Cole **Baril**

Laboratory Technician at the Public Health Agency of Canada

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Profile

- Planned, organized, designed, managed, and evaluated all stages of scientific projects as a researcher on neglected mosquito-borne pathogen research in Manitoba, including working independently and coordinating scientific teams.
- Identified the presence of mosquito-borne bunyaviruses in mosquitoes in Manitoba.
- Identified 33 viruses and >60 parasites and fungi harboured by mosquitoes in Manitoba.

Education

Brandon University
Brandon, Manitoba

Master of Science — *2022*

- Thesis: Insights into the Population Dynamics and Microbiome of Mosquitoes in Manitoba
- Supervisor: Dr. Bryan Cassone

The University of Winnipeg
Winnipeg, Manitoba

Bachelor of Science — *2019*

- Distinctions: Dean's Honour List

Experience

Graduate Researcher
Brandon, Manitoba

Brandon University, Biology Department — *2020-2022*

- Planned, organized, and managed all facets of several research projects related to mosquito surveillance, including leading a team of research assistants.
- Coordinated mosquito-borne bunyavirus surveillance by RT-PCR.
- Analyzed RNA Sequencing data to characterize the mosquito microbiome of mosquitoes in Manitoba.
- Procured mosquito trapping and weather data for statistical analysis.
- Managed inventory control for laboratory supplies and prepare purchase requisitions.
- Utilized strong project management skills in independently planning, organizing, designing, and delivering scientific (biology) projects within Brandon University.
- Employed sound operational decision-making skills for strategic planning, materials, equipment, analysis techniques, software usage and all aspects of the project.
- Administered project operating budgets, including diligently controlling labour and research procurement costs to meet fiscal and project goals with limited resources.
- Prepared weekly, monthly and annual reports on mosquito surveillance findings for 2020 and 2021 and shared data with the Manitoba's West Nile Surveillance Program, Manitoba Health (Manitoba Government) and the Public Health Agency of Canada (Canadian Government).
- Established connections with a network of other scientists throughout North America to discuss their research and request information to enhance lab surveillance projects by learning best practices.

Research Assistant
Winnipeg, Manitoba

Cibus, Product Development — *2022*

- Created, edited and reviewed fieldbooks for field observation collection using Excel.
- Authored a report detailing the relationships between weather variables and Sclerotinia infection of canola plants.
- Made educated reccomendations for future research site selection.
- Visited experimental canola plots to observe plant quality, infestations, weed status and presence of disease.
- Compiled photos and reports of field visits into Microsoft OneNote files for each site.

Greenhouse Assistant
Winnipeg, Manitoba

DL Seeds, Breeding Program — *2020*

- Assisted in canola breeding programs by cross-pollinating plants in compliance with the supervisor's instructions and caring for healthy plants and those infected with pathogens (e.g., Sclerotinia and clubroot) in high-tech greenhouses and growth rooms.
- Prepared plant samples for marker testing for agricultural studies.
- Seeded, transplanted, and harvested canola plants.
- Logged experiment data in Excel.

Teaching

Sessional Instructor (Diseases 15:366)

Brandon, Manitoba

Brandon University, Biology Department

2022

- Prepared laboratory materials, media, and organisms.
- Created relevant quizzes and tests. Grade quizzes, tests, and assignments.
- Researched, designed, and delivered pre-lab presentations.
- Supported, tutored, and guided students during lab sessions.

Teaching Assistant (Biodiversity, Functions and Interactions 15:163)

Brandon, Manitoba

Brandon University, Biology Department

2021

- Prepared and delivered pre-lab briefings in two lab sections prior to student experiments to explain concepts and procedures using the Zoom virtual platform.
- Assisted students using MacMillan Learning Software during lab procedures and responded to questions.
- Graded assignments and tests. Provided written and oral critiques to improve student performance.
- Assisted the professor in test creation.

Presentations

Mosquito-borne bunyavirus surveillance and mosquito-weather relationships in Manitoba

Winnipeg, Manitoba

Designed and delivered a research presentation for the August 23 West Nile Virus Scientific Committee Meeting

2022

Mosquito Surveillance and California Serogroup in Manitoba

Winnipeg, Manitoba

Designed and delivered a poster presentation for the August 10 National Vector Borne Disease Info Sharing Table

2022

Characterizing the Microbiome of Manitoban Mosquitoes

Winnipeg, Manitoba

Designed and delivered a poster presentation for the 2022 North Central Mosquito Control Association 2022 Annual Meeting

2022

Neglected mosquito-borne pathogen surveillance in Manitoba, Canada

Denver, Colorado

Designed and delivered a poster presentation for the 2021 Entomological Society of America Conference

2021

Mosquito Surveillance for California Serogroup and Cache Valley Viruses in Manitoba

Brandon, Manitoba

Designed and delivered a research presentation for the 2020 Brandon University Science Seminar Series

2020

Skills

Laboratory Skills

Skilled in the following laboratory procedures

- RNA/DNA extraction
- Mosquito identification, handling, and rearing
- Reverse transcriptase reactions
- Polymerase chain reactions
- Polymerase chain reaction design
- Gel electrophoresis
- ELISA
- Aseptic techniques
- Media preparation and pouring
- RNA interference design
- Primer design and troubleshooting

Laboratory Equipment

Familiar with the following laboratory equipment

- Dissection and compound microscope
- Light microscope camera
- CDC light trap
- Ultracold freezer
- Micropipette and pipette
- Microcentrifuge
- Dry and wet bath
- Thermocycler
- Gel electrophoresis apparatus
- Bio-Rad ChemiDoc Imaging System
- Autoclave
- Incubator
- Fume hood
- Implen NanoPhotometer
- Microplate photometer

Computer Skills

Through knowledge of the following programs and languages

- Microsoft Office Suite (Word, Excel, PowerPoint, Teams, Sharepoint and Outlook)
- Zoom
- Windows
- Google Sheets
- Netlify (website hosting)
- R & RStudio
- Xaringon (HTML presentations)
- Next generation sequencing analysis
- CLC Genomics Workbench
- Chan Zuckerberg ID
- MEGAX for phylogenetic and sequence analysis
- Familiar with NCBI databases (e.g., nr, protein, nucleotide)
- Familiar with NCBI web applications (e.g., BLAST suite, ORFfinder, conserved domains)
- R
- RMarkdown & Markdown
- HTML
- CSS
- Markup
- Data Manipulation, transformation and organization using Excel and R
- Data visualization using RStudio
- Experience building models (GLMMs) for mosquito- and sclerotinia-weather based modelling
- Familiar with the Environment Canada weather database
- Experience manipulating weather data