

# Zhangbin Cai

Department of Animal Science

McGill University (Macdonald campus)

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## Education

### **Doctor of Philosophy in Animal Science**

Jan. 2022 – present

*Department of Animal Science, McGill University, Canada*

Thesis: Discovery of novel probiotics for the treatment of mastitis in dairy cows

### **Bachelor of Computer Science**

Sep. 2020 – Dec. 2021

*Gina Cody School of Engineering & Computer Science, Concordia University, Canada*

### **Master of Science in Animal Science**

Sep. 2015 – Dec. 2017

*Department of Animal Sciences, University of Manitoba, Canada*

Thesis: Porcine epidemic diarrhea virus and porcine deltacoronavirus survivability in the environment

### **Bachelor of Science in Animal Science**

Sep. 2012 - May. 2015

*Department of Animal Science and Aquaculture, Dalhousie University, Canada*

Thesis: Evaluation of Tasco® (prebiotic) in diet for mid to late cycle of laying hens

## Work History

### **Research Laboratory Animal Technician**

Apr. 2019 – Aug. 2020

University Health Network, Toronto, Ontario, Canada

- Supervised the humane care and handled multi-species of research animals.
- Assisted in the implementation of in vivo biomedical research projects.
- Prepared animals, instruments, and equipment for surgery.
- Collected specimens and carried out laboratory procedures to monitor animal health.
- Maintained accurate records in the lab notebook.

### **Research Lab Technologist (Contract)**

Sep. 2018 – Jun. 2019

Trouw Nutrition, Guelph, Ontario, Canada

- Led completed 2 research projects (laboratory workstreams) in collaboration with a global research team.
- Accurately recorded experiments result and collated data for further analysis.
- Trained new staff members and scheduled daily laboratory activities.
- Improved laboratory documentation such as sample receiving log, chemical/equipment inventory lists, equipment maintenance log for the ISO audit.
- Developed and wrote an SOP for the lab equipment maintenance; reviewed and improved 2 SOPs.

### **Graduate Research Assistant and Research Technician**

Apr. 2015 – May. 2018

Gut Microbiome Lab, University of Manitoba, Winnipeg, Manitoba, Canada

- Dealt with multiple projects and performed day-to-day lab work.
- Developed, optimized and troubleshoot biological assays.
- Conducted housekeeping lab duties such as safety assessments, waste management, inventory management, updating SOPs, equipment cleaning and checking to ensure the lab is well-organized.
- Wrote research papers and reports; presented detailed progress/results during project and group meetings.
- Assisted and guided colleagues with their experiments.

### **Research Assistant (Part-Time)**

Jan. 2014 – Dec. 2014

Atlantic Poultry Research Institute, Dalhousie University, Truro, Nova Scotia, Canada

- Independently led, planned, and executed one poultry nutrition project.
- Assisted students with their experiments.
- Prepared and maintained accurate records in the lab notebook and evaluated and summarized data.
- Wrote study papers detailing the project methods and scientific findings.

### **Technical Skills**

- **Virology:** virus isolation and culture; determination of viral infectious dose (TCID<sub>50</sub>)
- **Cell culture:** Vero ATCC CCL-81 (African green monkey kidney epithelial cells), light microscopy
- **Bacteria culture:** animal and environmental samples
- **Nucleic acid analysis:** DNA and RNA isolation from various samples (manures, soils, tissues, swaps and water), DNA and RNA quality assessment, RT-qPCR, Conventional PCR (primer design and optimization of PCR conditions), gel electrophoresis, PCR products purification, Sanger sequencing, Next-generation sequencing (Miseq platform)
- **Animals handling:** euthanasia, anesthesia, intraperitoneal injection, subcutaneous injection, intramuscular injection, blood collection, suturing for surgery; experience in handling mice, swine, canine, poultry, dairy cows, minks, and sheep.
- **Software:** MS Office, SAS, Graphpad prism
- **Programming Languages:** Java, Python, JavaScript, HTML, CSS, PHP, SQL, C++, C#, C, Prolog, LISP

### **Lab Certifications**

- **Rat Handling Wetlab** 2019  
Certification Authority: University Health Network
- **Mouse Handling Wetlab** 2019  
Certification Authority: University Health Network
- **Anesthesia** 2019  
Certification Authority: University Health Network

- **Research Orientation Certificate** 2019  
Certification Authority: University Health Network
- **Generic Biosafety Tutorial and Quiz** 2015  
Certification Authority: University of Manitoba
- **Level 2 Microbiology Biosafety Training – Gut Microbiome Laboratory** 2015  
Certification Authority: University of Manitoba
- **WHMIS Online and In Site Tutorial and Quiz** 2015  
Certification Authority: University of Manitoba
- **Animal Care Training (Canadian Council on Animal Care (CCAC))** 2015  
Certification Authority: University of Manitoba
- **WHMIS Online and In Site Tutorial and Quiz** 2014  
Certification Authority: Dalhousie University
- **Animal User Training (Canadian Council on Animal Care (CCAC))** 2014  
Certification Authority: Dalhousie University

### Publications

Peer-reviewed manuscripts:

- Mi, R., Patidar, R., Farenhorst, A., **Cai, Z.**, Sepehri, S., Khafipour, E., & Kumar, A. (2019).  
Detection of fecal bacteria and antibiotic resistance genes in drinking water collected  
from three First Nations communities in Manitoba, Canada. FEMS microbiology letters,  
366(6), fnz067.
- Tun, H. M., **Cai, Z.**, & Khafipour, E. (2016). Monitoring survivability and infectivity of porcine  
epidemic diarrhea virus (PEDv) in the infected on-farm earthen manure storages (EMS).  
Frontiers in microbiology 7, 265.

Conference papers:

- Cai, Z.**, Sepehri, S., Carney, J., Fynn, M., Tenuta M., & Khafipour, E. Monitoring survivability  
of porcine epidemic diarrhea virus (PEDv) following surface application of PEDv-  
positive manure to the soil. Poster presented at: Canadian Society of Microbiologists  
2017 Waterloo Conference; 2017 June 20-23; Waterloo, Ontario, Canada.
- Cai, Z.**, Sepehri, S., Tun, H. M., & Khafipour, E. Monitoring survivability of porcine  
deltacoronavirus (PDCoV) in earthen manure storages co-infected with porcine epidemic  
diarrhea virus (PEDv). Poster presented at: Canadian Society of Microbiologists 2017  
Waterloo Conference; 2017 June 20-23; Waterloo, Ontario, Canada.

### Honors and Awards

- University of Manitoba Graduate Students' Association Conference Grant 2017
- University of Manitoba International Graduate Student Entrance Scholarship 2015
- Nutreco Canada Inc. Scholarship 2014
- International Students Scholarship 2014
- The third prize in Dalhousie College Royal 2012