

Jennifer Ronholm

Assistant Professor
Faculty of Agricultural and Environmental Sciences
McGill University

Recent Highlights

- Named to World Economic Forums Young Scientist Community
- Awarded Faculty of Agricultural and Environmental Science – Prize for Teaching Excellence
- Promoted to Senior Editorial Board Member BMC Microbiology

Education

Ph.D. University of Ottawa, 2013
B.Sc. University of Waterloo, 2007

Academic Positions

2017 - present Assistant Professor, McGill University
2014 - 2016 Visiting Fellow, Health Canada
2012 - 2014 Post-Doctoral Fellow, McGill University

Teaching Experience

2018-present Instructor, Food Microbiology, McGill University
2018 Instructor, Geomicrobiology Short Course, EMBL Heidelberg, Germany
2017-present Instructor, Advances in Food Microbiology, McGill University
2017-present Instructor, Foodborne Pathogens, McGill University
2016 Next-Generation Sequencing and Bioinformatics Workshop Series, Health Canada
2012-2014 Guest Lecturer, Environmental Microbiology, McGill University
2011-2012 Let's Talk Science & Science Travels, University of Ottawa Chapter
2008-2012 Teaching Assistant, University of Ottawa
2005-2007 Teaching Assistant, University of Waterloo

Honours and Awards

2020 Faculty of Agricultural and Environmental Sciences Prize for Teaching Excellence
2020 World Economic Forum's Young Scientists Community Class of 2020
2017 Government of Canada Deputy Minister's Award for Excellence in Science 2017
2013 PDF NSERC CREATE Canadian Astrobiology Training Program (\$87,400)
2013 Dean's Scholarship, University of Ottawa (for completing PhD in <4 years)
2011 Canadian College of Microbiology Student Symposium Award
2009 Banting and Best CGS - Doctoral Award, CIHR (\$105,000)
2009 Scientific Research Communication Award, Federal Food Safety Research Meeting

Peer Reviewed Publications (* Indicates a HQP under my supervision)

