**Dongyun Jung**

Ph.D. Candidate

Department of Food Science & Agricultural Chemistry

McGill University (Macdonald campus)

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**Education**

Ph.D. in Food Science and Agricultural ChemistrySep 2019-Present

(Supervisor: Dr. Jennifer Ronholm)

Ph.D. research project: Characterization of Genomics and Environmental Microbiology of Mammary Pathogenic *Escherichia coli*

Dept. of Food Science and Agricultural Chemistry, McGill University (Macdonald campus), Sainte-Anne-de-Bellevue, Quebec, Canada

M.Sc. in Veterinary MicrobiologyJan 2017-Jan 2019

(Supervisor: Dr. Joseph E. Rubin)

M.Sc. thesis title: Antimicrobial resistant bacteria from imported vegetables and spices purchased from niche markets in Saskatoon, Saskatchewan

Dept. of Veterinary Microbiology, University of Saskatchewan, Saskatoon, Saskatchewan, Canada

B.Sc. in Food Science and Technology **\***Mar 2009-Aug 2016

Dept. of Food Science & Technology, Chungnam National University, Daejeon, South Korea

(\*including mandatory military service)

**Publications (\*first author or co-first author)**

Peer-reviewed journal articles

First/co-first author

* (Preprint) **Jung, D.**, Park, S., Kurban, D., Dufour, S., & Ronholm, J. (2024). The occurrence of *Aerococcus urinaeequi* and non-aureus Staphylococci in raw milk negatively correlates with *Escherichia coli* clinical mastitis. *bioRxiv*, 2024-03. (under review by *mSystems*)
* **Jung, D.**, Morrison, B., Rubin, J. (2021). A review of antimicrobial resistance in imported foods. *Canadian Journal of Microbiology*. 68(1): 1-15. DOI: 10.1139/cjm-2021-0234
* Majumber, S., **Jung, D.,** Ronholm, J., George, S. (2021). Prevalence and mechanisms of antibiotic resistance in *Escherichia coli* isolated from mastitic dairy cattle in Canada. *BMC Microbiology.* 21, 222 DOI: 10.1186/s12866-021-02280-5
* **Jung, D**., Park, S., Ruffini, J., Dussault, F., Dufour, S., 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. DOI:10.1099/mgen.0.000597.
* **Jung, D**., Park, S., Ruffini, J., Dufour, S., Ronholm, J. (2021). Draft Genome Sequences of 113

Mammary Pathogenic *Escherichia coli* strains Isolated from Intramammary Infections. *Microbial*

*Resource Announcements.* 10 (7) e01464-20; DOI: 10.1128/MRA.01464-20

* **Jung, D.,** Rubin, J. (2020). Identification of antimicrobial resistant bacteria from plant-based food products imported into Canada. *International Journal of Food Microbiology.* 319C, 108509. DOI:

10.1016/j.ijfoodmicro.2020.108509

* **Jung, D**, Yum, SJ., Jeong, H. G. (2017). Characterization and evaluation of antimicrobial activity of actinonin against foodborne pathogens. *Food Science and Biotechnology*. 26(6), 1649-1657. DOI:

10.1007/s10068-017-0190-3

* **Jung, D**, Yum, SJ., Yu, Y. C., Kim, J. H., Lee, B. H., Jang, H. N., Jeong, H. G. (2016). Antimicrobial activities of actinonin against *Bacillus cereus*. *Korean Journal of Food Science and Technology*.

48(6): 560-564. DOI: 10.9721/KJFST.2016.48.6.

Co-author

* O’Brien, B., Yushchenko, A., Suh, J., Jung, D., Cai, Z., Nguyen, NS., Semret, M., Dufour, S., Ronholm, J. (2024) Draft Genome Sequences of 148 *Klebsiella pneumoniae* Species Complex Members from Bovine and Human Hosts. *Microbiology Resource Announcements* (accepted)
* Park, S., **Jung, D.,** Altshuler, I., Kurban, D., Dufour, S., Ronholm, R. (2022). A longitudinal census of the bacterial community in raw milk correlated with *Staphylococcus aureus* clinical mastitis infections in dairy cattle. *Animal Microbiome,* 4, 59. DOI: 10.1186/s42523-022-00211-x
* Park, S., **Jung, D.,** O’Brien, B., Ruffini, J., Dussault, F., Dube-Duquette, A., Demontier, É., 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). DOI: 10.1099/mgen.0.000779
* Demontier, E., 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., Malouin, F.

