Silvia T. Cardona, Ph.D
Curriculum Vitae

Department of Microbiology
University of Manitoba
213 Buller Building
Winnipeg, MB R3T 0B1

silvia.cardona@umanitoba.ca
https://cardonalab.org
@cardona_lab

EDUCATION

1983-1986	Pedagogy of Biology, CONSUDEC Institute, Buenos Aires, Argentina
1987-1995	B. Sc. (Biology), University of Buenos Aires, Argentina
1997-2001	Ph.D. (Microbiology) University of Chile, Chile

WORK EXPERIENCE

Research training (post-doctoral)

2002-2006	Department of Microbiology & Immunology, University of Western Ontario

Academic Positions

2006–2012	Assistant Professor. Department of Microbiology, University of Manitoba
2012–present	Associate Professor. Department of Microbiology, University of Manitoba
2013–present	Associate Professor. Department of Medical Microbiology & Infectious Disease, University of Manitoba
2017-2020	Smith Integrated Science Faculty Scholar, Faculty of Science, University of Manitoba
06-2017-12-2017	Acting Associate Head of Graduate Affairs, Department of Microbiology, Faculty of Science, University of Manitoba

AWARDS AND DISTINCTIONS

1997-2001	DAAD (German Institute for Academic Exchange) Ph.D. Scholarship to pursue doctoral studies at University of Chile
1999–2001	FONDECYT (National Fund for Science and Technology Development) Ph.D. Student Grant N° 2990035, Santiago, Chile
2003–2005	Cystic Fibrosis Canada (CFC) Fellowship Award
2005-2006	Cystic Fibrosis Canada (CFC) Fellowship Award (Renewal)
2007	Faculty of Science Celebration of Excellence Mention for Research Funding
2011	Faculty of Science Celebration of Excellence Mention for Research Funding
2012	Faculty of Science Celebration of Excellence Mention for Research Funding
2013	Faculty of Science Celebration of Excellence Mention for Research Funding
2017	Faculty of Science Award for Best Mentor (Life Science Category)

RESEARCH

Research Statement

My research field is Bacterial Genetics. My interest is the understanding of the mechanisms that regulate bacterial growth. The long-term goal is to control bacterial growth in different settings, such as infection conditions or biotechnological applications. I am particularly interested in environmental bacteria that have the capacity of invading plants, animals or humans, and cause disease. These interesting organisms are known as "environmental pathogens." A remarkable example of environmental pathogens is the group of bacteria called "*Burkholderia cepacia complex*" (Bcc), which are the model organisms of my research.

Able to live in many habitats without dominating, Bcc bacteria are of biotechnological interest because of the secondary metabolites they produce, and the bioremediation capacities they exhibit. Of additional interest are the Bcc large and multipartite genomes with an unusually high CG content, which offer the challenge and opportunity of developing custom novel tools for gene and genome editing. Importantly, Bcc bacteria are opportunistic pathogens, meaning that they usually cause infection in individuals with underlying conditions, such as the genetic disease cystic fibrosis. Notably, Bcc bacteria are famous for their intrinsic and multiple antibiotic resistance (they can use penicillin as the sole carbon source!). As most antibiotics are not effective to treat Bcc infections, Bcc bacteria have been listed as one of the ten worst by the British global Innovation Foundation NESTA.

The overarching questions that drive my research are: How do Bcc bacteria use their metabolic capacities to colonize different hosts? Can essential processes of Bcc be exploited to overcome Bcc antibiotic resistance and control infections? How can Bcc large genomes be manipulated to enhance their biotechnological potential while eliminating their pathogenicity?

Our current research projects include i) The link between amino acid catabolism and virulence regulation, ii) chemogenomic approaches to antibacterial drug discovery, and iii) Enhancement of metabolic capacities by gene and genome editing.

Funding

Awarded

2006-2011	Novel genes involved in survival in vivo in the environmental pathogen *Burkholderia cenocepacia*. NSERC Discovery Grant. $180,000. Completed
2007-2008	Environmental Pathogens Laboratory, Canadian Foundation for Innovation, Leaders Opportunity Fund. $249,706 Completed.
2007-2008	Novel antibiotic drug targets of bacterial pathogens of cystic fibrosis, University of Manitoba Research Grant Program, $7,500. Completed
2007-2009	Antibacterial drug discovery for cystic fibrosis bacterial pathogens, Manitoba Health Research Council (MHRC) Operating Grant, $ 104,000. Completed
2009-2010	Environmental Pathogens Laboratory, Canadian Foundation for Innovation. Infrastructure Operating Fund (IOF) $29,965. Completed
2010-2011	Characterization of a conditional-growth mutant library in *Burkholderia cenocepacia*. University of Manitoba Research Grant Program, $7,500. Completed
2010-2011	Construction of a *Burkholderia cenocepacia* conditional mutant library to be used in antimicrobial drug discovery. The Paul H. T. Thorlakson Foundation Fund Award $28,833. Completed
2011-2016	Growth in the host: catabolic capacities of opportunistic bacteria and possible links to virulence. NSERC Discovery Grant $185,000 Completed.
2011-2013	Target Identification of novel growth inhibitors for the multiple antibiotic resistant *Burkholderia cenocepa*cia through genome-wide conditional growth $183,246.