54. S. Majumder, D. Jung*, **J. Ronholm** and S. George (2021) Prevalence and mechanisms of antibiotic resistance in *Escherichia coli* isolated from mastitic dairy cattle in Canada. *Submitted. BMC Microbiology*.
53. Park, S.* , Classen, A.* , Gohou, H.M.* , Maldonado, R.* , Kretchmann, E.* , Duvernay, C.* , Kim, G-J, **Ronholm, J.** (2021) A New, Reliable, and High-Throughput Strategy to Screen Bacteria for Antagonistic Activity against *Staphylococcus aureus*. *In Revisions. BMC Microbiology*.
52. Duplessis, M., Frechette, A., Poisson, W.* , Blais, L., and **Ronholm, J.** (2021) Refining Knowledge of Factors Affecting Vitamin B₁₂ Concentration in Bovine Milk. *Animals 11*, 532. DOI: /10.3390/ani11020532
51. Jung, D.* , Park, S.* , Ruffini, J.* , Dussault, F., Dufour, S., and **Ronholm, J.** (2021) Comparative Genomic Analysis of *Escherichia coli* Isolates from Cases of Bovine Clinical Mastitis Identifies Nine Specific Pathotype Marker Genes. *Accepted 29/04/2021. Microbial Genomics*.
50. Jung, D.* , Park, S.* , Ruffini, J.* , Dussault, F., Dufour, S., and **Ronholm, J.** (2021) Draft Genome Sequences of 113 Mammary Pathogenic *Escherichia coli* strains Isolated from Intramammary Infections. *Microbiology Resource Announcements*. DOI: 10.1128/MRA.01464-20
49. Demontier, É., Dubé-Duquette, A., Brouillette, E., Larose, A., Ster, C., Lucier, J-F., Rodrigue, S., Park, S.* , Jung, D.* , Ruffini, J.* , **Ronholm, J.**, Dufour, S., Roy, J-P., Ramanathan, S., and Malouin, F. (2021) Relative virulence of *Staphylococcus aureus* bovine mastitis strains representing the main Canadian spa types and Clonal Complexes as determined using in vitro and in vivo mastitis models. *In Revisions. Journal of Dairy Science*.
48. Tong, S., Ma, L., **Ronholm, J.**, Hsiao, W., and Lu, X. (2021) Whole genome sequencing of *Campylobacter* in agri-food surveillance. *Current Opinion in Food Science*. 39:130-139.
47. Zhou, C., Koshani, R., O'Brien, B.* , **Ronholm, J.**, Cao, X., Wang, Y. (2021) Mechano-bactericidal surfaces for food safety: From biological to bioinspired nanotopographies. *Current Opinion in Food Science*. 39:110-119.
46. Spadoni, A.E., Li, M., **Ronholm, J.**, Karboune, S. (2021) Biocatalyzed Generation of Feruloylated Polysaccharides from Cranberry and Characterization of their Prebiotic Properties. *Accepted. Food Bioscience*.
45. Park, S.* and **Ronholm, J.** (2021) *Staphylococcus aureus* in Agriculture: Lessons in Evolution from a Multi-Species Pathogen. *Clinical Microbiology Reviews*. 34(2) e00182-20. <https://doi.org/10.1128/CMR.00182-20>.
44. O'Brien, B.* , Goodridge, L., **Ronholm, J.**, Nasheri, N. (2021) Exploring the potential of foodborne transmission of respiratory viruses. *Food Microbiology* 95:103709 doi.org/10.1016/j.fm.2020.103709.
43. Yu, Z., Park, S.* , Jung, D.* , Hu, Y., Haung, K., Rasco, B.A., Shuo, W., **Ronholm, J.**¹, Lu, X.¹, and Chen, J.¹. (2020) Smart Traceability for Food Safety. *Critical Reviews in Food Science and Nutrition* DOI: 10.1080/10408398.2020.1830262 ¹Indicates a shared corresponding author.

42. Park, S.*, Jung, D.*, Dufour, S., **Ronholm, J.** (2020) Draft Genome Sequences of 27 *Staphylococcus aureus* strains and 3 *Staphylococci* Species Isolated from Bovine Clinical Mastitis. *Microbiology Resource Announcements*. doi: 10.1128/MRA.00300-20
41. Oliva, C., Huang, W., Badri, S.E., Lee, M.A.I.*, **Ronholm, J.**, Chen, L., Wang, Y. (2020) Concentrated sulfuric acid aqueous solution enables rapid recycling of cellulose from waste paper into antimicrobial packaging. *Carbohydrate Polymers*. 241:116256
40. Guan, P., Afzal, M., George, S., **Ronholm, J.**, Prasher, S. (2020) Removal of *Escherichia coli* from Lake Water in a Biochar-Amended Biosand Filtration System. *Ecological Engineering*. 150:105819.
39. Liu, X.*, Teixeira, J.S., Ner, S.*, Ma, K.*, Petronella, N., Banerjee, S., **Ronholm, J.** (2020) Exploring the Potential of the Microbiota as a Marker of the Geographic Origin of Fresh Seafood. *Frontiers in Microbiology*. 11:696.
38. Franco-Lopez, J.*, Duplessis, M., Bui, A.*, Reymond, C.*, Poisson, W.*, Blais, L., Gervais, R., Rico, DI., Cue, RI., Girard, C., **Ronholm, J.** (2020) Identification of correlations between the composition of the bovine microbiota and vitamin B12 abundance. *mSystems*. doi:10.1128/mSystems.00107-20
37. Paranjape, K., Bédard, E., Whyte, L., **Ronholm, J.**, Prévost, M., Faucher, S. (2020) Presence of *Legionella* spp. in cooling towers: the role of microbial diversity, *Pseudomonas*, and continuous chlorine application. *Water Research*. 169:115252
36. Petronella, N., Kundra, P.*, Auclair, O.*, Hébert, K., Rao, M., Kingsley, K., De Bruyne, K., Banerjee, S., Gill, A., Pagotto, F., Tamber, S., **Ronholm, J.** (2019) Changes detected in the genome sequences of *Escherichia coli*, *Listeria monocytogenes*, *Vibrio parahaemolyticus*, and *Salmonella enterica* after serial subculturing. *Canadian Journal of Microbiology*. 65(11): 842-850
35. Altshuler, I., **Ronholm, J.**, Layton, A., Onstott, T.C., Greer, C., Whyte, L.G. (2019) Denitrifying and nitrogen-fixing bacteria and their potential effect on N₂O soil gas flux in Canadian high Arctic cryosols. *FEMS Microbial Ecology*. 95(5) doi:10.1093/femsec/fiz049
34. Goordial, J., **Ronholm, J.** (2018) Metagenomics meets read clouds. *Nature Biotechnology*. 36, 1049-1051
33. Nasheri, N., Petronella, N., **Ronholm, J.**, Suresh, M., Harlow, J., Mykytczuk, O., Corneau, N., Bidawid, S. (2018) Genetic Characterization of Norovirus GII.4 Variants Circulating in Canada using a Metagenomic Technique. *BMC Infectious Diseases*. 18(1):512
32. Petronella, N., **Ronholm, J.** (2018) The Expression of Virulence Factors in *Vibrio parahaemolyticus* is Controlled by Different Mechanisms in Different Pathotypes. *Microbial Genomics*. 60: 3539-9
31. **Ronholm, J.**, (2018) Editorial: Game Changer - Next Generation Sequencing and Its Impact on Food Microbiology. *Frontiers in Microbiology*. 9:363

