

Jennifer Ronholm

Associate Professor
Faculty of Agricultural and Environmental Sciences
McGill University

Recent Highlights

- Science Meets Parliament, 2024
- Canada Research Chair in Agricultural Microbiology, 2023-2028
- Principal's Prize for Emerging Researchers, 2023
- William Dawson Scholar, 2022
- World Economic Forum Young Scientist, 2020
- McGill Award for Teaching Excellence, 2020

Education

Ph.D. University of Ottawa, 2013

B.Sc. University of Waterloo, 2007

Academic Positions

2023 - Associate Professor, McGill University

2017 - 2023 Assistant Professor, McGill University

2014 - 2016 Visiting Fellow, Health Canada

2012 - 2014 Post-Doctoral Fellow, McGill University

Teaching Experience

2017- Instructor, Advances in Food Microbiology FDSC545, McGill University

2017- Instructor, Foodborne Pathogens ANSC350, McGill University

2018- 2022 Instructor, Food Microbiology FDSC442, McGill University

2018 Instructor, Geomicrobiology Short Course, EMBL Heidelberg, Germany

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

2023 Canada Research Chair (\$600,000)

2023 Principal's Prize for Emerging Researchers (\$5,000)

2022 William Dawson Scholar (\$25,000)

2020 Faculty of Agricultural and Environmental Sciences Prize for Teaching Excellence

2020 World Economic Forum's Young Scientist

2017 Government of Canada Deputy Minister's Award for Excellence in Science

2013 PDF NSERC CREATE Canadian Astrobiology Training Program (\$87,400)

2013 Dean's Scholarship, University of Ottawa (for completing PhD in <4 years)

Peer Reviewed Publications (* Indicates a HQP under my mentorship, ¹indicates shared authorship)

69. Dong, Y., **Ronholm, J.**, Fliss, I., Karboune, S. (2024) Screening of lactic acid bacteria strains for potential sourdough and bread applications: enzyme expression and exopolysaccharide production. *Probiotics and Antimicrobial Proteins*. 11:1-23 <https://doi.org/10.1007/s12602-024-10270-y>
68. O'Brien, B.* , Jung, D.* , Park, S.* , Kurban, D., Cai, Z.* , Nguyen, S.* , Li, Z.* , Dufour, S., **Ronholm, J.** The composition of the bacterial community in raw milk from Holstein dairy cattle correlated with the occurrence of *Klebsiella pneumoniae* Clinical Mastitis Infections. *In preparation for Animal Microbiome*.
67. Khullar, G.* , Cai, Z.* , O'Brien, B.* , Suh, J.* , **Ronholm, J.** Draft genome sequences of 21 *Bacillus sp.* isolates from raw bovine milk. *Accepted to Microbiol Resour Announc*.
66. Jung, D.* , Park., S* , Kurban, D., Dufour, S., **Ronholm, J.** The occurrence of *Aerococcus urinaeequi* and non-aureus Staphylococci in raw milk negatively correlates with *Escherichia coli* clinical mastitis. *In revisions mSystems*.
65. O'Brien, B.* , Yushchenko, A.* , Suh, J.* , Jung, D.* , Cai, Z.* , Nguyen, S.* , Semret, M., Dufour, S., Fanning, S., **Ronholm, J.** Subtle genomic differences in *Klebsiella pneumoniae* sensu stricto isolates indicate host adaptation. *Submitted OneHealth*
64. Suh, J., O'Brien, B., Glenn, Paul D II., Cai, Z., Daigle, F., Faucher, S. P., **Ronholm, J.** (2024) Draft genome sequences of 13 *Salmonella enterica* subsp. Enterica Isolates from Chickens, Cows, and Previous Canadian Outbreaks. *Microbiol Resour Announc*. 12:e00989-23. <https://doi.org/10.1128/mra.00989-23>
63. O'Brien, B.* , Yushchenko, A.* , Suh, J.* , Jung, D.* , Cai, Z.* , Nguyen, S.* , Semret, M., Dufour, S., **Ronholm, J.** (2024) Draft genome Sequences of 148 *Klebsiella pneumoniae* species complex members from bovine and human hosts. *Microbiol Resour Announc*. 12:e00132-24. <https://doi.org/10.1128/mra.00132-24>
62. Martineau, C-A., Duplessis, M., **Ronholm, J.**, Petri, R. The influence of trace metal supplementation on the presence of ceftriaxone resistance in *Enterobacteriaceae* in the gastrointestinal tract of dairy cattle. *Submitted to mSystems*.
61. Majumder, S., Sackey, T., Viau, C., Park, S.* , Xia, J., **Ronholm, J.**, Geroge, S. (2023) Genomic and phenotypic profiling of *Staphylococcus aureus* isolates from bovine mastitis for antibiotic resistance and intestinal infectivity. *BMC Microbiology*. 23(1) 1-18. <https://doi.org/10.1186/s12866-023-02785-1>
60. Lamontagne, J., Rico, D., Perdomo-Rincon, C., **Ronholm, J.**, Gervais, R., and Chouinard, Y. (2023) Effects of direct-fed *Bacillus subtilis* and *Bacillus licheniformis* on production performance and milk fatty acid profile in dairy cows. *Journal of Dairy Science*. 106(3) 1815-1825. <https://doi.org/10.3168/jds.2022-22564>
59. Park, S.* , Jung, D.* , Altshuler, I., Kruban, D., Dufour, S., and **Ronholm, J.** (2022) The Effect of Milk Microbiome Concentration on Host Susceptibility to *Staphylococcus aureus* Clinical Mastitis in Dairy Cattle. *Animal Microbiome*. 4(1) 59. <https://doi.org/10.1186/s42523-022-00211-x>

