CHARLOTTE FRANCOEUR

Microbiology Ph.D. Student
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Education

University of Wisconsin – Madison *Aug. 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 *Aug. 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

Currie Lab, University of Wisconsin - Madison *Jan. 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/
- Resulted in three publications

Wu Lab, University of Maryland - College Park *Sept. 2014 - July 2016*
- Institute for Bioscience and Biotechnology Research Laboratory
- Volunteer undergraduate research assistant in the laboratory of Dr. Louisa Wu
- Performed a genome-wide association study (GWAS) to find genes associated with the phagocytosis of fungi in *Drosophila melanogaster* using the Drosophila Genetics Research Panel
- Resulted in the completion of a senior research thesis for the Cell Biology and Molecular Genetics Department honors program

Nou Lab, USDA-ARS *Aug. 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*, *Salmonell*a spp., and *Listeria monocytogenes*
- Resulted in a publication

Martin Lab, USDA-ARS *Aug. 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)
- Resulted in the completion of a senior thesis, poster presentation, and oral presentation

Publications

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. (Submitted). *Burkholderia* from fungus gardens of fungus-growing ants produce antifungals that inhibit the specialized parasite *Escovopsis*. *Applied and Environmental Microbiology*. [BioRxiv DOI: 10.1101/2021.01.22.427492.]
# indicates equal contributors

Weng, Y-M., **Francoeur, C.B**., Currie, C.R., Kavanaugh, D., & Schoville, S. (Submitted). A high-quality carabid genome provides insights into beetle genome evolution and cold adaptation. *Molecular Ecology Resources*. [Authorea DOI: 10.22541/au.161101907.70798763/v1.]

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](https://mbio.asm.org/content/11/5/e02146-20).

Liu, N. T., Bauchan, 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.

Awards and Grants

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

Mentoring and Teaching

Mentoring

- **Damayanti Rodriguez Ramos**: MDTP rotation student.
    - minION sequencing of fungus garden bacteria. *Oct. 2020*
- **Olivia Panthofer**: Undergraduate Research Scholar. Recipient of the UW Genetics and Genomics Distinguished Research Fellowship 2020-2021.
    - Metagenomic characterization of bacteriophage from fungus garden *2018-Present*
- **Jennifer Koehler**: REU student.
    - Lipid Production of *Streptomyces* on Conversion Residue. *Summer 2018*
- **Donny Hoang**: MDTP rotation student.
    - Inhibition of *Escovopsis* by *Burkholderia* spp. *Jan. 2018*
- **Josh Daniels**: Undergraduate student.
    - Investigation of bee-associated *Streptomyces* and lipid production. *2017-2018*

- **Laura Williams**: Undergraduate student.
    - Characterization of fungus garden-associated *Burkholderia* spp. *2017-2018*

Teaching

Assistant Teacher *Sept. 2017 – Dec. 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

Undergraduate Teaching Assistant *Jan. 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**. Francoeur, C.B.** How Microbes Shape Our Lives, Transform the Environment, and Influence Climate Change. Invited Speaker for the 2021 UW-Madison Arboretum Winter Enrichment Lecture Series. *Feb. 2021*

2. **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. Attine fungal garden Burkholderia produce antifungals and inhibit the specialized parasite Escovopsis. Student Speaker at the Entomology 2020 Virtual Annual Meeting. *Nov. 2019*

3. **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. Winner of the Lightning Talk Competition at the 9th Annual UW-Madison Plant Sciences Symposium. *Nov. 2019*

4. **Francoeur, C.B.**, Khadempour, L., Keefover-Ring, K., & Currie, C.R. Garden bacteria in fungus-farming ants can metabolize plant secondary compounds. Selected Speaker at the Gordon Research Seminar on Animal-Microbe Symbioses. *June 2019*

5. **Francoeur, C.B.** & Currie, C.R. Characterizing microbial associations in leaf-cutter ant fungus gardens. MDTP Student Seminar Series Talk at UW - Madison. *Oct. 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. *Mar. 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. *Apr. 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. 9th Annual UW-Madison Plant Sciences Symposium and the Entomological Society of America 2019 Conference. *Nov. 2019*

2. **Francoeur, C.B.**, Khadempour, L., Keefover-Ring, K., & Currie, C.R. Garden bacteria in fungus-farming ants can metabolize plant secondary compounds. 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. 8th Annual UW-Madison Plant Sciences Symposium. *Nov. 2018*
4. **Francoeur, C.B.**, Hoang, D., Carlos, C., & Currie, C.R. Potential roles of Burkholderia in the fungus-farming ant system. 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. Madison Microbiome Meeting. *Apr. 2018*
6. **Francoeur, C.B.**, Khadempour, L., Currie, C.R. Microbial tolerance of plant defense compounds in the fungus-farming ant system. DOE Joint Genome Institute Genomics of Energy and Environment Meeting. *Mar. 2018*
7. **Francoeur, C.B.** & Martin, P. Identifying Bacteria From Stink Bugs. Eleanor Roosevelt High School Research Symposium. *Apr. 2012*

Professional Development and Fieldwork

1. WISCIENCE Public Service Fellows *Jan. 2020-Feb. 2021*
   - Developed an illustrated zine for the UW-Madison Arboretum about microbes, titled The Wonderful World of Microbes. Available for free at https://arboretum.wisc.edu/learn/resources/.
   - Invited Speaker in the Winter Enrichment Lecture Series: How Microbes Shape Our Lives, Transform the Environment, and Influence Climate Change.
2. Active Learning Ambassadors Workshop California State University, Northridge *Oct. 2019*
3. Costa Rica Fieldwork at La Selva Biological Station *Mar.-Apr. 2019*
4. Ant Course, California Academy of Sciences *Aug.-Sept. 2018*
   - French Guiana, Nouragues Research Station
   - Acquired training on classification, identification, sample preparation, dissection, and general roles of ants.
5. Costa Rica Fieldwork at La Selva Biological Station *Mar.-Apr. 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 *Nov. 2016*
8. Microbiota Processing in mothur UW-Madison *Nov. 2016*

Leadership and Volunteering

MDTP Steering Committee *2019-2020*
MDTP Student Host *2018-2020*
MDTP Student Invited Speaker Committee *2017-2019*
UW-Madison Women's Club Ultimate Frisbee B Team Coach *2018-2020*
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*