30. **Ronholm, J.**, Goordial, J., Sapers, H.M., Izawa, M.R.M., Applin, D.M., Pontefract, A., Omelo, C.R., Lamarche-Gagnon, G., Cloutis, E.A., Whyte, L.G. (2018) Characterization of Microbial Communities Hosted in Quartzofeldspathic and Serpentinite Lithologies in Jeffrey Mine, Canada. *Astrobiology*. 18(8) 1008-1022
29. Raymond-Bouchard, I., Goordial, J., Zolotarov, Y., **Ronholm, J.**, Stromvik, M., Bakermans, C., Whyte, L. (2018) Conserved Genomic and Amino Acid Traits of Cold Adaptation in Subzero-Growing Arctic Permafrost Bacteria. *FEMS Microbial Ecology*. 94:4
28. Sapers, H., **Ronholm, J.**, Raymond-Bouchard, I., Comery, R., Osinski, G., Whyte, L. (2017) Biological Characterization of Microenvironments in a Hypersaline Cold Spring Mars Analogue. *Frontiers in Microbiology*. 8:2527
27. Forbes, J.D., Knox, N., **Ronholm, J.**, Pagotto, F., Reimer, A. (2017) Metagenomics: The Next Game Changer. *Frontiers in Microbiology*. 8:1069
26. Loza-Correa, M., Kou, Y., Taha, M., Kalab, M., **Ronholm, J.**, Schlievert, P., Cahill, M.P., Skeate, R., Cserti-Gazdewich, C., Ramirez-Arcos, S. (2017) Septic transfusion case cause by a platelet pool with visible clotting due to contamination with *Staphylococcus aureus*. *Transfusion*. 57 (5): 1299-1303
25. Nasheri, N., Petronella, N., **Ronholm, J.**, Bidawid, S., Corneau, N. (2017) Characterization of the Genomic Diversity of Norovirus in Linked Patients Using a Metagenomic Deep Sequencing Approach. *Frontiers in Microbiology* 8:73
24. **Ronholm, J.**, Nasheri, N., Petronella, N., Pagotto, F. (2016) Navigating Microbial Food Safety in the Era of Whole Genome Sequencing. *Clinical Microbiology Reviews* 29(4): 837-857
23. **Ronholm J.**, Petronella N, Tamber S. (2016) Draft genome sequences of 11 Salmonella enterica strains with variable levels of barotolerance. *GenomeA* 4(5):e00952-16
22. **Ronholm, J.**, Petronella, N., Tamber, S. (2016) Draft Genome Sequences of 2 Salmonella enterica Strains Isolated from Sprouted Chia and Flax Seed Powders. *GenomeA* 4(5):e00963-16
21. Daia, Z., **Ronholm, J.**, Tiana, Y., Sethia, B., Cao, X. (2016) Sterilization Techniques for Biodegradable Scaffolds in Tissue Engineering Applications. *Journal of Tissue Engineering* 7: 2041731416648810
20. **Ronholm, J.**, Lau, F., Banerjee, S. (2016) Emerging Seafood Preservation Techniques to Extend Freshness and Minimize Vibrio Contamination. *Frontiers in Microbiology* 7:350
19. Goordial, J. Raymond-Bouchard, I., Riley, R., **Ronholm, J.**, Shapiro, N., Woyke, T., Grigoriev, I., LaButti, K., Tice, H., Amirebrahimi, M., Greer, C., Bakermans, C., Whyte, L. (2016) Improved-high-quality draft genome of eurypsychrophile *Rhodotorula* sp. JG1b, isolated from permafrost in the hyper-arid Upper Elevation McMurdo Dry Valleys, Antarctica. *GenomeA* 4(2):e00069-16
18. Goordial, J., Raymond-Bouchard, I., Zolotarov, Y., deBethencourt, L., **Ronholm, J.**, Woyke, T., Stromvik, M., Greer, C., Bakermans, C., Whyte, L. (2016) Cold adaptive traits revealed by comparative genomic analysis