58. Brar, A., Majumder, S., Navarro, M.Z., Benoit-Biancamano, M.O., **Ronholm, J.**, George, S. (2022) Nanoparticle-enabled combination therapy showed superior activity against multi-drug resistant bacterial pathogens in comparison to free drugs. *Nanomaterials*. (12) 2197 <https://doi.org/10.3390/nano12132179>
57. Zhou, C., Girouard, F.*, O'Brien, B.*, **Ronholm, J.**¹, Wang, Y¹. (2022) Construction of chevaux-de-frise from cellulose nanocrystals to enable mechano-bactericidal activity on recycled waste cotton film. *Green Chemistry*. <https://doi.org/10.1039/D2GC00073C>
56. Park, S.*, Jung, D.*, O'Brien, B.*, Ruffini, J*, Dussault, F., Dube-Duquette, A., Demoniter, E., Lucier, J-F., Malouin, F., Dufour, S. and **Ronholm, J.** (2022) Comparative Genomic Analysis of *Staphylococcus aureus* Isolates Associated with Either Bovine Intramammary Infections or Human Infections Demonstrates the Importance of Restriction-Modification Systems in Host Adaptation. *Microbial Genomics*. 8(2):000779 <https://doi.org/10.1099/mgen.0.000779>
55. Bilal, M., Achard, C., Barbe, F., Chevaux, E., **Ronholm, J.** and Zhao, X. (2021) *Bacillus pumilus* and *Bacillus subtilis* Promote Early Maturation of Cecal Microbiota in Broiler Chickens. *Microorganisms*. 9(9):1899 <https://doi.org/10.3390/microorganisms9091899>
54. Majumder, S., Jung, D.*, **Ronholm, J.** and George, S. (2021) Prevalence and mechanisms of antibiotic resistance in *Escherichia coli* isolated from mastitic dairy cattle in Canada. *BMC Microbiology* 21:222 <https://doi.org/10.1186/s12866-021-02280-5>
53. Park, S.*, Classen, A.*, Gohou, H.M.*, Maldonado, R.*, Kretschmann, 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*. *BMC Microbiology* 21:189 <https://doi.org/10.1186/s12866-021-02265-4>
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 <https://doi.org/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. *Microbial Genomics* 7:000597 <https://doi.org/10.1099/mgen.0.000597>
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* <https://doi.org/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. *Journal of Dairy Science*. 104(11):11904-11921. <https://doi.org/10.3168/jds.2020-19904>

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
<https://doi.org/10.1016/j.cofs.2020.12.020>
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
<https://doi.org/10.1016/j.cofs.2020.12.021>
46. Spadoni, A.E., Li, M., **Ronholm, J.**, Karboune, S. (2021) Biocatalyzed Generation of Feruloylated Polysaccharides from Cranberry and Characterization of their Prebiotic Properties. *Food Bioscience* 42:101071
<https://doi.org/10.1016/j.fbio.2021.101071>
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*
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*.
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, D.I., Cue, R.I., Girard, C., **Ronholm, J.** (2020) Identification of correlations between the composition of the bovine microbiota and vitamin B12 abundance. *mSystems* 5:e00107-20 <https://doi.org/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)
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., Saylor, 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

Books and Book Chapters

Harnessing Big Data in Food Safety. Springer Nature press. 2022. Edited by J. Farber, R. Dara, and **J. Ronholm**.

Foodborne Bacterial Pathogen Big Data – Genomic Analysis *in* Harnessing Big Data in Food Safety. Springer Nature Press. 2022. Chapter by J. Marquis-Hrabe*, D. Jung*, S. Park*, A. Boray* and **J. Ronholm**.

Invited Talks and Symposia

Featured Speaker in the QIAGEN AMR Webinar March 9, 2023. Talk entitled: “Precision Microbiome Engineering as an Alternative to Antibiotics to Prevent Bacterial Infections In Agriculture.” 90 mins including extensive Q&A session.

Invited Departmental Seminar Faculty of Agriculture and Nutrition University of Alberta, Edmonton, Alberta. August 16, 2023. Talk entitled “Precision Microbiome Engineering as an Alternative to Antibiotics to Prevent Bacterial Infections In Agriculture.”

Invited talk (online) One Health in Global Perspective course, Fiocruz, Brazil. October 18, 2023. Talk entitled “A One Health Approach to Antimicrobial Resistance”

The role of antibiotics and probiotics in milk production. *Huazhong Agricultural University*. Online. July 27, 2022.