(2021). Relative virulence of *Staphylococcus aureus* bovine mastitis isolates representing the main Canadian *spa* types and Clonal Complexes as determined using *in vitro* and *in vivo* mastitis models. *Journal of Dairy Science.* DOI: 10.3168/jds.2020-19904

* Yu, Z., **Jung, D**, Park, S, Hu Y, Huang, K., Rasco, B., Wang, S., Ronholm, J., Lu, X., Chen, J.

(2020). Smart Traceability for Food Safety. *Critical Reviews in Food Science and Nutrition*. DOI:

10.1080/10408398.2020.1830262

* Park, S., **Jung, D.,** Dufour, S., Ronholm, J. (2020) Draft Genome Sequences of 27 *Staphylococcus aureus* Strains and 3 Staphylococcus Species Strains Isolated from Bovine Intramammary Infections. *Microbiology Resource Announcements*. DOI: 10.1128/MRA.00300-20
* Sharma, R., Loseto, L, Ostertag, S, Laire, S, Couture, E, Tomaselli, M, Bredtmann, C, Crill, C, Rodriguez-Pinacho, C, Schultz, D, **Jung, D**, Shrethsa, K, Jindal, K, Jenkins, E. (2018). Qualitative risk assessment of impact of *Toxoplasma gondii* on health of beluga whales, *Delphinapterus leucas* from Eastern Beaufort Sea, Northwest Territories. *Arctic Science*. 4(3), 321-337. DOI: [10.1139/as](https://doi.org/10.1139/as-2017-0037)-[2017-0037](https://doi.org/10.1139/as-2017-0037)

Textbook

Co-author

* Marquis-Hrabe, J., **Jung, D.,** Park, S., Boray, A., Ronholm, J. (2022). Foodborne Bacterial Pathogen Big Data – Genomic Analysis. In: Farber, J., Dara, R., Ronholm, J. (eds) Harnessing Big Data in Food Safety. Food Microbiology and Food Safety. Springer, Cham. DOI: 10.1007/978-3-031-07179-9\_2

 **Conference Presentations**

Oral Presentation

* The Effect of Milk Microbiota Composition on Susceptibility of Dairy Cattle to *Escherichia coli* Clinical Mastitis. 72nd Annual Canadian Society of Microbiologists Conference. Dalhousie University, Halifax, Nova Scotia, Canada (Jun 2023)
* Grow your masterpiece and become a scientist - Integration of agar art into microbiology education. 7th Annual Forum on Microbiology Undergraduate Education (FOME) - 72nd Annual Canadian Society of Microbiologists Conference. Dalhousie University, Halifax, Nova Scotia, Canada (Jun 2023)
* Dynamics of milk microbiome in *Escherichia coli* clinical mastitis associated-dairy cattle. McGill Centre for Microbiome Research Symposium: Emerging Breakthroughs in Microbiome Science. The Research Institute of the McGill University Health Centre, Montreal, Quebec, Canada (Dec 2022)
* LEfSe & Wilcoxon rank sum test (Differential Abundance Method - What do you use and why). Theory of Microbiome Analysis Workshop. Centennial Center Ballroom, Macdonald campus of McGill University, Sainte-Anne-de-Bellevue, Quebec, Canada (Oct 2022)
* Micro-hitman in cows (3 Minute Thesis Competition). GEFSES Summer School Workshop 2022. New Residence Hall, McGill University, Montreal, Quebec, Canada (Aug 2022)
* **Jung, D.,** Chaudhary, S. Use of Nanoparticles based CRISPR-Cas9 in Treating Multiple Drug Resistant *Klebsiella pneumoniae* in Bovine Mastitis. GEFSES Summer School Workshop 2022. New Residence Hall, McGill University, Montreal, Quebec, Canada (Aug 2022)
* Longitudinal Study on the Milk Microbiota of Holstein Cows Diagnosed with *Escherichia coli* Clinical Mastitis. Moderated Student Poster Session at Global Health Week McGill Macdonald Mini-Symposium (May 2022)
* Characterization of Genomics and Environmental Microbiology of Mammary Pathogenic *Escherichia coli*. My thesis in 180 seconds presentation in Op + lait Annual Scientific Meeting (virtual conference) (Oct 2020)
* Characterization of antimicrobial resistant bacteria from imported vegetables and spices in Canada*.* 73rd International Conference on Diseases in Nature Communicable to huMan (INCDNCM).