of eurypsychrophile *Rhodococcus* sp. JG-3 isolated from high elevation McMurdo Dry Valley permafrost, Antarctica. *FEMS Microbiology Ecology* 92(2)

17. **Ronholm, J.**, Petronella, N., Chew Leung, C., Pightling, A., Banerjee, SK. (2016) Genomic Features of Environmental and Clinical *Vibrio parahaemolyticus* Isolates Lacking Recognized Virulence Factors Are Dissimilar. *Applied and Environmental Microbiology* 82(4) 1102-1113

16. **Ronholm, J.**, Petrunka L.J., Banerjee, SK. (2015) Antimicrobial Resistance in *Vibrio* spp. Isolated from Canadian Imported Shrimp, 2009 to 2014. *International Journal of Antimicrobial Agents*. 46(4) 475-476

15. Goordial, J., Raymond-Bouchard, I., **Ronholm, J.**, Shapiro, N., Woyke, T., Whyte, L.G., Bakermans, C. (2015) Improved-high-quality draft genome sequence of *Rhodococcus* sp. JG-3, a eurypsychrophilic Actinobacteria from Antarctic Dry Valley permafrost. *Standards in Genomic Science*. 10(61)

14. Lau, M.C.Y, Stackhouse, B.T., Layton, A.C., Chauhan, A., Vishnivetskaya, T.A., Chourey, K., **Ronholm, J.**, Mykytczuk, N.C.S., Bennett, P.C., Lamarche-Gagnon, G., Burton, N., Pollard, W.H., Omelon, C.R., Medvigy, D.M. Hettich, R.L., Pfiffner, S.M., Whyte, L.G., Onstott, T.C. (2015) An Active Atmospheric Methane Sink in High Arctic Mineral Cryosols. *ISME* 9:1880-1891

13. **Ronholm, J.**, Ramond-Bouchard, I., Cyr, T., Creskey, M, Cloutis, E., Whyte, L. (2015) Characterizing the Surface-Exposed Proteome of *Planococcus halocryophilus* During Cryophilic Growth. *Extremophiles*. 19(3) 619-629