The role of genomics in reducing the need for antibiotic use in milk production. *Canadian Food Summit CIFST*. Guelph, ON. June 1, 2022

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

Conference Presentations

* Indicates a HQP under my mentorship, the presenting author is underlined

Bridget O'Brien*, Alla Yushchenko*, Jinha Suh*, Dongyun Jung*, Zhangbin Cai*, Sam Nguyen*, Simon Dufour, and **Jenifer Ronholm**. Genomic relationship between *Klebsiella pneumoniae* isolated from bovine clinical mastitis cases and human infections. *IFD World Dairy Summit* Oct 16-19, 2023.

Sang Nguyen,* Xingyi Yu, Dongyun Jung*, Zhangbin Cai*, **Jennifer Ronholm**. Identification of Milk Contamination in the Next Generation Sequencing Era. *Macdonald Dairy Farm Open House*. April 14, 2023.

Bridget O'Brien*, Soyoun Park*, Dongyun Jung*, and **Jennifer Ronholm**. Variations in the Bovine Raw Milk Microbiome of Holstein Cows Correlated with Occurrence of *Klebsiella pneumoniae* Clinical Mastitis Infections. *Macdonald Dairy Farm Open House*. April 14, 2023.

Bridget O'Brien*, Soyoun Park*, Dongyun Jung*, and **Jennifer Ronholm**. Genomic Relationship Between *Klebsiella pneumoniae* Isolated from Bovine Clinical Mastitis Cases and Human Infections. AMR Annual Symposium. McGill University. May 25, 2023

Satwick Majumber, Dongyun Jung*, **Jennifer Ronholm**, Saji Geroje. Antibiotic resistant *Escherichia coli* from bovine clinical mastitis cases in Canada. AMR Annual Symposium. McGill University. May 25, 2023

Zhangbin Cai*, Celine Ster, Sam Nguyen*, Alla Yushenko*, and **Jennifer Ronholm**. Investigation of the Dynamics of the Mammary Gland Microbiome in Response to *Staphylococcus aureus* Infection. AMR Annual Symposium. McGill University. May 25, 2023

Zhangbin Cai*, Celine Ster*, Sam Nguyen*, Alla Yushenko*, and **Jennifer Ronholm**. Investigation of the Dynamics of the Mammary Gland Microbiome in Response to *Staphylococcus aureus* Infection. CSM Halifax. Poster Presentation. June 24-29, 2023

Zhixuan Feng*, and **Jennifer Ronholm**. Prospecting the chicken microbiome with culturomic methods and find probiotic candidates via inter-bacterial competition. CSM Halifax. Poster Presentation. June 24-29, 2023

Natalia Lorenc*, Bridget O'Brien*, **Jennifer Ronholm**, Steven Leadbeater, Stewart C Johnson, Christine Liu. Characterizing antimicrobial resistance genes (ARGs) in Bacteria Relevant to Canadian Aquaculture. CSM Halifax. Poster Presentation. June 24-29, 2023

Sang Nguyen*, Shikha Chaudhary, Guy Seguin, Jessica St. John, Carolina Mateus, **Jennifer Ronholm**. Potential Milk-Origin Probiotics against *Escherichia coli* Bovine Mastitis. CSM Halifax. Poster Presentation. June 24-29, 2023

Zhiwei Li*, Danielle Malo, **Jennifer Ronholm**. Characterization of Interactions between *Salmonella enterica* and Host Gut Microbiome Mediated by Type VI Secretion Systems. CSM Halifax. Poster Presentation. June 24-29, 2023

Bridget O'Brien*, Soyoun Park*, Dongyun Jung*, and **Jennifer Ronholm**. Genomic Relationship Between *Klebsiella pneumoniae* Isolated from Bovine Clinical Mastitis Cases and Human Blood Infections. CSM Halifax. Poster Presentation. June 24-29, 2023

Dongyun Jung*, Bridget O'Brien*, Soyoun Park*, **Jennifer Ronholm**. The Effect of Milk Microbiota Composition on Susceptibility of Dairy Cattle to *Escherichia coli* Clinical Mastitis. CSM Halifax. Oral Presentation. June 24-29, 2023

Z. Feng*, N. Lorenc*, G. Sun, B*. O'Brien*, and **J. Ronholm**. Development of Anti-Infective Probiotics for use in the Poultry Industry. Egg Farmer of Canada Research Summer Meeting. Sainte-Anne-de-Bellevue, Quebec, July 25, 2022.

D. Jung*, S. Park*, D. Kurban, S. Dufour, **J. Ronholm**. Longitudinal study on the milk microbiota of Holstein cows diagnosed with *Escherichia coli* clinical mastitis. 71st Annual Conference of the Canadian Society of Microbiologists. Guelph, Ontario. June 26-29, 2022

L. Auzance*, B. Martin, C. Delbes, I Verdier-Metz, M. Buchon, M. C. Michalski, M. Duplessis, M. Popova, **J. Ronholm**, and B. Graulet. Variation of vitamin B12 status in dairy cows fed contrasted diets. 71st annual Conference of the Canadian Society of Microbiologists. Guelph, Ontario, June 26-29, 2022.

Z. Feng*, N. Lorenc*, G. Sun*, B. O'Brien*, and **J. Ronholm**. Prospecting the chicken microbiome for Anti-infective probiotic. 71st annual Conference of the Canadian Society of Microbiologists. Guelph, Ontario, June 26-29, 2022.

