Dongyun Jung

Department of Food Science & Agricultural Chemistry
McGill University (Macdonald campus)
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Research Interests

- Interaction between mammary pathogenic *E. coli* and bovine udder microbiome
- Antimicrobial resistance in food sources

Education

Ph.D. in Food Science and Agricultural Chemistry Sep 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 Microbiology Jan 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)

- **Jung, D*.,** Park, S., Ruffini, J., Dufour, S., Ronholm, J. Draft Genome Sequences of 113 Mammary Pathogenic *Escherichia coli* strains Isolated from Intramammary Infections. Microbiology Resource Announcements (**Accepted on January 31, 2020**)
- **Jung, D***., Park, S., Ruffini, J., Dussault, F., Dufour, S., Ronholm, J. (Submitted 2021-01-06). Comparative Genomic Analysis of *Escherichia coli* Isolates from Cases of Bovine Clinical Mastitis Identifies Nine Specific Pathotype Marker Genes. *Microbial Genomics* (**on review**)
- **Jung, D***., Park, S., Ruffini, J., Dufour, S., Ronholm, J. (Submitted 2020-12-21). Draft Genome Sequences of 113 Mammary Pathogenic *Escherichia coli* strains Isolated from Intramammary Infections. *Microbial Resource Announcements* **(on review)**
- 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. (2020). 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* (On review)

- **Jung, D*.,** Morrison, B., Rubin, J. (2020). A review on the role of imported foods on the worldwide dissemination of antimicrobial resistance. *Journal of Antimicrobial Chemotherapy* (On review)
- Yu, Z., **Jung, D**, Park, S, Hu Y, Huang, K., Rasco, B., Wang, S., Ronholm, J., Lu, X., Chen, J., 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
- **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
- 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-2017-0037 (co-first author)
- **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.2016.48.6.560

Conference Presentations

Oral Presentation

- **Jung, D.** 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 due to COVID-19* (Oct 2020)
- **Jung, D**. 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***, 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 due to COVID-19*

- **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 due to COVID-19*
- **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

<u>Research scholarship</u>

- Op+lait Complements de Bourses ($10,000 CAD) (Accepted in Fall 2019)
- NSERC CREATE in Milk Quality Program Scholarship ($15,833 CAD) (Sept 2019-Mar 2021)
- NSERC CREATE in Integrated Training Program in Infectious Diseases, Food Safety

and Public Policy (ITraP) ($18,000 CAD) (Jan 2017-Dec 2017)

Recognition

- Veterinary Microbiology Devolved Graduate Scholarship ($8000 CAD) (May 2018-Apr 2019)

Research-related Experience

Ph.D. Student
Dr. Jennifer Ronholm's lab, Dept. of Food Science and Agricultural Chemistry, McGill University

- Identification of microbiome difference between healthy and mastitic bovine udder using 16s rRNA sequencing
- Whole genome sequencing for MPEC isolated from Canadian bovine mastitis cases
- Characterization of antagonistic activity of commensal bacteria preventing bovine mastitis from MPEC

Research Assistant May 2019-Aug 2019
Dr. Jennifer Ronholm's lab, Dept. of Food Science and Agricultural Chemistry, McGill University

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

M.Sc. Student and Research Assistant Jan 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 July 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 Assistant 2013-2014 & 2015-2016
(Advisor: Dr. Hee Gon Jeong)
Food Microbiology Molecular Genetics Laboratory
Department of Food Science & Technology, Chungnam National University

- Research project
  - 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 food borne 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

Guest lecture

- "Biological Methods of Food Preservation" 2019 Fall Term, FDSC 442 Food Microbiology.
- "Antimicrobial Resistance in Food" 2020 Winter Term, FDSC 545 Advances in Food Microbiology

Educational, Communication and Leadership-related Experience

Educational

Infectious Diseases, Food Safety and Public Policy (ITraP) student Jan 2017-Dec 2017
NSERC-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;
  - Toxoplasmosis in beluga harvested by Inuit hunters in the Canadian Arctic
  - Vibrio infection linked to raw oyster consumption in British Columbia, Canada

Exchange Student Program Jan 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

Op+Lait Student Committee Dec 2020-Present

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

Research Liaison
MSSI Graduate Student/Post-doc Collective Community Nov 2020-Present
The McGill Sustainability System Initiative (MSSI), McGill University

- Connecting the researchers and experts from the sustainability fields to graduate Students and post-docs at McGill University

TRaCE McGill Graduate Student Researcher Sept 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: http://tiny.cc/jzp3cz, StarPhoenix: http://tiny.cc/c0p3cz

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
    - "Stubborn": Finalist from Infectious Images Photography Competition by Infectious Diseases Hub (https://bit.ly/2ERfUKV)
    - "Shine on": Finalist from American Society for Microbiology Agar Art 2018 (https://bit.ly/2WI1lNj)
    - Interview by Quebec Science magazine "L'«agar art» ou comment peindre avec des bactéries": https://www.quebecscience.qc.ca/sciences/agar-art-comment-peindre-bacteries/

Leadership

Military Service in Republic of Korea Army

- 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