12. **Ronholm, J.**, Petronella, N., Kenwell, R., Banerjee, S. (2015) Draft Whole-Genome Sequences of Fourteen *Vibrio parahaemolyticus* Clinical Isolates with an Ambiguous K-Serogroup. *GenomeA* 3(2):e00217-15

11. Chauhan, A. Layton, A.C., Vishnivetskaya, T.A., Williams, D., Pfiffner, S.M., Rekepalli, B., Stackhouse, B., Lau, M.C.Y., Phelps, T., Mykytczuk, N.C.S., **Ronholm, J.**, Whyte, L., Onstott, T., Sayler, G.S. (2014) Metagenomes from Thawing Low Carbon Mineral Cryosols and Permafrost of the Canadian High Arctic. *GenomeA* 2(6):e01217-14

10. **Ronholm, J.**, Schumann, D., Sapers, H. M., Izawa, M. R. M., Applin, D., Berg, B., Mann, P., Vali, H., Flemming, R. L., Cloutis, E. A. Whyte, L. G. (2014) A mineralogical characterization of biogenic calcium carbonates precipitated by heterotrophic bacteria isolated from cryophilic polar regions. *Geobiology* 12(6): 542-556

9. Rhind, T., **Ronholm, J.**, Berg, B., Mann, P., Applin, D., Stromberg, J., Sharma, R., Whyte, L. G., Cloutis E. A., (2014) Gypsum-hosted endolithic communities of the Lake St. Martin impact structure, Manitoba, Canada: spectroscopic detectability and implications for Mars. *International Journal of Astrobiology*. 13(4): 366-377

8. Berg, B. L., **Ronholm, J.**, Applin, D. M., Mann, P., Izawa, M. R. M., Cloutis, E. A., Whyte, L. G. (2014) Spectral features of biogenic calcium carbonates and implications for astrobiology. *International Journal of Astrobiology*. 13(4): 353-365

7. **Ronholm, J.** Zhang, X.Y.Z., Cao, X., Lin, M. (2014) The *Listeria monocytogenes* serotype 4b autolysin IspC is SecA2-independent. *Journal of Basic Microbiology*. 54(9): 1017-1021

6. Allan, J., **Ronholm, J.**, Mykytczuk, N.C.S., Greer, C., Onstott, T. Whyte, L. (2014) Methanogen Community Composition and Rates of Methane Consumption in Canadian High Arctic Permafrost Soils. *Environmental Microbiology Reports* 6 (2): 136-144
5. **Ronholm, J.**, VanFassen, H., McKenzie, R., Zhang, Z., Cao, X, Lin, M. (2013) Monoclonal antibodies recognizing the surface autolysin IspC of *Listeria monocytogenes* serotype 4b: epitope localization, kinetic characterization and cross-reaction studies. *PLoS ONE* 8(2): e55098
4. **Ronholm, J.**, Cao, X., Lin, M. (2012) Unveiling the expression characteristics of IspC, a cell wall-associated peptidoglycan hydrolase in *Listeria monocytogenes* during growth under stress conditions. *Applied and Environmental Microbiology*. 78(22): 7833-7840
3. **Ronholm, J.**, Wang, L., Hayashi, I., Sugai, M., Zhang, Z., Cao, X., Lin, M. (2012) The *Listeria monocytogenes* serotype 4b autolysin IspC has N-acetylglucosaminidase activity. *Glycobiology*. 22(10): 1311-1320
2. **Ronholm, J.**, Zhang, Z., Cao, X., Lin, M. (2011) Production and Characterization of monoclonal antibodies to lipopolysaccharide antigens of *Salmonella enterica* serotype Typhimurium DT104. *Hybridoma*. 30(1): 43-52
1. Lin, M., Armstrong, S., **Ronholm, J.**, Dan, H., Auclair, M.-E., Zhang, Z., Cao, X. (2009) Screening and characterization of monoclonal antibodies to the surface antigens of *Listeria monocytogenes* serotype 4b. *Journal of Applied Microbiology*. 106(5): 1705-1714

Invited Talks and Symposia

Identifying key interactions between the bovine udder microbiota and infectious and environmental mastitis. *Canadian Bovine Mastitis Research Network Annual Meeting*. Montreal, QC. Tuesday May 28, 2019.

