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.
- Resulted in two first author publications, two co-authored publications

Wu Lab, University of Maryland - College Park *Sept. 2014 - July 2016*
- Volunteer undergraduate research assistant in the laboratory of Dr. Louisa Wu
- Performed a genome-wide association study to find genes associated with the phagocytosis of fungi in *Drosophila melanogaster*
- 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
- Resulted in one co-authored 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
- Resulted in the completion of a senior thesis, poster presentation, and oral presentation

Publications

Gotting, K., May, D.S., Sosa-Calvo, J., Khadempour, L., **Francoeur, C.B.**, Berasategui, A., Thairu, M.W., Sandstrom, S., Carlson, C.M., Chevrette, M., Rodriques A., Pupo, M.T., Bugni, T.S., Schultz, T.R., Johnston, J.S., Gerardo, N.M., & Currie, C.R. (*Submitted*). Genomic diversification of the specialized parasite of the fungus-growing ant symbiosis.

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 produces antifungals that inhibit the specialized parasite *Escovopsis*. *Applied and Environmental Microbiology*. [DOI: 10.1128/AEM.00178-21]
#indicates equal contributors

Weng, Y-M., **Francoeur, C.B**., Currie, C.R., Kavanaugh, D.H., & Schoville, S.D. (2021). A high-quality carabid genome assembly provides insights into beetle genome evolution and cold adaptation. *Molecular Ecology Resources*. [DOI: 10.1111/1755-0998.13409]

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.* [DOI: 10.1128/mBio.02146-20]

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. [DOI: 10.1016/j.foodcont.2016.01.004]

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

- **Chandler Hellenbrand**: CMDTP rotation student. *Nov. 2021*
    - Co-mentored with Dr. Margaret Thairu
    - Identification of eukaryotic viruses (Reoviridae) in leaf-cutter ants.
- **Damayanti Rodriguez Ramos**: MDTP rotation student. *Oct. 2020*
    - minION sequencing of fungus garden bacteria.
- **Olivia Panthofer**: Undergraduate Research Scholar. Recipient of the UW Genetics and Genomics Distinguished Research Fellowship 2020-2021. *2018 - Present*
    - Metagenomic characterization of bacteriophage from fungus garden
- **Jennifer Koehler**: REU student. *Summer 2018*
    - Lipid Production of *Streptomyces* on Conversion Residue.
- **Donny Hoang**: MDTP rotation student. *Jan. 2018*
    - Inhibition of *Escovopsis* by *Burkholderia* spp.
- **Josh Daniels**: Undergraduate student. *2017 - 2018*
    - Investigation of bee-associated *Streptomyces* and lipid production.
- **Laura Williams**: Undergraduate student. *2017 - 2018*
    - Characterization of fungus garden-associated *Burkholderia* spp.

Teaching

Assistant Teacher *Sept. - Dec. 2017*

- Assistant teacher for Pathogenic Bacteriology with Professor Joe Dillard
- Duties include giving three lectures, writing and grading exams, and meeting with students

Undergraduate Teaching Assistant *Jan. - 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

Professional Development and Fieldwork

1. Costa Rica Fieldwork, Finca La Anita and La Selva Biological Station *Aug. 2021*
   - Trained two Currie lab members (a postdoc and lab specialist) on fungus-growing ant identification, collection, and maintenance
2. 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.
3. Active Learning Ambassadors Workshop California State University, Northridge *Oct. 2019*
4. Costa Rica Fieldwork at La Selva Biological Station *Mar. - Apr. 2019*
5. Ant Course, California Academy of Sciences *Aug. - Sept. 2018*
   - French Guiana, Nouragues Research Station
   - Acquired training on classification, identification, sample preparation, and general ecological roles of ants.
6. Costa Rica Fieldwork at La Selva Biological Station *Mar. - Apr. 2018*
   - Trained on the collection, upkeep, and transportation of fungus-growing ants
7. Anvi'o Workshop UW-Madison *May 2017*
8. Microbiota Analysis in R UW-Madison *Nov. 2016*
9. Microbiota Processing in mothur UW-Madison *Nov. 2016*

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 Societies

American Society of Microbiology *2017 - Present*
Entomological Society of America *2018 - Present*
Mycological Society of America *2020 - Present*

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*