	CIHR operating grant Priority Announcement Regional Partnership Program Manitoba Completed.
2012-2013	Genome Sequencing of three *Burkholderia contaminans* isolates from Argentinian and North American Hospitals $7,467. University of Manitoba Research Grants (established) (URGP). Completed
2012-2013	Overcoming the knowledge gap between *Burkholderia cepacia* complex-related infections in cystic fibrosis (CF) patients from North America and Argentina. $15,000. International Development Research Centre (IDRC). Canada-Latin America And the Caribbean Research Exchange Grants Program (LACREG). Completed
2013-2017	Target identification of novel growth inhibitory small molecules through genome-wide competitive growth in the multiple antibiotic resistant *Burkholderia cenocepacia* $301,790. Cystic Fibrosis Canada (CFC) Research Initial Grant. Completed
2014-2015	International *Burkholderia cepacia* working group (IBCWG) 19th meeting $10,000. CIHR. Planning and Dissemination Grants. Completed
2016	Using bioinformatics to unravel the evolution of multiple antibiotic resistance in *Staphylococcus aureus* isolates from Argentina. Faculty of Science Interdisciplinary/New Directions Research Collaboration Initiation Grants. $ 6,278. Completed
2016	Genomic libraries for dereplication of novel antibiotics. University of Manitoba Research Grant (URGP) $7,400. Active
2016-2021	The interface between metabolism and virulence in environmental pathogens $155,000 NSERC Discovery Grant Program. Active
2017-2018	Prediction of novelty and mode of action of antibacterial compounds by machine learning. University Collaborative Research Program (UCRP) $24,200. Co-investigator. Active
2017-2019	Elucidation of the mechanism of action of a novel antibiotic targeting cell division. Research Manitoba Mid-Career Operating Grant. $146,700. Active
2017	Designing CRISPR-based next-generation antimicrobials for *Acinetobacter baumannii*. Manitoba Chemosensory Biology (MCSB) Research Group Seed Grant. $7,000. Co-Investigator. Active.
2018-2020	Antibiotic discovery for *Burkholderia cepacia* complex. Cystic Fibrosis Foundation. Pilot and Feasibility Award. Principal Applicant. Co-Investigators: Pingzhao Hu and Rebecca Davis USD 107,838

Applied for

September 2018	Prediction of antibiotic activity and antibiotic mode of action by Illumina sequencing of knockdown mutant libraries and machine learning. CIHR project Grant. Principal Applicant, Co-investigators: Pingzhao Hu and Rebecca Davis $1,250,000
October 2018	Antibiotic discovery for cystic fibrosis pathogens. Cystic Fibrosis Canada Basic Research Grant. Principal Applicant. Co-investigators: Pingzhao Hu and Rebecca Davis $300,000

Invited Lectures

25/07/2003	Essential genes in *Burkholderia cepacia*: towards the identification of new targets of antibiotics for the treatment of infections in cystic fibrosis patients. Technical university of Munich
10/10/2008	*Burkholderia cenocepacia* pathogenesis in Real Time: Bacterial Physiology and Metabolism Modeled in *Caenorhabditis elegans*. Department of Biology, University of Regina
02/02/2009	*Burkholderia cenocepacia* pathogenesis in real time: bacterial physiology and metabolism modeled in *Caenorhabditis elegans*. department of medical microbiology, University of Manitoba
15/04/2011	Session Chair. "Novel Antimicrobials" 15th International *Burkholderia cepacia* Working Group (IBCWG) Meeting. Prague.
07/12/2011	A chemical genomic approach to find novel antibiotics for *Burkholderia cenocepacia*. Manitoba group in protein structure and function. Seminar. University of Manitoba
27/02/2013	*Burkholderia cepacia* complex: a tale of a harmless bacterium turned superbug and the quest for novel antimicrobial targets. Department of Medical Microbiology, University of Manitoba.
19/11/2013	Genomic libraries and their use for detection of antibiotic mode of action. Department of Microbiology Immunology and Biotechnology, University of Buenos Aires.
22/11/2013	Visualizing genomes with Artemis Software. Department of Microbiology Immunology and Biotechnology, University of Buenos Aires.
30/11/2013	Genomic tools to profile antibiotic mode of action. Invited speaker (Omics Symposium) XXXV Congreso Chileno de Microbiologia, Maintencillo, Chile, November 26-30 2013.
10/1/2014	Overcoming the Knowledge Gap between Infections in Cystic Fibrosis Patients from North America and Argentina. Reflections on a LACREG funded project. CAREG/LACREG Brown Bag Lunch Session. Hosted by the office of Research Services, University of Manitoba
19/11/2014	Metabolism of phenyl acetic acid: a novel regulator of quorum sensing? Invited seminar presentation. Seminars in infectious disease and medical microbiology. Department of Medical Microbiology & Infectious Disease, University of Manitoba.
28/01/2015	Phenyl acetic acid: a new player in quorum sensing-regulated microbial interactions? Department of Biological Sciences. University of Toronto at Scarborough
29/01/2015	A tale of bacteria turned superbug and the quest for novel antimicrobials Research Rounds. Public Health Ontario.
26/11/2015	*Burkholderia cepacia* complex infections in cystic fibrosis and the quest for novel antimicrobials Research Rounds. Immunology Seminars.
14/6/2016	Illumina-based chemogenomic profiling of a novel compound with antimicrobial activity reveals its role as a bacterial cell division inhibitor. Invited Symposium. 66th Annual Conference of the Canadian Society of Microbiologists, June 12 - 15, 2016, University of Toronto, Toronto, ON.

24/6/2016	Illumina-based chemogenomic profiling of a novel compound with antimicrobial activity reveals its role as a bacterial cell division inhibitor. Protein Structure, Function and Malfunction Meeting. University of Saskatchewan.
8/2/2017	Finding novel antibiotic targets and drugs for *Burkholderia cepacia* complex infections. Departmental Seminar. Department of Biological Sciences. University of Alberta.
14/06/2017	Using next generation sequencing to advance antibiotic discovery. geXc symposium, University of Manitoba.
20/06/2018	Adaptation of *Burkholderia cenocepacia* to the cystic fibrosis lung environment. Invited Symposium Speaker. 68th Annual Canadian Society of Microbiologists (CSM) Conference, Winnipeg, Manitoba
19/10/2018	Adaptation of *Burkholderia cenocepacia* to the cystic fibrosis lung environment. Host-Microbe Interactions Symposium Speaker. 32nd North American Cystic Fibrosis Conference, Denver, Colorado

Peer-reviewed articles

Trainees under Dr. Cardona's supervision are underlined.