Defining and Improving the Dairy Cattle Microbiota to Assure consistent and High Vitamin B12 Concentrations in Milk. *69th Annual Conference of the Canadian Society of Microbiologists*. Sherbrooke, Quebec. June 11, 2019.

The Influence of the Bovine Microbiota on the Abundance of Vitamin B12 in Milk. *Sherbrooke Research and Development Centre*. Sherbrooke, Quebec. June 12, 2019.

Interbacterial interactions and removing antibiotics in agriculture. *University of Alberta Edmonton, Alberta*. July 26, 2019.

The Agricultural Microbiome. *CREATE TECHNOMISE*. September 19, 2018. Ottawa, Ontario.
<https://www.youtube.com/watch?v=fHOg8tBQGME&t=481s>

Interactions Between Bacterial Pathogens and the Microbiome. Characterizing Département de sciences biologiques *Université de Montréal*. November 13, 2017. Montreal, Quebec.
<https://www.youtube.com/watch?v=90cJY1DDx84&t=1357s>

The role of the Microbiome in Maintaining Udder Health. *Canadian Bovine Mastitis and Milk Quality Research Network Meeting*. May 12, 2017. Montreal, Quebec

The Shellfish Microbiome: Can it be Manipulated to Increase the Freshness and Safety of Seafood? *Health Canada Science Forum*. February 10, 2017. Ottawa, ON

A Genomics Approach to Finding Novel Virulence Factors in *Vibrio parahaemolyticus* Clinical Isolates Lacking Traditional Virulence Factors. *Health Canada Science Forum*. February 22, 2016. Ottawa, ON

Next-Generation Sequencing - Problems in Environmental Microbiology. *Health Canada*. March 6, 2015. Ottawa, ON

Extreme Living - Understanding Extremophilic Microorganisms. *Astrobiology Graduate Conference*. June 13, 2013. Montreal, QC
<https://www.youtube.com/watch?v=RF-rgiRWKHo&t=72s>

IspC is conserved in *Listeria monocytogenes* serotype 4b and has potential for use in food-processing diagnostics. January 19, 2012. *Canadian Food Inspection Agency*. Ottawa, ON

IspC is a Novel N-acetylglucosaminidase conserved in *Listeria monocytogenes* serotype 4b. December 14, 2011. *University of Ottawa*. Ottawa, ON

IspC - An Autolysin with potential for use in food microbiology. March 3, 2010. *University of Hiroshima*. Hiroshima, Japan

Research Funding

Combined total of >\$3-million since 2017

NOVA: NSERC FRQNT Team Research Supplement, 2021

PI: Novel Approaches to Prevent Bovine Mastitis by Microbiome Manipulation

Total Value: \$30,000

Summary: This funding will be used to conduct pre-clinical testing of the CRISPR-Cas9 MPEC prophylactic which we are designing in our FRQNT Team Research and Equipment grant. This work will be carried out in collaboration with the University of Sherbrook and the University of Guelph.

MAPAQ Programme Innov'Action, 2021-2023

PI: A culturomic approach to optimizing the chicken microbiome

Total Value: \$109,802

Summary: This funding will be used to apply a culturomic approach to isolating a variety of bacterial isolates from healthy chickens throughout Canada to attempt to discover novel chicken specific probiotics.

Louis G. Johnson Foundation, 2020-2021

Co-PI: Equipment grant to purchase a QiaCUBE HT

Total Value: \$55,000

Summary: This is an equipment grant to purchase a QIAcube HT which is an instrument that automates 96-parallel DNA extractions. This will save approximately 32 hours of time for ever 96 DNA extractions preformed.