Z. Li*, D. Malo, **J. Ronholm**. Characterization of Interactions Between *Salmonella enterica* and Host Gut Microbiome Mediated by Type VI Secretion Systems. 71st Annual Conference of the Canadian Society of Microbiologists. Guelph, Ontario. June 26-29, 2022.

B. O'Brien*, D. Jung*, S. Park*, D. Kurban, S. Dufour, and **J. Ronholm**. Variations in the Bovine Udder Microbiome of Holstein Cows with *Klebsiella pneumoniae* Clinical Mastitis Infections. 71st Annual Conference of the Canadian Society of Microbiologists. Guelph, Ontario. June 26-29, 2022

S. Park*, D. Jung*, D. Kruban, B. O'Brien*, J. Ruffini*, F. Dussault, I. Altshuder, A. Classen*, H. Gohou, R. Maldonado*, E. Kretschmann*, C. Duvernay*, A. Dubé-Duquette, É. Demontier, J. F. Lucier, F. Malouin, GJ Kim, S. Dufour, **J. Ronholm**. Understanding *Staphylococcus aureus* and Associated Inter-Bacterial Interactions to Develop Prophylactics and Therapeutics for Bovine Clinical Mastitis. 71st Annual Conference of the Canadian Society of Microbiologists. Guelph, Ontario. June 26-29, 2022

Z. Cai*, C. Popovich*, B. O'Brien*, S. Park*, D. Jung*, and **J. Ronholm**. Discovery of Novel Probiotics for Treatment of Bovine Mastitis Caused by *Staphylococcus Aureus*. 71st Annual Conference of the Canadian Society of Microbiologists. Guelph, Ontario. June 26-29, 2022

Z. Feng*, N. Lorenc*, G. Sun*, B. O'Brien*, and **J. Ronholm**. Prospecting the chicken microbiome for Anti-infective probiotic. 2022. Canadian Poultry research Forum. Online, June 14, 2022.

Z. Feng*, N. Lorenc*, G. Sun*, B. O'Brien*, and **J. Ronholm**. Prospecting the chicken microbiome for Anti-infective probiotic. Global Health Week Event McGill Macdonald Mini-Symposium – Open poster session. Sainte-Anne-de-Bellevue, Quebec, May 18, 2022.

D. Jung*, S. Park, D*. Kurban, S. Dufour, **J. Ronholm**. Longitudinal study on the milk microbiota of Holstein cows diagnosed with *Escherichia coli* clinical mastitis. McGill Bicentennial Global Health Week. Sainte-Anne-de-Bellevue, Quebec. May 16-20, 2022

S. Park*, D. Jung*, D. Kruban, S. Dufour, **J. Ronholm**. Longitudinal Study on the Milk Microbiota of Dairy Cows Diagnosed with *Staphylococcus aureus* Clinical Mastitis” 61st National Mastitis Council Annual Meeting. Virtual Meeting. February 1-3, 2022 (Virtual attendance)

D. Jung*, S. Park*, D. Kurban, S. Dufour, **J. Ronholm**. Longitudinal study on the milk microbiota of Holstein cows diagnosed with *Escherichia coli* clinical mastitis. National Mastitis Council 61st Annual Meeting. San Diego, California, USA. February 1-3, 2022 (Virtual attendance)

F. Girouard*, Y. Wang, **J. Ronholm**. Antibacterial effect of a food packaging material incorporated with nanopillars. Graduate Research Symposium. McGill University, Montréal, Quebec, Canada (Oral) March 26, 2021.

S. Park*, D. Jung*, D. Kurban, S. Dufour, **J. Ronholm**. A longitudinal cohort study of milk microbiota associated with *Staphylococcus aureus* bovine clinical mastitis. Poster. 2021 Canadian Society of Microbiologists (CSM). Jun 14-17, 2021

D. Jung*, S. Park*, J. Ruffini*, F. Dussault, S. Dufour, **J. Ronholm**. Comparative genomic analysis of mammary pathogenic *E. coli* and bovine commensal *E. coli*. Poster. CSM-SCM Annual Conference Remote 2021. June 14-17, 2021

A. Classen*, R. Levésque, S. Bayen, L. Whyte, **J. Ronholm**. Utilisation des bactéries arctiques pour aider à conserver les fromages. Video recording. Forum Techno Novalait. June 8, 2021.

A. Classen*, E. Marcolef, R. Levésque, S. Bayen, L. Whyte, **J. Ronholm**. Discovery of novel cold-active antifungals from polar bacteria isolated from the Canadian high arctic that are active against major spoilage fungi in the cheese industry. Poster. Canadian Society of Microbiologists. June 14, 2021.

Z. Li*, **J. Ronholm**. Type VI Secretion Systems and Effector-Immunity Pair Carrying Status in *Salmonella enterica*. Poster. 70th Annual Conference of the Canadian Society of Microbiologists (CSM 2021). June 14, 2021

Z. Feng*, B. O' Brien*, **J. Ronholm**. Prospecting Chicken Microbiome for Anti-Infective Probiotics. Poster. Canadian Poultry Research Forum. June 21- June 23, 2021

Z. Feng*, B. O' Brien*, **J. Ronholm**. Prospecting Chicken Microbiome for Anti-Infective Probiotics. Oral. Canadian Poultry Research Forum. June 21, 2021

Z. Feng*, **J. Ronholm**. Prospecting Chicken Microbiome for Anti-Infective Probiotics. Poster. CSM-SCM Annual Conference Remote 2021. June 14, 2021

J. Marquis-Hrabe*, B. O'Brien*, E. Magnuson, **J. Ronholm**. A metagenomic approach to understanding relationships between microbial communities in the bovine rumen and vitamin B12 abundance. Poster. CSM. June 15, 2021.