University of Saskatchewan, Saskatoon, Saskatchewan, Canada (Jun 2018)

Poster Presentation (\**presenter*)

* **Jung, D\*,** Allard, N, Doucet, A, Rodrigue, S, Goodridge, L, Renaud, D, Ronholm, J. Utilization of conjugative CRISPR-Cas9 system for targeted elimination of *cat* and *bla*CMY-2-bearing plasmid in *Escherichia coli* from bovine gastrointestinal tract. 2024 McGill AMR Annual Symposium. McGill University, Montreal, Quebec, Canada (June 2024)
* Majumber, S., **Jung, D.\*,** Ronholm, J., George, S. Antibiotic resistant *Escherichia coli* from bovine clinical mastitis cases in Canada. 2023 McGill AMR Annual Symposium. McGill University, Montreal, Quebec, Canada (May 2023)
* **Jung, D\*,** Park, S, Kurban, D, Dufour, S, Ronholm, J. Longitudinal study on the milk microbiota of Holstein cows diagnosed with *Escherichia coli* clinical mastitis. 71th Annual Canadian Society of Microbiologists Conference. University of Guelph, Guelph, Ontario, Canada (Jun 2022)
* **Jung, D\*,** Park, S, Kurban, D, Dufour, S, Ronholm, J. Longitudinal study on the milk microbiota of Holstein cows diagnosed with *Escherichia coli* clinical mastitis. National Mastitis Council 61st Annual Meeting (Virtual attendance; the meeting venue: Town & Country, San Diego, California, USA) (Feb 2022)
* **Jung, D\*,** Park, S, Ruffini, J, Dussault, F, Dufour, S, Ronholm, J. Identification of nine pathotype specific marker genes from *Escherichia coli* bovine clinical mastitis isolates. CSM-SCM Annual Conference 2021 (June 2021; virtual conference)
* **Jung, D**\*, Park, S, Ruffini, J, Dussault, F, Dufour, S, Ronholm, J. Comparative genomic analysis of mammary pathogenic *E. coli* and bovine commensal *E. coli*. Op + lait Annual Scientific Meeting. (Oct 2020; virtual conference)
* **Jung, D**\*, Park, S, Ruffini, J, Dussault, F, Dufour, S, Ronholm, J. Comparative genomic analysis of mammary pathogenic *E. coli* and bovine commensal *E. coli*. 2020 Mastitis Network Annual Scientific Meeting. (Oct 2020; virtual conference)
* **Jung, D\***, Park, S, Kurban, D, Dufour, S, Ronholm, J. Characterization of Mammary Pathogenic *E. coli* and *S. aureus* and their Interaction with Commensal Bacteria in Bovine Udder. National Mastitis Council 59th Annual Meeting, DoubleTree at the Entrance to Universal Orlando, Florida, USA (Jan 2020)
* **Jung, D\***, Rubin, E. J. Characterization of antimicrobial resistant bacteria from imported plant-based foods in Canada*.* 69th Annual Canadian Society of Microbiologists Conference. Université de Sherbrooke, Sherbrooke, Quebec, Canada (Jun 2019)
* **Jung, D\***, Ronholm, J., The effect of the microbiota on the prevalence of environmental mastitis. 2019 Mastitis Network Annual Scientific Meeting, Montreal, Quebec, Canada (May 2019)
* **Jung, D\***, Rubin, E. J. Characterization of antimicrobial resistant bacteria from imported vegetables and spices in Canada*.* 68th Annual Canadian Society of Microbiologists Conference. University of Manitoba, Winnipeg, Manitoba, Canada (Jun 2018)
* Bredtmann, C, Crill, C, Rodriguez-Pinacho, C, Schultz, D\*, **Jung, D**, Sharma, R\*, Jenkins, E. Qualitative risk assessment, management, and communication of risks of *Toxoplasma gondii* for health of humans and caribou (*Rangifer tarandus*) in the Western Canadian Arctic. Integrated Training Program in Infectious Diseases, Food Safety and Public Policy Student Symposium 2018. University of Saskatchewan, Saskatoon, Saskatchewan, Canada (Jun 2018)
* **Jung, D\***, Rubin, E. J. Characterization of antimicrobial resistant bacteria from imported foods in Canada*.* Prairie University Biology Symposium 2017. University of Saskatchewan, Saskatoon, Saskatchewan, Canada (Feb 2017)
* **Jung, D\***, Yum, S.J., Yu, Y.C., Jeong, H.G. The antimicrobial effect of actinonin against *Bacillus cereus*. International Symposium and Annual Meeting of Korean Society of Food Science and

Technology (KoSFoST); Food Science for Daily Living via Innovation and Convergence. EXCO, Daegu, Rep. of Korea (Aug 2016)