McGill Sustainability Systems Initiative, 2020-2021

Co-PI: All-plant-derived biodegradable packaging with mechano-bactericidal activity

Total Value: \$50,000

Summary: Will be used in collaboration with a partner in food packaging to develop novel biodegradable food packaging material that is also anti-microbial.

FRQNT Team Research and Equipment Grant, 2020-2023

PI: New approached to the treatment and Prevention of Bovine Mastitis through Manipulating the Microbiome

Total Value: \$185,000

Summary: Will be used to investigate the possibility of using a CRISPR based technology to edit mammary pathogenic *E. coli* out of the bovine microbiome and prevent environmental mastitis cases. This work will be carried out in collaboration with the University of Sherbrook.

New Frontiers in Research Fund – Exploration, 2020-2022

Co-PI: Development of biodegradable electrospun nanofabrics with mechano-bactericidal activity

Total Value: \$250,000

Summary: Will be used in collaboration with partners in food packaging and chemical engineering to develop novel biodegradable food packaging material that is also anti-microbial.

Canadian Foundation for Innovation – John R. Evans Leaders Fund, 2019

PI: Antagonistic Interbacterial Interactions

Total Value: \$357,956

Summary: Equipment grant to purchase an artificial gut model.

Consortium-RITA, 2019-2021

PI: Development of antifungal and antibacterial ingredients from natural sources and the process of their encapsulation to maintain the quality of grated cheese

Total Value: \$55,000

Summary: Bioprospecting bacterial isolates from the Canadian high arctic to discover novel cold active anti-fungals to be used in the cheese industry for clean-label preservation and shelf-life extension.

Egg Farmers of Canada, 2019-2021

PI: Mining the Chicken Gastrointestinal Microbiome for Novel Anti-Infective Probiotics to Reduce the Incidence of Bacterial Infections

Total value: \$50,000

Summary: This proposal focuses on the discovery of novel probiotic bacteria that are able to reduce the incidence of pathogenic Gram-negative bacteria in high-density poultry production operations without using antibiotics.

McGill Sustainability Systems Initiative, 2019-2020

PI: Mining the Chicken Microbiome for Anti-infective Probiotics to Eliminate the Need for Prophylactic Antibiotics

Total Value: \$50,000

Summary: Novel products are needed to replace antibiotics as prophylactics for bacterial infection in poultry. This proposal focuses on the discovery of novel probiotic bacteria.

Elanco Research Contract, 2019-2021

PI: Effect of lysozyme on Gram-positive microorganism growth inhibition and changes in intestinal microbiota in broiler chickens

Total value: \$440,100

Summary: This is contract work to conduct a trial on novel growth promoting enzymes and detail their effect on the gastrointestinal microbiota.

Op+Lait Regroupment, 2019

PI: Whole Genome Sequencing 180 Bacterial Isolates from Bovine Mastitis Cases

Total Value: \$22,500

Summary: In this project we whole genome sequenced 180 bovine mastitis isolates.

NSERC Collaborative Research and Training Experience Program, 2019-2025

Co-PI: Genome Editing for Food Security and Environmental Sustainability

Total Value: \$1,600,000

Summary: This is a training program for students to learn novel genome editing technologies with applications in food production and agriculture.

NSERC Discovery, 2018-2023

PI: Interactions Between Foodborne Bacterial Pathogens and the Microbiome

Total Value: \$247,000

Summary: In the gastrointestinal bacterial pathogens must compete with resident non-pathogenic bacteria. At the molecular level, very little is known about the details of antagonistic interactions between bacterial pathogens and the microbiome. This research program will expand the fundamental knowledge of the interactions that occur between bacterial pathogens and the microbiome of food-producing animals.