R. Petri, **J. Ronholm**, I. Royer, M. Duplessis. Ensuring ecosystem productivity and resiliency by assessing the impact of trace metal contamination on the microbial population of the gastrointestinal microbiota of lactating dairy cattle. Poster. International Symposium on Gut Microbiology. October 13 – 15, 2021.

S. Majumder, D. Jung*, S. George and **J. Ronholm**. Prevalence and mechanisms of antibiotic resistance in *Escherichia coli* isolated from mastitic dairy cattle in Canada. Conference of Research Workers in Animal Diseases. December 3-7, 2021. Chicago, IL

D. Jung*, S. Park*, D. Kurban, S. Dufour, and **J. Ronholm**. Characterization of pathogenic *E. coli* and *S. aureus* from Bovine Mastitis, and their Interaction between Commensal Bacteria in Bovine Udder. National Mastitis Conference. Orlando, Florida. January 2020.

D. Jung*, S. Park*, J. Ruffini*, F. Dussault, S. Dufour, and **J. Ronholm**. Comparative genomic analysis of mammary pathogenic *E. coli* and bovine commensal *E. coli*. Canadian Bovine Mastitis and Milk Quality Research Network Symposium. *Online* October 6 – 7, 2020

S. Park*, D. Jung*, B. O'Brien*, J. Ruffini*, F. Dussault, A. Dube-Duquette, E. Demontier, J-F. Lucier, F. Malouin, S. Dufour, and **J. Ronholm**. Comparative genomic study of *Staphylococcus aureus*: Lessons from its gene contents. Canadian Bovine Mastitis and Milk Quality Research Network Symposium. *Online* October 6 – 7, 2020

J. S. Teixeira, **J. Ronholm**, N. Petronella, S. Tamber, and S.K. Banerjee. Antimicrobial susceptibility testing of Canadian Clinical *Vibrio parahaemolyticus* isolates. Health Canada Science Forum. Ottawa, Ontario, Canada. February 2019.

D. Jung*, **J. Ronholm**. The effect of the microbiota on the prevalence of environmental mastitis. Canadian Bovine Mastitis Research Network Annual Meeting. Montreal, QC. May 28, 2019.

J. Lopez*, A. Bui*, C. Raymond*, R. Gervais, W. Poisson, L. Blais, Girard, C., and **J. Ronholm**. Defining and Improving the Dairy Cattle Microbiota to Assure consistent and High Vitamin B12 Concentrations in Milk. Canadian Bovine Mastitis Research Network Annual Meeting. Montreal, QC. May 28, 2019.

S. Park*, J. Lopez*, and **J. Ronholm**. The milk storage effect on milk microbiome and an optimized bacterial DNA extraction protocol: Pave a way for longitudinal study to control *Staphylococcus aureus* mastitis. Canadian Bovine Mastitis Research Network Annual Meeting. Montreal, QC. May 28, 2019.

J. Ruffini* and **J. Ronholm**. Whole genome sequencing of 180 bacterial isolates associated with bovine mastitis in Canada. Montreal, QC. May 28, 2019.

A. Bui*, C. Duvernay*, E. Kretchman*, and **J. Ronholm**. Commensal bacteria in raw milk and their ability to inhibit *Staphylococcus aureus* growth. Montreal, QC. May 28, 2019.

Z. Li*, **J. Ronholm**. Identification of Novel Type VI Secretion Systems in *S. enterica*. 69th Annual Conference of the Canadian Society of Microbiologists. Sherbrooke, Quebec. June 10-13, 2019.

J. Lopez*, S. Park*, **J. Ronholm**. The milk storage effect on milk microbiome and an optimized bacterial DNA extraction protocol for *S. aureus* mastitic milk. 69th Annual Conference of the Canadian Society of Microbiologists. Sherbrooke, Quebec. June 10-13, 2019.

J. Lopez*, A. Bui*, C. Raymond*, R. Gervais, W. Poisson, L. Blais, Girard, C., and **J. Ronholm**. 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 10-13, 2019.

M. Lee Ai Lan, S. Ner*, K. Ma, N. Petronella, J. Teixeira, S. Banerjee, and **J. Ronholm**. Using the Microbiome to Detect Fraud in Seafood. 69th Annual Conference of the Canadian Society of Microbiologists. Sherbrooke, Quebec. June 10-13, 2019.

T. Feng*, E. Kretschmann*, C. Duvernay*, A. Bui* and **J. Ronholm**. Bovine Mammary Gland Commensal Culture Collection. 69th Annual Conference of the Canadian Society of Microbiologists. Sherbrooke, Quebec. June 10-13, 2019.