1. **Cardona S**, Schebor C, Buera MP, and Chirife, J. 1997. Thermal stability of invertase in reduced moisture amorphous matrices in relation to glassy state and threalose crystallization. Journal of Food Science. 62: 105-112.
2. **Cardona S**, Remonsellez F, Guiliani N, and Jerez CA. 2001. The glycogen-bound polyphosphate kinase from *Sulfolobus acidocaldarius* is actually a glycogen synthase. Applied and Environmental Microbiology. 67: 4773-4780.
3. **Cardona ST**, Chavez F, and Jerez CA. 2002. The exopolyphosphatase gene from *Sulfolobus solfataricus*: Characterization of the first gene found to be involved in polyphosphate metabolism in *Archaea.* Applied and Environmental Microbiology. 68: 4812-4819.
4. Valvano MA, Keith KE, and **Cardona ST**. 2005. Survival and persistence of opportunistic *Burkholderia* species in host cells. Current Opinion in Microbiology. 8:1-7. Review.
5. **Cardona ST**, and Valvano MA. 2005. An expression vector containing a rhamnose-inducible promoter provides tightly regulated gene expression in *Burkholderia cenocepacia*. Plasmid. 54:219-228.
6. **Cardona ST**, Wopperer J, Eberl L, and Valvano MA. 2005. Diverse pathogenicity of *Burkholderia cepacia* complex strains in the *Caenorhabditis elegans* host model. Federation of European Microbiology Societies Microbiology Letters. 250:97-104.
7. Wopperer, J, **Cardona ST**, Huber B, Jacobi C, Valvano MA, and Eberl L. 2006. Investigations on the conservation of quorum sensing regulated functions within the *Burkholderia cepacia* complex by the aid of a quorum quenching approach. Applied and Environmental Microbiology, 72:1579-1587.
8. **Cardona ST**, Mueller C, and Valvano MA. 2006. Identification of essential operons in *Burkholderia cenocepacia* with a rhamnose inducible promoter. Applied and Environmental Microbiology, 72:2547-2555.
9. Ortega XP, **Cardona ST**, Brown AR, Loutet SA, FlannaganRS, Campoiano DJ, Govan JRW, and Valvano MA 2007. A lipopolysaccharide modification gene cluster essential for viability in *Burkholderia cenocepacia*. Journal of Bacteriology 189:3639-3644.
10. Law RJ, Hamlin JN, Sivro, A, McCorrister, S. J, Cardama, G. A, and **Cardona ST**. 2008. A functional phenylacetic acid catabolic pathway is required for full pathogenicity of *Burkholderia cenocepacia* in the *Caenorhabditis elegans* host model. Journal of Bacteriology 190: 7209-7218.

11. Hamlin JN, Bloodworth RAM, **Cardona ST** 2009. Regulation of phenylacetic acid degradation genes of *Burkholderia cenocepacia* K56-2. BMC Microbiology 8:222.
12. Yudistira H, McClarty L, Bloodworth RAM, Hammond SA, Butcher H, Mark BL, and **Cardona ST** 2011. Phenylalanine induces *Burkholderia cenocepacia* phenylacetic acid catabolism through degradation to phenylacetyl-CoA in synthetic cystic fibrosis sputum medium. Microbial Pathogenesis. 52:183-193.
13. Imolhore IAI, **Cardona ST**, 2011. Three-hydroxyphenylacetic acid induces the *Burkholderia cenocepacia* phenylacetic acid degradation pathway. Towards understanding the contribution of aromatic catabolism. Frontiers in Cellular and Infection Microbiology. 1:14.
14. Yakandawala N, Gawande P, LoVetri K, **Cardona ST**, Romeo T, Nitz M. and Madhyastha S. 2011. Characterization of Poly-ß-1, 6-N-Acetylglucosamine Polysaccharide Component of *Burkholderia* Biofilms. Applied and Environmental Microbiology. 77:8303-8309.
15. Kaplan J, LoVetri K, **Cardona ST**, Madhyastha S, Sadovskaya I, Jabbouri S, and Izano, E. 2012. Antibiofilm activity of recombinant human DNase I (Pulmozyme®) against *Staphylococcus aureus* and *Staphylococcus epidermidis*. The Journal of Antibiotics. 65:73-77.
16. Bloodworth RAM, Gislason AS, and Cardona S. T. 2013. A *Burkholderia cenocepacia* conditional growth mutant library created by random promoter replacement of essential genes. MicrobiologyOpen. 2:243-258.
17. Privytkova T, Lightly TJ, Kumar B, Bernier SP, Sorensen JL, Surette MG, **Cardona ST**. 2014. The attenuated virulence of a *Burkholderia cenocepacia paaABCDE* mutant is due to inhibition of quorum sensing by release of phenylacetic acid. Molecular Microbiology. 94:522-536.
18. Cardona ST, Selin C, and Gislason AS. 2015. Genomic tools to profile antibiotic mode of action. *Crit Rev Microbiol* 4: 465-472.
19. Stokes JM, Selin C, **Cardona ST**, Brown ED. 2015. Chemical inhibition of bacterial ribosome biogenesis shows efficacy in a worm infection model. Antimicrobial Agents and Chemotherapy. *Antimicrob Agents Chemother* 59: 2918-2920.
20. Selin C, Blanchard JE, Gehrke SS, Bernard S, Hall DG, Brown ED, **Cardona ST**. 2015. A pipeline for screening *Burkholderia cepacia Complex* growth inhibitors. *PLoS One* 10: e0128587
21. Bloodworth RAM, Zlitni S, Brown ED, **Cardona ST**. 2015. An electron transfer flavoprotein (ETF) is essential for viability and cell size determination in *Burkholderia cenocepacia. Microbiology* 161: 1909-1920.
22. Bloodworth RAM, Selin C, Lopez de Volder A, Drevinek P, Degrossi J, **Cardona ST**. 2015. Draft Genome Sequences of *Burkholderia contaminans*, a *Burkholderia cepacia* Complex Species That Is Increasingly Recovered from Cystic Fibrosis Patients. *Genome Announc* 3: 10.1128/genomeA.00766-15.
23. Kumar B, **Cardona ST**. 2016. Synthetic cystic fibrosis sputum medium regulates flagellar biosynthesis through the *flhF* gene in *Burkholderia cenocepacia.* Frontiers in Cellular and Infection Microbiology. 6:65.
24. Nunvar J, Kalferstova L, Bloodworth RAM, Kolar M, Degrossi J, Lubovich S, **Cardona ST**, Drevinek P. 2016. Understanding the pathogenicity of *Burkholderia contaminans*, an emerging pathogen in cystic fibrosis. PloS One, 11(8), e0160975.
25. Haim MS, Mollerach M, Van Domselaar G, Teves S, Degrossi J, **Cardona ST**. 2016. Draft Genome Sequences of *Burkholderia contaminans* FFI-28 a strain isolated from a contaminated pharmaceutical solution. Genome Announcements. 4(5): e01177-16.
26. Gislason AS, Bloodworth RAM, Choy M, Qu W, Li X, Zhang C, Cardona ST. 2016. Competitive growth enhances mutant sensitivity to antimicrobials and unravels a two-component system as an antibacterial target in *Burkholderia cenocepacia.* Antimicrob Agents Chemother. 61(1) pii: e00790-16
28. Lightly TJ, Phung RR, Sorensen JL, **Cardona ST**. 2017. Synthetic cystic fibrosis sputum medium diminishes Burkholderia cenocepacia antifungal activity against Aspergillus fumigatus independently of phenylacetic acid production. Can J Microbiol. 63:427-438.
29. Stietz MS, Tolmasky M, **Cardona ST**. 2017. Evaluation of the electron transfer flavoprotein (ETF) as an antibacterial target in *Burkholderia cenocepacia*. Canadian Journal of Microbiology 63:857-863.