FRQNT New University Researchers, 2018-2020

PI: The Type VI Secretion System in *Salmonella enterica*

Total Value: \$94,425

Summary: In this investigation, a reductionist approach will be used to examine antagonistic interactions between *Salmonella enterica* and commensal bacteria.

Dairy Farmers of Canada, Research Cluster III 2018-2023

Co-PI: The Canadian Bovine Mastitis and Milk Quality Research Network: continuing the advancement of milk quality in Canada

Total Value: \$1,200,000

Summary: This project investigates multiple aspects of mastitis. Within this team grant, my lab will characterize changes that occur in the milk microbiome prior to, during, and after establishment of mastitis.

Op+Lait Regroupment, 2017

PI: Defining and Improving the Bovine Microbiome for the Optimal Production of Vitamin B12 in Milk

Total Value: \$22,500

Summary: Milk is an ideal source of vitamin B12. However, vitamin B12 concentrations in milk are highly variable. In this study microbiome composition will be correlated to management practices and milk vitamin B12 abundance.

Service Activities

Service to McGill University:

- McGill University Senator, 2019-2024
- Chair of Macdonald Campus Library Advisory Committee, 2019-2020
- Member of Macdonald Campus Student Awards Committee, 2021-2026
- Member of Macdonald Campus Lister Communication Committee, 2020-2025
- Member of Macdonald Campus Animal Care Committee, 2019-2022
- Member of Macdonald Campus Student Recruitment Committee, 2018-2021
- Member of Macdonald Campus Library Advisory Committee, 2019-2024
- Member of Faculty Planning Committee, 2018-2021
- Member of IJM Chair in Food Safety Hiring Committee, 2019
- Member of Sustainable Poultry Production Hiring Committee, 2020
- Member of CREATE student recruitment committee 2019-2024
- Served on 15 thesis advisory committees in 2020
- Served as an examiner on 14 Ph.D. comprehensives and defenses in 2020

Service to Scientific Community:

Animal Care Committee:

2019- Ferme d'éducation et de recherche de campus d'Alfred – FERCA

Editing Services:

2020- Microorganisms, Review Editor

2020- BMC Microbiology, Senior Editorial Board Member

2018- Canadian Journal of Microbiology, Editorial Board Member

2016- Frontiers in Microbiology, Associate Editor

Reviewing Services:

2018-2020 Nature Biotechnology

2013-2020 Canadian Journal of Microbiology

2015-2020 Frontiers in Microbiology

2017-2020 BMC Microbiology

2019 Nature Communications

2017 Crystals

2016 Environmental Science & Technology

2016 Antarctic Science

2015 Springer Life Sciences (Books)

2015 Marine Genomics

Conference Organization:

2019 Chair: Local Organizing Committee – Vibrio 2019 (Montreal)

2013 Chair: Round table on post-Graduate (lack of) Employment Opportunities
Canadian Society of Microbiologists 2013 (Ottawa)

Society Volunteerism:

2020 Educational Committee Member, Canadian Society of Microbiologists

Service to Society:

Public Engagement through Media:

I regularly engage in public outreach by giving interviews or writing Q&A's for a general audience. My quotes and sound bites have appeared in too many articles and in too many media clips to list or track. Here are some good examples:

<https://reporter.mcgill.ca/covid-19-qa-jennifer-ronholm-on-staying-safe-while-shopping-for-groceries/>

<https://www.coastmountainnews.com/business/the-reason-bagged-salads-get-hit-with-recalls/>

<https://www.cbc.ca/news/canada/saskatchewan/reduce-waste-food-spoilage-produce-storage-1.4699844>

<https://www.lapresse.ca/actualites/justice-et-faits-divers/2020-09-03/oignons-contamines-a-la-salmonelle-demande-d-action-collective.php>

I worked with the World Economic Forum – and 6 other talented young scientists, to produce a website that puts science in an economic context and attempts to link it to all aspects of human life. The results can be found here:

<https://intelligence.weforum.org/topics/a1G0X000006DO7RUAW?tab=publications>