Petronella, N., Kundra, P.*, Auclair, O.*, Banerjee, S., DeBruyne, K., Gill, A., Hebert, K., Kingsley, K., Pagotto, F., Rao, M., Tamber, S., **Ronholm, J.** How many SNPs are enough SNPs? Correctly identifying clonal isolates during a foodborne outbreak investigation using whole genome sequencing. Canadian Society of Microbiologists Annual Meeting. Winnipeg, Manitoba. June 19, 2018 (Oral Presentation)

P. Guan, S. George, **J. Ronholm**, J. Singh, and S. Prasher Application of Biochar-amended Biosand Filter in Removal of Escherichia coli from Lakewater under Intermittent Flow: Effect of Biochar Placement CSBE/SCGAB 2018 AGM & Technical Conference. Guelph, Ontario. July 22-25, 2018 (Poster)

J. Rico, J. Martinez, R. Gervais, **J. Ronholm** and D. Rico. Evaluation of the effects of dietary medium chain fatty acids on production performance, egg yolk fatty acid profile and fecal microbiome in laying hens. EAAP Annual Meeting. Dubrovnik, Croatia. August 27, 2018 (Poster)

J. Lopez*, and **J. Ronholm**. Challenges associated with microbial DNA extraction from raw milk. November 29, 2018. OP+Lait Annual Conference Workshop. Montreal, Canada. November 29, 2018.

K. Paranjape, E. Bedard, **J. Ronholm**, M. Prevost, and S.P. Faucher. The importance of the bacterial community of cooling towers in Legionnaires disease outbreaks. 1st symposium on the Microbiota. University of Montreal. November 2, 2018.

Research Funding

NSERC Research Tools and Instruments (RTI), 2024

PI: Building a single-cell sorting capacity (B.SIGHT)

Total Value: \$150,000

Summary: This funding will be used to purchase a cell sorter (B.SIGHT)

NSERC Alliance, 2024-2025

PI: Quantifying, characterising, and addressing antimicrobial resistance in Canadian food (with Living Oceans & World Animal Protection)

Total Value: \$103,464

Summary: This funding will be used to characterize and quantify the presence and abundance of antibiotic resistance genes

Galactinnov Nouvelles Collaborations, 2024

PI: Probiotics for dairy farming

Total for my lab: \$25,000

Summary: This funding will be used to collaborate with researchers in France to establish probiotics for the dairy industry in both countries.

RITA Recherche Innovation Transformation Alimentaire, 2023-2025

PI: Preventing spoilage of smoked salmon products

Total for my lab: \$50,000

Summary: This funding will be used to understand the spoilage of smoked salmon products and develop enzymes to prevent this process.

NSERC International Alliance Catalyst Program, 2023

PI: Comparative genomic analysis of human and bovine *Klebsiella pneumoniae* isolates.

Total: \$25,000

Summary: This funding will be used to sequence *Klebsiella pneumoniae* isolates from both Canada and Ireland and attempt to identify genes important for both human and bovine infections.

Canada Research Chairs, 2023-2028

PI: Agricultural Microbiology

Total: \$600,000

Total for my lab: \$600,000

Summary: This funding will be used to develop techniques to replace antibiotics with probiotics for infection prevention in agriculture

NSERC/FRQNT NOVA, 2023-2026

PI: Optimizing the microbiome of dairy cattle for increased resistance to *Staphylococcus aureus* colonization

Total: \$260,000

Total for my lab: \$180,000

Summary: This funding will be used to attempt to optimize the dairy cow microbiome to resist *S. aureus* mastitis

NSERC International Alliance Collaboration Program, 2023-2025

PI: Constructing model microbiomes to study microbial interactions and AMR in dairy production systems

Total: \$200,000

Total for my lab: \$100,000

Summary: This funding will be used to attempt to build synthetic microbiome communities of the dairy cow hind gut for the purposes of studying the movement of AMR genes.

NSERC Collaborative Research and Training Experience Program, 2023-2029

PI: One Health Against Pathogens (OHAP)

Total: \$1,650,000

Total for my lab: ~\$200,000

Summary: This funding will be used to train graduate students in a One Health approach to treating and preventing bacterial infections

NSERC Alliance, 2022-2026

PI: Preventing Mastitis in Canadian Dairy Cattle while Reducing Industry Reliance on Antibiotics

Total Value: \$150,000

Summary: This funding will be used to find bacterial antagonists to Gram-negative mastitis pathogens based on our previous microbiome work.

RITA Recherche Innovation Transformation Alimentaire, 2023-2025

PI: Preventing Mastitis in Canadian Dairy Cattle while Reducing Industry Reliance on Antibiotics

Total for my lab: \$120,000

Summary: This funding will be used to find bacterial antagonists to Gram-negative mastitis pathogens based on our previous microbiome work.

MSSI Ideas Fund, 2022

PI: High-Throughput Microfluidic Droplet Platform to Identify Bovine Commensal Bacteria with Antagonistic Activity Against *Klebsiella pneumoniae*.

Total Value: \$40,000

Summary: To identify bacteria with antagonistic activity against a common mastitis pathogen, *Klebsiella pneumoniae* we will aim to develop a double water-in-oil-in-water emulsion technique can create droplets that can support the growth of bacteria.

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 Sherbrooke 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 performed.

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

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

Total for my lab: varies annually

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.