30. Haim MS, Di Gregorio S, Galanternik L, Lubovich S, Vazquez M, Bharat A, Zaheer R, Golding GR, Graham M, Van Domselaar G, **Cardona ST**, Mollerach M. 2017. First description of rpsJ and mepA mutations associated with tigecycline resistance in *Staphylococcus aureus* isolated from a cystic fibrosis patient during antibiotic therapy. Journal of Antimicrobial Agents. 50:739-741.
31. Gislason AS, Turner K, Domaratzki M, **Cardona ST**. 2017. Comparative analysis of the *Burkholderia cenocepacia* K56-2 essential genome reveals cell envelope functions that are uniquely required for survival in *Burkholderia* species. Microbial Genomics. Nov;3(11). doi: 10.1099/mgen.0.000140.
32. **Cardona ST** Choy M, Hogan AM. 2018. Essential two component systems regulating cell envelope functions: opportunities for antibiotic therapies. J Membr Biol. 251:75-89 doi: 10.1007/s00232-017-9995-5
33. Kumar B, Sorensen JL, **Cardona ST**. 2018. A c-di-GMP-modulating protein regulates swimming motility of *Burkholderia cenocepacia* in response to arginine and glutamate. 8:56 doi: 10.3389/fcimb.2018.00056.
34. Hogan AM, Scoffone VC, Makarov V, Gislason AS, Tesfu H, Stietz MS, Brassinga AKC, Domaratzki M, Li X, Azzalin A, Biggiogera M, Riabova O, Monakhova N, Chiarelli LR, Riccardi G, Buroni S, **Cardona ST**. 2018. Competitive fitness of essential gene knockdowns reveals a broad-spectrum antibacterial inhibitor of the cell division protein FtsZ. Submitted to Antimicrobial Agents and Chemotherapy. Accepted.
35. Mittal N, Tesfu H, Hogan AM, Cardona ST, Sorensen JL. 2018. Synthesis and antibiotic activity of novelacylated phloroglucinol compounds against methicillin-resistant *Staphylococcus aureus*. The Journal of Antibiotics. Submitted.

Conference Proceedings

Trainees under Dr. Cardona's supervision are underlined.

1. **Cardona S**, Mazzobre F, Schebor C, Buera M. P, and Chirife J. 1997. Glass transition and thermal stability of enzymes with particular reference to trehalose systems. In Jowitt R. (Ed.). J. Engineering and Food at the 7th International Congress on Engineering and Food, April 13-17, pp A89.
2. **Cardona S**, Remonsellez F, Guiliani N, and Jerez CA. 2001 a. Polyphosphate metabolism in the archaeon *Sulfolobus acidocaldarius.* In Ciminelli, V.S.T. and Garcia O. Jr. (Eds.), Biohydrometallurgy: Fundamentals, Technology and Sustainable Development. Part A. Proceedings of the International Biohydrometallurgy Symposium IBS 2001 held in Ouro Pretto, Brazil, September16-19, p. 345-354. Elsevier.
3. Selin C, Brown ED, and **Cardona ST**. 2013. High-throughput screening for growth inhibitors of *Burkholderia cenocepacia*." *Pediatric Pulmonology* 48:111-112.
4. Islam MM, Jeffers K, Hogan AM, Liu Q, Davis R, **Cardona ST**, Hu P. 2018. Deep Neural Network Model for Predicting Gene Activity Using Three-dimensional Structures of Chemical Compounds. In *Joint Statistical Meeting Proceedings*, Section on Statistical Learning and Data Science. American Statistical Association, Vancouver, BC.
5. Lightly T, Kumar B, **Cardona ST**. 2018. Adaptation of Burkholderia cenocepacia to the cystic fibrosis lung environment. Pediatric Pulmonology 53:89-90.

Conference Abstracts

Trainees under Dr. Cardona's supervision are underlined.

1. **Cardona S**, Osorio G, and Jerez CA. Genetic expression of the extremophile archaeon *Sulfolobus acidocaldarius* in phosphate starvation. XXI Annual Meeting of the Chilean Society of Biochemistry and Molecular Biology. Valdivia, Chile. September 22 -25, 1998.
2. **Cardona, S**, Guiliani N, Remonsellez F, and Jerez CA. Polyphosphate in the archaeon *Sulfolobus acidocaldarius*: towards the genetic and functional characterization of its metabolism. XLII Annual Congress of the Chilean Society of Biology. Pucón, Chile, November 16-19, 1999.
3. **Cardona S**, Remonsellez F, Guiliani N, and Jerez CA. Inorganic polyphosphate in archaea. Studies in *Sulfolobus*. XXII Chilean Congress of Microbiology. El Quisco, Chile, December 5-7, 2000. Presented in Spanish.