* **Jung, D\***, Jeong, H. G. The antimicrobial effect of actinonin against food-borne pathogens. Annual Meeting & International Symposium of the Korean Society for Microbiology & Biotechnology (KMB). DCC, Daejeon, Rep. of Korea (Jun 2016)

**Awards**

Research scholarship

* Fonds de recherche du Québec – Nature et technologies (FRQNT) Bourses de doctorat en recherche ($49,000 CAD ; offered on June 2nd, 2022)
* Margaret A. Gilliam Fellowship in Food Security ($25,000 CAD; offered on October 26th, 2021)
* NSERC CREATE in Genome Editing for Food Security and Environmental Sustainability (GEFSES) ($30,000 CAD; offered on September 8th, 2021)
* TRaCE McGill Grad Award ($4,000 CAD; offered on October 1st, 2019)
* McGill Graduate Excellence Fellowship ($33,388 CAD; offered on September 8th, 2019, $7,388 CAD; August 30th, 2020, $16,000 CAD; October 5th, 2021)
* Op+lait Complements de Bourses ($10,000 CAD; offered on August 28th, 2020)
* NSERC CREATE in Milk Quality Program Scholarship ($10,000 CAD; offered on August 7th, 2019,

$10,000 CAD; offered on September 4th, 2020, $10,000 CAD; offered on July 18th, 2021)

* Veterinary Microbiology Devolved Graduate Scholarship ($8000 CAD; offered on May 1st, 2018)
* NSERC CREATE in Integrated Training Program in Infectious Diseases, Food Safety and Public Policy (ITraP) ($18,000 CAD; offered on January 3rd, 2017)

**Research Experience**

Research AssistantMay 2019-Aug 2019

Dr. Jennifer Ronholm’s lab, Dept. of Food Science and Agricultural Chemistry, McGill University

* Whole genome sequencing for MPECand *Staphylococcus aureus* isolates from Canadian bovine mastitis cases in 2007-2008

M.Sc. Student and Research AssistantJan 2017-Jan 2019

Dept. of Veterinary Microbiology, University of Saskatchewan

* MSc thesis project

**-** Identification and characterization of multi-drug resistant Enterobacteriaceae (*E. coli, Enterobacter, Klebsiella pneumoniae*), MRSA from imported vegetables, fruits and spices in Saskatoon, Saskatchewan

* CBC Marketplace project Jul 2018-Mar 2019

 **-**  Isolation of multi-drug resistant Enterobacteriaceae and MRSA in imported shrimp products

(Season 46, Episode 17: Testing Shrimp for Superbugs; aired on Mar 15, 2019)

Undergraduate Research Assistant2013-2014 & 2015-2016

(Advisor: Dr. Hee Gon Jeong)

Food Microbiology Molecular Genetics Laboratory

Department of Food Science & Technology, Chungnam National University

•Research projects

* Characterization of antimicrobial effect of the antimicrobial peptide, actinonin, on *V. vulnificus, Salmonella*

 Typhimurium, *Bacillus cereus, E. coli* O157:H7, *Listeria monocytogenes* and *S. aureus*

* Characterization of actinonin against the targeted foodborne pathogens as novel antibacterial compound *in vitro* and *in situ*
* Characterization of actinonin as anti-virulence compound against *V. vulnificus* and *S.* Typhimurium (Inhibition of swarming motility and cytotoxicity)

**Teaching Experience**

Agar art project at the Saint-Nom-de-Marie boarding school

* Guest talk about research experiences in the graduate programs in Canada and agar art (Sep 30th, 2022)
* Teaching and helping high school students make agar art (Sep 30th, 2022)
* Hosting the lab (Dr. Ronholm lab) tour by the students and teachers (Nov 10th, 2022)

Teaching Assistant

* FDSC 442 Food Microbiology (2021 Fall Term)
	+ Preparation of every material and teaching every lab class

Guest lectures

* + “Fermentation Cocoa, Tea, and Coffee Products” lecture from FDSC 442 Food Microbiology

(2021 Fall Term)

* + “Antimicrobial Resistance in Food” lecture from FDSC 545 Advances in Food Microbiology

(2020 Winter Term)

* + “Biological Methods of Food Preservation” lecture from FDSC 442 Food Microbiology

(2019 Fall Term)

**Educational, Communication and Leadership-related Experience**

Educational

McGill 3MT (Three Minute Thesis) Training and Competition Jan 2021-Feb 2021

* Two training sessions to craft 3-minute talk about PhD thesis research project and practice
* Virtual “Heats” to compete with participants across the university (Semi-Final)