Research Trainees

Undergraduate Research Projects Supervised

Name	Semester	Role	Project	Current
An Bui	F18/W19	Honours Project FAES401/402	Vitamin B12 and the microbiome	unknown
Adam Classen	F18/W19	Honours Project FAES401/402	Peptidoglycan hydrolases and milk	Ph.D. student UBC
Coralie Raymond	F18/W19	Honours Project FAES401/402	Vitamin B12 and the microbiome	unknown
Emily Kretchmann	F18/W19	Honours Project FAES401/402	Culturing isolates from raw milk	unknown
Ann Bui	S19	Summer Student	Culturing isolates from raw milk	unknown
Kenny Drummond	S19	USRA	Culturing isolates from chicken feces	Dentist
Janina Ruffini	S19	Summer Student	Whole Genome Sequencing of <i>E. coli</i>	M.Sc. student in my lab
Hanny Maeva Gohou	F19	Honours Project FAES401	High-throughput screening of bacterial antagonism	unknown
Paloma Jaquet	F19	Special Topics FAES371	High-throughput screening of bacterial antagonism	unknown
Aynsley Merk	F19	Special Topics FAES371	Peptidoglycan hydrolases and broilers	Dairy Farm Worker
Shekna Abeghe	F19	Special Topics FAES372	High-throughput screening of bacterial antagonism	unknown
Maude Tetrault-Labbe	W20	Special Topics AGRI490	Optimal bedding material for calves	Agrologist in Quebec
Francois Girouard	W20	Honours Project FAES401	Peptidoglycan hydrolases and broilers	R&D Food Industry
Bridget O'Brien	S20	USRA	Foodborne transmission of respiratory viruses	Ph.D. student in my lab
Bridget O'Brien	F20/W21	Honours Project MIMM496/497	Metagenomics and Vitamin B12	Ph.D. student in my lab
Agathe Carrier-Crevier	F20/W21	Honours Project FDSC490/491	<i>E. coli</i> mastitis and the microbiome	unknown
Bridget O'Brien	S21	Summer Student	<i>K. pneumoniae</i> mastitis and the microbiome	Ph.D. student in my lab
Kevin Sun	S21	Summer Student	Culturing isolates from chicken feces	unknown
Natalia Lorenc	F21/W22	Honours Project FAES401/402	High-throughput methods to identify novel T6SSs	Ph.D. student in my lab

Maxine Selye	W22	Special Topics FAES313	T6SSs and the mouse microbiome	unknown
Xingyi (Missy)Yu	W22	Honours Project FDSC490/491	Detection of fecal Contamination in raw milk	unknown
Cassandra Popovitch	W22	Honours Project FDSC490	<i>E. coli</i> mastitis and the microbiome	unknown
Samuel Nguyen	W22	Honours Project MIMM496/497	<i>E. coli</i> mastitis and the microbiome	Ph.D. student in my lab
Samuel Nguyen	S22	Summer Student	<i>E. coli</i> mastitis and the microbiome	Ph.D. student in my lab
Paul Glenn	S22	Summer Student	T6SSs and the mouse microbiome	M.Sc. student in my lab
Paul Glenn	S23	NSERC USRA	T6SSs, <i>Salmonella</i> , and the chicken microbiome	M.Sc. student in my lab
Jinha Suh	S23	NSERC USRA	T6SSs, <i>Salmonella</i> , and the chicken microbiome	M.Sc. student in my lab
Valerie Dagenais	S23	NSERC USRA	Whole genome sequencing of <i>A. urinaequii</i>	R&D Lallemand
Jinha Suh	F23/W24	Honours Project MIMM496/497	T6SSs, <i>Salmonella</i> , and the chicken microbiome	M.Sc. student in my lab
Valerie Dagenais	F23/W24	Honours Project LSCI490/ 491	Whole genome sequencing of <i>A. urinaequii</i>	R&D Lallemand
Jinha Suh	S24	NSERC USRA	AMR in Canadian Food	M.Sc. student in my lab
Josh Wang	S24	NSERC USRA	16S rRNA sequencing AAFC samples	Degree in progress

M.Sc. Non-Thesis Students Supervised

Name	Year	Project Title
Palni Kundra	2017	An Examination of How <i>de novo</i> vs. Reference Guided Genomic Assembly of Common Foodborne Pathogen Effects Single Nucleotide Polymorphism Calling
Lynn Wang	2017	Determining the Effect Infection with <i>Salmonella enterica</i> subsp. <i>enterica</i> on the Mouse Gastrointestinal Microbiome
Chloee Duvernay	2018	Attempting to culture commensal microbes from the bovine udder that are antagonistic towards <i>Staphylococcus aureus</i>
Marc-Andree Gravel	2018	Undergraduate teaching in Microbiology, How Can We Improve Hands-on Teaching?
Pragya Tiwary	2018	How cannabis edibles are regulated globally from a food safety perspective.
Aarushi Bhillotra	2018	Determining the role of field flooding on the soil microbiome in produce production.
Haritima Bhatia	2018	<i>Listeria monocytogenes</i> in Food Processing Plants.
Shishira Suresh	2018	In-vitro meat technology: where to go with regulatory approval in Canada?
Tiffany Feng	2018/19	Assembly pipelines for WGS.
Saurbh Ner	2019	Determining if the mollusk microbiome can be used for food authentication
Roberto Maldonado	2019	Screening Commensals for anti- <i>S. aureus</i> activity
Anita Boray	2020	Whole genome sequencing in food safety
Yuchen Bai	2020	Designing a culture system to capture the microbial diversity present in the avian gastrointestinal tract