4. **Cardona ST**, Guiliani NS, Remonsellez F, and Jerez CA. Polyphosphate metabolism in the archaeon *Sulfolobus acidocaldarius*. American Society for Microbiology 100th General Meeting. Los Angeles, U.S.A. May, 21-25, 2000.
5. **Cardona ST**, Chavez F, and Jerez CA. The exopolyphosphatase gene from *Sulfolobus solfataricus*: Characterization of the First Gene found to be involved in polyphosphate metabolism in Archaea. The 4th International congress of Extremophiles. Naples, Italy, September 22-25, 2002.
6. **Cardona ST**, and Valvano MA. Developing a genetic strategy to validate putative essential genes from *Burkholderia cepacia.* American Society for Microbiology Michigan Branch Meeting. Flint, Michigan October 12, 2002.
7. **Cardona ST**, Whellams D, and Valvano MA. *Burkholderia cepacia* essential genes: Toward the identification and characterization of novel antimicrobial targets for the treatment of infections in cystic fibrosis patients. Margaret Moffat Graduate Research Day. Faculty of Medicine and Dentistry, University of Western Ontario, London, May 14, 2003.
8. **Cardona ST**, Whellams D, and Valvano MA. The use of *Escherichia coli* rhamnose promoter as a tool to identify essential genes in *Burkholderia cenocepacia.* American Society of Microbiology 104th General Meeting, New Orleans, May 22-27, 2004.
9. **Cardona ST**, Whellams D, and Valvano MA. The use of *Escherichia coli* rhamnose promoter as a tool to identify essential genes in *Burkholderia cenocepacia.* University of Toronto Microbiology and Infectious Diseases Research Day, Toronto, June 2, 2004.
10. **Cardona ST**, and Valvano MA. Identification of essential genes in *Burkholderia cepacia* K56-2 by transposon-based delivery of a rhamnose inducible promoter. International *Burkholderia cepacia* Working Group (IBCWG) 10th Meeting. Oklahoma City, April 21-24, 2005.
11. **Cardona ST**, Petersen A, and Valvano MA. Transposon mutants of *B. cenocepacia* K56-2 that are attenuated for pathogenicity in *C. elegans*. Microbial Pathogenesis & Host Response. Cold Spring Harbor Laboratory, September 14-18, 2005.
12. Bernier SP, **Cardona ST**, Bouvier M, Drevinek P, Mahenthiralingam E, Valvano MA, and Sokol PA. The effect of colony morphology on *Burkholderia cenocepacia* virulence. International *Burkholderia cepacia* Working Group (IBCWG) 11th Meeting, Gent, Belgium, April 20-23, 2006.
13. Ortega XP, **Cardona ST**, Loutet SA, Flannagan RS, and Valvano MA. A lipopolysaccharide modification gene cluster encoding the synthesis and transfer of 4-amino-arabinose is essential for survival of *Burkholderia cenocepacia*. IIRF Research Day. University of Western Ontario, London, Ontario, November 24, 2006.
14. Hamlin JNR, Law RJ, and **Cardona ST**. Exploring essential genes of *Burkholderia cenocepacia* for novel antimicrobial targets. International *Burkholderia cepacia* Working Group (IBCWG) 12th Meeting, Ann Arbour, Michigan, USA, April 19–22, 2007.
15. Ortega XP, **Cardona ST**, Brown AR, Loutet SA, Flannagan RS, Campoiano DJ, Govan J. R. W, and Valvano MA. A Putative Gene Cluster for Aminoarabinose Biosynthesis is Essential for *Burkholderia cenocepacia* Viability. Gordon Research Conference on Antimicrobial peptides. Il Ciocco Lucca (Barga), Italy, April 29-May 4, 2007.
16. Hamlin JNR, Sivro A, Cardama G, Valvano MA, and **Cardona ST**. *Burkholderia cenocepacia* mutant strains defective in phenylacetic acid catabolism are attenuated in the *Caenorhabditis elegans* model of infection. American Society of Microbiology 107th General Meeting, Toronto, May 21-25, 2007.
17. Hamlin JNR, Law RJ. and **Cardona ST**. A Putative TetR-type Regulator for the Phenylacetic Acid Catabolic Pathway in *Burkholderia cenocepacia*. 57th Annual Meeting of the Canadian Society of Microbiologists, Quebec City, June 17-20, 2007.
18. Bartholdson SJ, Brown ART, Ortega XP, **Cardona ST**, Loutet SA, Flannagan RS, Valvano MA, Campopiano DJ, Govan JRW. *Burkholderia cenocepacia*: LPS mediated antimicrobial resistance mechanisms of a cystic fibrosis super bug. Antibiotics- Where Now? Royal Society of Chemistry Conference. Royal Institute of British Architects, London, United Kingdom, January 21, 2008.
19. Shakibani MA, van Bruggen R, and **Cardona ST**. A genomic approach to discovering novel antimicrobial targets in *Burkholderia cenocepacia*. 58th Annual Meeting of the Canadian Society of Microbiologists, Calgary Alberta, June 9-12, 2008.
20. Law RJ, McCorrister SJ, and **Cardona ST**. A functional phenylacetic acid catabolic pathway is required for full pathogenicity of *Burkholderia cenocepacia* in the *Caenorhabditis elegans* host model. 58th Annual Meeting of the Canadian Society of Microbiologists, Calgary, Alberta, June 9-12, 2008.