Infectious Diseases, Food Safety and Public Policy (ITraP) student Jan 2017-Dec 2017NSERC-CREATE, University of Saskatchewan

* Interdisciplinary work with scientists and policy-makers together to solve complex issues from infectious

pathogens, their entry to food chain and daily environment based on One Health concept

* Collaboration with graduate students from University of Saskatchewan, Freie Universität (Berlin, Germany), University of Bern (Bern, Switzerland) and GADVASU (Ludhiana, India) to solve two complex issues; 1) Toxoplasmosis in beluga harvested by Inuit hunters in the Canadian Arctic. 2) Vibrio infection linked to raw oyster consumption in British Columbia, Canada

Exchange Student ProgramJan 2015-Apr 2015

* 2015 Winter Exchange Student Program in Lakehead University, Thunder Bay, Ontario, Canada
* Taking undergraduate courses: Genetics, Biochemistry II and Astronomy I

**Communication**

EDAR7 Human Library May 29, 2024

* Providing in-depth topics about antimicrobial resistance, microbiome, and agar art to the experts on antimicrobial resistance as a human book

Op+Lait Student Committee member Dec 2020-Oct 2021

* Building knowledge transfer strategy between the dairy research and industry groups in Quebec

Research Liaison

MSSI Graduate Student/Post-doc Collective Community Nov 2020-Aug 2021

The McGill Sustainability System Initiative (MSSI), McGill University

* Connecting the researchers and experts from the sustainability fields to graduate Students and postdocs at McGill University

TRaCE McGill Graduate Student ResearcherSept 2019-Aug 2020

TRaCE (Track, Report, Connect, Exchange), McGill University

* Tracking and reporting the career pathways of Ph.D. graduates from the Faculty of Agricultural and Environmental Sciences
* Making a connection between PhD graduates and current PhD graduate students to inspire and give valuable career opportunities for current graduate students

Student Mixer Organizer Nov 18-20, 2019

Vibrio 2019: The Biology of Vibrio conference

* Provided the attendees with networking opportunities

Young Innovator series from University of Saskatchewan and StarPhoenix

* Young Innovator: the series featured in the University of Saskatchewan news and StarPhoenix, the regional newspaper in Saskatoon
* Main role: Getting interviewed to explain about my master’s research project and how the findings from the project can affect to dissemination of antimicrobial resistance and food safety.
* University of Saskatchewan: <https://news.usask.ca/articles/research/2019/imported-spices-and-frozen-vegetables-tested-for-superbugs.php>[,](http://tiny.cc/jzp3cz) StarPhoenix: <https://thestarphoenix.com/news/local-news/young-innovators-imported-spices-and-frozen-vegetables-tested-for-superbugs>

CBC Marketplace

* Season 46, Episode 17: Testing Shrimp for Superbugs (aired on Mar 15, 2019)

- Main role

* + Providing the results from the testing and main information to the Marketplace team for better communication with Canadian public regarding the episode
	+ Helping the Marketplace team to answer the questions from the viewers after the episode being aired

Agar Art

Encouraging public to learn about bacteria in entertaining way by making artworks created by cultured bacteria in certain patterns on agar plates

* “A Refreshing New Medium: Agar Plate Art”: Photo Essay from Health Science Inquiry Volume 12, 2021
* “L’«agar art» ou comment peindre avec des bactéries”: Interview by Quebec Science [(](file:///C%3A%5CUsers%5Cdjung%5CDesktop%5C%28)[https://www.quebecscience.qc.ca/sciences/agar-art-comment-peindre-bacteries/)](https://www.quebecscience.qc.ca/sciences/agar-art-comment-peindre-bacteries/)
* “Stubborn”: Finalist from Infectious Images Photography Competition by Infectious Diseases Hub
* “Shine on”: Finalist from American Society for Microbiology Agar Art 2018
* Agar Art Project at the Pensionnat du Saint-Nom-de-Marie (Sep 2022-Nov 2022)
	+ Invited talk about my experience in the graduate programs and agar arts for 9th grade students (Secondary 4) and made agar art with the students
	+ Hosted the students’ visit to the Ronholm lab

**Leadership**

Military Service in Republic of Korea Army Apr 2011-Jan 2013

* Honorably discharged from the two-year service in Chemical, Biological, Radiological and Nuclear (CBRN) defense unit
* Served CBRN squad leader to lead the members to get their trainings and drills done successfully