Henry Solankie	2020	Novel techniques for identifying novel antifungals
Ravi Ponugubait	2020	Collecting data on 22 unique genes and determining if they could contribute to mammary infection
Romasa Ahmed	2022	Examining the prevalence of Hepatitis E virus in Canadian Caribou

M.Sc. Thesis Students Supervised

Name/ Current position if Graduated	Years	Project Title
Julian Lopez <i>R&D at RISE Kombucha</i>	2017-2019	Correlations between the rumen, milk, and fecal microbiome and the concentrations of vitamin B12 in milk
Zhiwei Li <i>Ph.D. student in my lab</i>	2018-2019	Identifying novel antagonistic Type VI Secretion Systems in <i>Salmonella enterica</i>
Adam Classen <i>Ph.D. Student at UBC</i>	2019-2021	Discovery of novel cold-active antifungals from polar bacteria isolated from the Canadian high arctic that are active against major spoilage fungi in the cheese industry (co-supervised with Dr. Lyle Whyte, I am the primary supervisor)
Jessika Marquis-Hrabe <i>Project Manager – NEFF Beautiful Living</i>	2019-2021	A metagenomic approach to understanding relationships between microbial communities in the bovine rumen and vitamin B12 abundance
Janina Ruffini	2020-	Peptidoglycan hydrolases as growth promoters in broilers microbiome perspectives
Ebenezer Botang	2020-2022	Peptidoglycan hydrolases as growth promoters in broilers growth promotion perspectives (co-supervised, Dr. Michael Ngadi is the primary supervisor)
Celeste Dong	2020-2023	Lactic acid bacteria in sour dough bread (co-supervised, Dr. Salwa Karboune is the primary supervisor)
Francois Girouard <i>Research and Development Nexxus Foods</i>	2020-2022	Cellulose nano-pillars provide bactericidal properties to bio-degradable plastic food packaging products
Bridget O'Brien	2021-2022	Understanding <i>Klebsiella pneumoniae</i> and Associated Inter-Bacterial Interactions to Develop Prophylactics and Therapeutics for Bovine Clinical Mastitis
Samuel Nguyen	2022-2023	<i>E. coli</i> interactions with bovine mammary commensals
Natalia Lorenc	2022-2023	Reducing illnesses in farmed fish using targeted lactic acid bacteria probiotics – to replace antibiotics in aquaculture
Jinha Suh	2024-	Re-constructing the missing chicken microbiome

Ph.D. Students Supervised

Name/ Current position if Graduated	Years	Project Title
Soyoun Park <i>Software Engineer at BenchSci</i>	2018-2022	Understanding <i>Staphylococcus aureus</i> and Associated Inter-Bacterial Interactions to Develop Prophylactics and Therapeutics for Bovine Clinical Mastitis
Zhiwei Li	2019-	Identifying novel antagonistic Type VI Secretion Systems in <i>Salmonella enterica</i> (co-supervised with Dr. Danielle Malo, I am the primary supervisor)
Dongyun Jung	2019-	Understanding <i>E. coli</i> mastitis

Tiffany Feng	2019-	Characterizing the microbiome of healthy laying hens
Zhangbin Cai	2022-	<i>S. aureus</i> interactions with bovine mammary commensals
Lucie Auzance	2022-	The effects of management practices on the concentration of vitamin B12 in milk (co-supervised with Dr. Benoit Cotutelle – Joint Supervision agreement between McGill and INRAE in France)
Alla Yushchenko	2022-	Ph.D. student from Kiev (Ukraine), joining my lab funded by NSERC Emergency Response Fund. Working on bovine microbiome
Bridget O'Brien	2022-	Understanding <i>Klebsiella pneumoniae</i> and Associated Inter-Bacterial Interactions to Develop Prophylactics and Therapeutics for Bovine Clinical Mastitis
Samuel Nguyen	2023-	<i>E. coli</i> interactions with bovine mammary commensals
Natalia Lorenc	2023-	Reducing illnesses in farmed fish using targeted lactic acid bacteria probiotics – to replace antibiotics in aquaculture

Post-Doctoral Trainees and Research Associates Supervised

Name	Years	Project Title	Current Position
Sudhakar Bhandare	May 2019 – December 2019	Interactions between phage and <i>E. coli</i> (co-supervised with Dr. Goodridge)	Assistant Professor in Veterinary Public Health, University of Nottingham
Christine Liu	August 2019- March 2020	Peptidoglycan hydrolases as growth promoters in broilers	Research Scientist, Agriculture and Agri-food Canada
Luis Sanchez	September 2020 – January 2022	Peptidoglycan hydrolases as growth promoters in broilers	Assistant Professor, Autonomous University of Queretaro

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:

2019-2022 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:

2025-2026 Chair AEM Section, Canadian Society of Microbiologists
2023-2024 Vice-Chair AEM Section, Canadian Society of Microbiologists
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>