21. Hamlin JNR, Bloodworth R, and **Cardona ST**. Regulation of phenylacetic acid degradation in *Burkholderia cenocepacia* K56-2. 58th Annual Meeting of the Canadian Society of Microbiologists, Calgary, Alberta, June 9-12, 2008.
22. Law RJ, Hamlin JNR, Teichroeb K, Ward T. and **Cardona ST**. Regulatory components and pathogenic features of the phenylacetic acid catabolic pathway of *Burkholderia cenocepacia* K56-2. International *Burkholderia cepacia* Working Group (IBCWG) 13th Meeting, Toronto, Canada, April 23-26, 2009.
23. Bloodworth RAM, Park M, Peters A, and **Cardona ST**. A genome-scale identification of essential *Burkholderia cenocepacia* genes using transposon mediated insertion of a rhamnose inducible promoter. CSM General Meeting, Montreal, Quebec, June 15-18, 2009.
24. Bamforth, J. M, Giraud, E, Doublet B, Cloeckaert, A, Kabanangi F, **Cardona ST**, Graham M, Golding GR, and Mulvey MR. Salmonella Genomic Island 1 influences expression of virulence-associated genes in early stationary phase and enhances killing of *Caenorhabditis elegans* for *Salmonella enterica* serovar *Typhimurium* DT104. 3*rd* ASM Conference on Salmonella: Biology, Pathogenesis & Prevention. Aix-en-Provence, France, October 5-9, 2009.
25. Bloodworth RAM, Arfaoui A, and **Cardona ST**. A chemo-genetic approach to identifying *B. cenocepacia* growth inhibitors and their specific targets. International *Burkholderia cepacia* Working Group (IBCWG) 14th Meeting, Seattle, USA, April 21-24, 2010.
26. Yudistira H, McClarty LM, and **Cardona ST**. Phenylalanine catabolism in *Burkholderia cenocepacia* during growth in Synthetic Cystic Fibrosis Medium. International *Burkholderia cepacia* Working Group (IBCWG) 14th Meeting, Seattle, USA, April 21-24, 2010.
27. Arfaoui A, Bloodworth RAM, Lesanko AU, Hall D, and **Cardona ST**. *In vitro* and *in vivo* antibacterial activity of three novel imido-piperidines against *Burkholderia cepacia* complex (Bcc). McMaster University, Hamilton, Ontario, Canadian Society of Microbiologists 60th Annual conference, June 14-17, 2010.
28. Yudistira H, McClarty LM, and **Cardona ST**. Phenylalanine Catabolism In *Burkholderia cenocepacia* During Growth In Synthetic Cystic Fibrosis Medium. Canadian Society of Microbiologists 60th Annual conference, June 14-17, 2010. McMaster University, Hamilton, Ontario.
29. Bloodworth RAM, Gislason A, and **Cardona ST**. Development of an enhanced lethality assay for target identification of novel growth inhibitors of *B. cenocepacia.* International *Burkholderia cepacia* Working Group (IBCWG) 15th Meeting, Prague, Czech Republic, April 13-17, 2011.
30. LoVetri K, Gawande PV, Yakandawala N, **Cardona ST**. and Madhyastha, S. DispersinB® Enzyme-Based Product for Treating CF-Associated Infection. Montana Biofilm Meeting, Bozeman, MT, July 12-14, 2011.
31. Bloodworth RAM, Gislason, A, and **Cardona ST**. (2012) A *Burkholderia cenocepacia* Essential Gene Conditional Expression Library as a tool for characterizing small-molecule target interactions. American Society of Microbiology 112th General Meeting. June 16-19. San Francisco, California, USA.
32. Bloodworth RAM, Gislason, A, Hurst H, and **Cardona ST**. (2012) Random Promoter Replacement of Essential Genes As A Tool For Chemical Genomics Studies In *Burkholderia Cenocepacia.* International *Burkholderia cepacia* Working Group (IBCWG) 16th Meeting, April 18-21. Montreal, Quebec.
33. Selin C, Brown E, and **Cardona ST**. High throughput screening for growth inhibitors of *Burkholderia cenocepacia.* The 27th Annual North American Cystic Fibrosis Conference. Salt Lake City, Utah. October 17-19, 2013.
34. Pribytkova T. and **Cardona ST**. Phenylacetic acid degradation pathway related pathogenicity in *C. elegans* host model: understanding the mechanism of virulence. Canadian Society of Microbiologists (CSM) 61st Annual Conference. June 17-20, 2013. Carleton University, Ottawa.
35. Gislason A, Bloodworth RAM, Qu W, Li X, Zhang C. and **Cardona ST**. Developing a high throughput chemogenomic approach for profiling bioactives against *Burkholderia cenocepacia.* Canadian Society of Microbiologists (CSM) 61st Annual Conference. June 17-20, 2013. Carleton University, Ottawa.
36. Saas A, **Cardona ST**, Valvano MA, Coenye T, and Mahenthiralingan E. Structural differences between the genomes of *Burkholderia cenocepacia* strains K56-2 and J2315. International *Burkholderia cepacia* Working Group (IBCWG) 17th Meeting, Ann Arbor, Michigan, USA, April 10-13, 2013.

