Wide Association Study on Phagocytosis of Zymosan in *Drosophila melanogaster*. **Senior Thesis Talk** at University of Maryland - College Park. May 2016
7. **Francoeur, C.B.**, Nazario-Toole, A., & Wu., L. Genome Wide Association Study on Phagocytosis of Zymosan in *Drosophila melanogaster*. **ILS Student Seminar Series** at University of Maryland - College Park. March 2016
8. **Francoeur, C.B.**, Price, T., & Martin, P. Isolation and Identification of Pathogenic Bacteria From Stink Bugs. **Research Symposium Talk** at Eleanor Roosevelt High School. April 2012

#### Poster Presentations

1. **Francoeur, C.B.**, Khadempour, L., Moreira-Soto, R.D., Gotting, K., Book, A.J., Pinto-Tomás, A.A., Keefover-Ring, K., & Currie, C.R. Bacteria contribute to plant secondary compound degradation in a generalist herbivore system. **Poster Presentation** at the 9th Annual UW-Madison Plant Sciences Symposium (Nov. 15) and the Entomological Society of America 2019 Conference (Nov. 18). November 2019
2. **Francoeur, C.B.**, Khadempour, L., Keefover-Ring, K., & Currie, C.R. Garden bacteria in fungus-farming ants can metabolize plant secondary compounds. **Poster Presentation** at the Gordon Research Seminar and Gordon Research Conference on Animal-Microbe Symbioses. June 2019
3. **Francoeur, C.B.**, Khadempour, L., Currie, C.R. Microbial tolerance of plant defense compounds in the fungus-farming ant system. **Poster Presentation** at the 8th Annual UW-Madison Plant Sciences Symposium. November 2018
4. **Francoeur, C.B.**, Hoang, D., Carlos, C., & Currie, C.R. Potential roles of Burkholderia in the fungus-farming ant system. **Poster Presentation** at the Beneficial Microbes Meeting. July 2018
5. **Francoeur, C.B.**, Khadempour, L., Currie, C.R. Microbial tolerance of plant defense compounds in the fungus-farming ant system. **Poster Presentation** at Madison Microbiome Meeting. April 2018
6. **Francoeur, C.B.**, Khadempour, L., Currie, C.R. Microbial tolerance of plant defense compounds in the fungus-farming ant system. **Poster Presentation** at the DOE Joint Genome Institute Genomics of Energy and Environment Meeting. March 2018
7. **Francoeur, C.B.** & Martin, P. Identifying Bacteria From Stink Bugs. **Poster Presentation** at Eleanor Roosevelt High School Research Symposium. April 2012

#### Professional Development & Fieldwork

1. **WISCIENCE Public Service Fellows** January 2020-February 2021  
-Developed an illustrated booklet for the UW-Madison Arboretum about microbes, titled **The Wonderful World of Microbes**, that will be freely available in English, Spanish, and Hmoob in March.  
-Participant in the Winter Enrichment Lecture Series.
2. **Active Learning Ambassadors Workshop** California State University, Northridge October 2019
3. **Costa Rica Fieldwork** at La Selva Biological Station March-April 2019
4. **Ant Course** French Guiana, Nouragues Research Station August-Sept 2018  
-Acquired training on classification, identification, sample preparation, dissection, and general roles of ants.
5. **Costa Rica Fieldwork** at La Selva Biological Station March-April 2018  
-Trained on the collection, upkeep, and transportation of fungus-growing ants
6. **Anvi'o Workshop** UW-Madison May 2017
7. **Microbiota Analysis in R** UW-Madison November 2016
8. **Microbiota Processing in mothur** UW-Madison November 2016

#### Committees

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| MDTP Steering Committee                | 2019-2020 |
| MDTP Student Invited Speaker Committee | 2017-2019 |

#### Leadership & Volunteering

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| MDTP Student Host | 2018-2020 |
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UW-Madison Women's Club Ultimate Frisbee B Team Coach	2018-2020
Junior Science Cafe (through the Morgridge Institute for Research )	Fall 2017
Women's Maryland Club Ultimate B Team Captain	2014-2016
Women's Maryland Club Ultimate Treasurer	2013-2016
Alternative Spring Break-Chesapeake Bay	Spring Break 2013

### Relevant Classes

2017	CS 301: Introduction to Data Programming (Python) MICROBIO526: Microbial Physiology MICROBIO875: Bioinformatics for Microbiologists
2016	MICROBIO655: Biology and Genetics of Filamentous Fungi ENST432: Environmental Microbiology
2015	BSCI467: Freshwater Biology BSCI424: Pathogenic Microbiology