37. Selin C, Brown E, and **Cardona ST**. High throughput screening for growth inhibitors of *Burkholderia cenocepacia.* International *Burkholderia cepacia* Working Group (IBCWG) 17th Meeting, Ann Arbor, Michigan, USA, April 10-13, 2013.
38. López De Volder MA, Bloodworth R, Selin C, **Cardona ST**, Degrossi J. Developing Molecular Biology and genomic tools for studying *Burkholderia contaminans*. International Union of Microbiological Societies (IUMS), XIVth International Congress. July 27 – August 1, 2014. Montreal, Canada
39. Gislason AS, Bloodworth RAM, Qu W, Xuan Li X, Zhang C, **Cardona ST**, Developing a high throughput chemogenomic approach for profiling bioactives against *Burkholderia cenocepacia*. International Union of Microbiological Societies (IUMS), XIVth International Congress. July 27 – August 1, 2014. Montreal, Canada.
40. Kumar B, Yudistira H, **Cardona ST**. Proteomic analysis of K56-2 grown in Synthetic Cystic Fibrosis Sputum Medium shows up-regulation of virulence factor flagellin and increased motility. International Union of Microbiological Societies (IUMS), XIVth International Congress. July 27 – August 1, 2014. Montreal, Canada.
41. Nunvar J, Kalferstova L, Kolar M, Degrossi J, **Cardona ST**, Bloodworth RAM, Drevinek P. Gene expression profiling of the *Burkholderia contaminans* bloodstream isolate. International *Burkholderia cepacia* Working Group (IBCWG) 19th Meeting. April 15-18, 2015. Vancouver, Canada.
42. Bloodworth RAM, Zlitni S, Brown ED, **Cardona ST**. An electron transfer flavoprotein (ETF) is essential for viability and cell size determination in *Burkholderia cenocepacia*. International *Burkholderia cepacia* Working Group (IBCWG) 19th Meeting. April 15-18, 2015. Vancouver, Canada.
43. Bloodworth RAM, Selin C, López De Volder MA, Degrossi J, Drevinek P, Galanternik L, **Cardona ST**. Draft genome sequences of the *Burkholderia contaminans* strains LMG23361 and FFH2055. International *Burkholderia cepacia* Working Group (IBCWG) 19th Meeting. April 15-18, 2015. Vancouver, Canada.
44. Gislason AS, Bloodworth RAM, Choy M, Qu W, Li X, Zhang C, **Cardona ST**. A chemogenetic approach for profiling bioactives by next generation sequencing reveals a novel antibacterial target in *Burkholderia cenocepacia*. Canadian Student Health Research Forum. June 2 – 4, 2015. Winnipeg, Manitoba.
45. Lightly TJ, Pribytkova T, Sorensen JL, **Cardona ST**. Interactions between quorum sensing and phenylacetic acid metabolism in cystic fibrosis pathogens. Canadian Student Health Research Forum. June 2 – 4, 2015. Winnipeg, Manitoba.
46. Gislason AS, Bloodworth RAM, Choy M, Qu W, Xuan Li X, Zhang C, **Cardona ST**. A chemogenetic approach for profiling bioactives by next generation sequencing reveals a novel antibacterial target in *Burkholderia cenocepacia*. Canadian Society of Microbiologists (CSM) 65st Annual Conference. June 15-18, 2015. University of Regina, Saskatchewan.
47. Lightly TJ, Pribytkova T, Sorensen JL, **Cardona ST**. Interactions between quorum sensing and phenylacetic acid metabolism in cystic fibrosis pathogens. Canadian Society of Microbiologists (CSM) 65st Annual Conference. June 15-18, 2015. University of Regina, Saskatchewan.
48. Nunvar J, Bloodworth R, Degrossi J, **Cardona ST**, Drevinek P. Genomic evolution of *Burkholderia contaminans* ST872 during chronic CF infection. 39th European Cystic Fibrosis Conference, Basel, Switzerland, June 08-11, 2016.
49. Buroni S, Gislason AS, Scoffone VC, Stietz MS, Chiarelli LR, Azzalin A, Makarov V, **Cardona ST**, Riccardi G. 2016. A new promising bactericidal compound against *Burkholderia cenocepacia*. International *Burkholderia cepacia* Working Group (IBCWG) 20th Meeting. April 27-30, 2016. Columbus, Ohio, USA.
50. Winsor GL, Dhillon BK, Bertelli C, Zlosnik JE, **Cardona ST** and Brinkman FSL. The Burkholderia Genome Database: More Genomes, More Analyses, More Plans. International *Burkholderia cepacia* Working Group (IBCWG) 20th Meeting. April 27-30, 2016. Columbus, Ohio, USA.
51. Gislason AS, Buroni S, Stietz MS, Scoffone VC, *Mabilangan C*, Chiarelli LR, Li X, Makarov V, Riccardi G, **Cardona ST**. Illumina-based chemogenomic profiling of a novel compound with antimicrobial activity reveals its role as a bacterial cell division inhibitor. 66th Annual Conference of the Canadian Society of Microbiologists, June 12 - 15, 2016, University of Toronto, Toronto, ON.
52. Stietz MS, Lopez C, Balasko A, de Carvalho CCCR, Tolmasky ME and **Cardona ST**. A *Burkholderia cenocepacia* electron transfer flavoprotein (ETF) plays an essential role in fatty acid metabolism. 4th Annual Meeting of Protein Structure, Function and Malfunction (PSFaM). June 2016. Saskatoon, Canada.

53. Haim MS, Zaheer R, Bharat A, Golding G, Galanternik L, Graham M, Van Domselaar G, Mollerach M, **Cardona ST**. Comparative genomics of sequential *Staphylococcus aureus* isolates recovered from respiratory samples of cystic fibrosis patients from Argentina. 23rd Latin American Microbiology Conference and 14th Argentinean Microbiology Conference. September 26th-30th, 2016. Rosario, Santa Fe, Argentina.
54. Stietz MS, Lopez C, Balasko A, de Carvalho CCCR, Tolmasky ME and **Cardona ST**. Investigation of an electron transfer flavoprotein (ETF) involved in fatty acid metabolism, as a new antimicrobial target for treating *Burkholderia cenocepacia* infections. 23rd Latin-American Microbiology Conference. September 2016. Rosario, Argentina.
55. Scoffone VC, Gislason AS, Hogan A, Chiarelli LR, Stietz MS, Azzalin A, Makarov V, **Cardona ST**, Riccardi G, Buroni S. Fighting *Burkholderia cenocepacia* through a new promising bactericidal molecule. 7th Congress of European Microbiologists FEMS 2017. July 9-13, 2017, Valencia, Spain.
56. Haim MS, Zaheer R, Bharat A, Knox N, Di Gregorio S, Di Conza J, Galanternik L, Golding G, Graham M, Van Domselaar G, **Cardona ST**, Mollerach M. Microevolutionary Analysis of Methicillin Resistant *Staphylococcus aureus* in a Cystic Fibrosis Patient from Argentina Using Next Generation Sequencing. ASM Microbe. June 1 -5, 2017 New Orleans, LA. USA.
57. Di Gregorio S, Haim MS, Herrera M, Famiglietti A, **Cardona ST**, Di Conza J, Mollerach M. Analysis of Insertion Elements in *Staphylococcus aureus* Mutants Selected After Antibiotic Treatment Using Whole Genome Sequencing. ASM Microbe. June 1 -5, 2017 New Orleans, LA. USA.
58. Kumar B, Sorensen JL, **Cardona ST.** The role of c-di-GMP metabolizing domains in motility of *Burkholderia cenocepacia* K56-2 in cystic fibrosis sputum nutritional conditions. 67th Annual Conference of the Canadian Society of Microbiologists, June 20 - 23, 2017, University of Waterloo, Waterloo, ON.
59. Hu P, Mohaiminul I, Jeffers K, Hogan AM, Davis R, Cardona ST. Deep neural network model for predicting gene activity using three-dimensional structures of chemical compounds. Joint Statistical Meeting (JSM) American Statistical Association, July 28 – August 2, 2018, Vancouver Convention Centre, Vancouver, BC.
60. Hogan AM, Makarov V, Gislason AS, Tesfu H, Brassinga KA, Domaratzki M, Riccardi G, Buroni S, **Cardona ST**. A broad-spectrum antimicrobial inhibitor of the cell division protein FtsZ revealed by Illumina-based chemogenetics in *Burkholderia cenocepacia.* International *Burkholderia cepacia* Working Group (IBCWG) 21th Meeting. May 2-5, 2018. Dublin, Ireland.
61. Lightly TJ, Wolfram S, Sorensen SL, **Cardona ST**. Investigating the role of the phenylacetic acid pathway in the quorum sensing-regulated virulence of *Burkholderia cenocepacia.* International *Burkholderia cepacia* Working Group (IBCWG) 21th Meeting. May 2-5, 2018. Dublin, Ireland.
62. Hogan AM, Scoffone VC, Makarov V, Tesfu H, Stietz MS, Brassinga KA, Domaratzki M, Azzalin A, Biggiogera M, Chiarelli LR, Riccardi G, Buroni S, **Cardona ST**. A broad-spectrum antimicrobial inhibitor of the cell division protein FtsZ revealed by Illumina-based chemogenetics in *Burkholderia cenocepacia.* 68th Annual Conference of the Canadian Society of Microbiologists, June 18 - 21, 2018, University of Manitoba, Winnipeg, MB.
63. Tesfu H, Mittal N, Hogan AM, Sorensen SL, **Cardona ST**. Phloroglucinol derivatives exhibit antimicrobial and antibiofilm activities against *Staphylococcus aureus.* 68th Annual Conference of the Canadian Society of Microbiologists, June 18 - 21, 2018, University of Manitoba, Winnipeg, MB
64. Lightly TJ, Wolfram S, Sorensen SL, **Cardona ST.** Investigating the role of the phenylacetic acid pathway in the quorum sensing-regulated virulence of *Burkholderia cenocepacia.* 68th Annual Conference of the Canadian Society of Microbiologists, June 18 - 21, 2018, University of Manitoba, Winnipeg, MB.

TEACHING

Graduate

2013-2014 BME7010 Biomedical Engineering (2 invited lectures)

2010-present	MBIO 7010 Graduate Microbiology (Co-Teaching) Module: Using next generation sequencing to analyse mutant responses at the genomic level
2008-present	MBIO 7160 Graduate Seminars (Co-Teaching)

Undergraduate

2006-2009	MBIO 2100 General Microbiology
2007-2009	MBIO 3480 Microbial Diversity
2010-2014	MBIO 1010 Microbiology
2012-present	MBIO4440 Systems Microbiology
2014-2016	MBIO 1220 Essentials of Microbiology
2017-2020	Smith Integrated Science Faculty Scholar
2018	MBIO 4030 Special Topics in Microbiology

Mentoring

Postdoctoral Fellows

2009-2010	Dr Arbia Arfaoui. MHRC Postdoctoral Fellow. In Vitro And In Vivo Antibacterial Activity of Three Novel Imido-Piperidines Against *Burkholderia cepacia* Complex
2012-2014	Carrie Selin. MHRC Postdoctoral Fellow. Identification of target/mechanism of action of molecules with antibacterial properties for treatment against *Burkholderia cepacia* complex Current position: Seasonal Instructor, University of Manitoba
2014-2016	Maria Silvina Stietz. Exploration of small inhibitory RNAs as antibiotics against *Burkholderia cepacia* complex. Current position: Postdoctoral Fellow, Tao Dong Laboratory, Unversity of Calgary

Graduate Students

Masters Theses Completed

2006-2008	Jason N. R. Hamlin. Ms Sc Thesis. Regulation of The Phenylacetic Acid Catabolic Pathway in *Burkholderia cenocepacia.* MHRC Scholarship. Current position: Product Marketing Manager. STEMCELL Technologies

2007-2009	Robyn J. Law. Ms. Sc Thesis. The Relationship between Phenylacetic Acid Catabolism and Pathogenicity of *Burkholderia cenocepacia* K56-2 In the *Caenorhabditis elegan*s Host. NSERC Scholarship. Current Position: Technology Transfer Officer. University of British Columbia
2008-2010	Harry Yudistira. Ms. Sc Thesis. Metabolism of *Burkholderia cenocepacia* in the Cystic Fibrosis Lung Current position: PhD student Oresnik Laboratory, University of Manitoba
2009-2011	Ijeme Imolorhe. Ms. Sc Thesis. Functional Characterization of The Phenylacetyl-CoA Ligase Genes of *Burkholderia cenocepacia* Current position: undisclosed
2011-2014	Tanya Pribytkova. Ms. Sc Thesis. The attenuated virulence of a *Burkholderia cenocepacia* paaABCDE mutant is due to inhibition of quorum sensing by release of phenylacetic acid. Current position: Dentistry Student
2015-2017	Matthew Choy. M. Sc. Program. A novel *Burkholderia cenocepacia* two component system involved in resistance to antibiotics. Current Position: Optometry Student

Doctoral Theses Completed

2008-2015	Ruhullah Bloodworth. PhD Thesis. Essential genes and genomes of the *Burkholderia cepacia* complex. Current position: Personal Leave.
2011-2017	April Gislason. PhD Thesis. Identification of the essential genome of *Burkholderia cenocepacia* K56-2 to uncover novel antibacterials Current position: Posdoctoral Fellow. DiKievit Laboratory, University of Manitoba
2012-2017	Brijesh Kumar. PhD Thesis. Nutritional cues in cystic fibrosis sputum regulate number and functioning of flagella through *flhF* and a c-di-GMP related protein BCAL1069 in *Burkholderia cenocepacia* K56-2 Current position: Posdoctoral Fellow Heinrichs Laboratory, Western University.

Theses in Process

2014	Tasia Lightly. PhD Thesis. Phenylacetic acid metabolism as a regulator of quorum sensing during microbial interactions
2016	Andrew Hogan. PhD. Thesis. Chemogenomics approaches to understand mechanisms of action of novel antibacterial molecules for *Burkholderia cenocepacia.* Cystic Fibrosis Canada Doctoral Scholarship
2018	Haben Tesfu. MSc. Thesis. Global response of *Burkholderia cenocepacia* to phenyl acetic acid metabolites
2019	Zisanur Rahman. MSc Thesis. TBD

Visiting PhD Students

2013-2014	Agustina Lopez de Volder. Genome sequencing of *Burkholderia contaminans* strains from Argentina Current position: PhD student, University of Buenos Aires

2016	Maria Sol Haim. Genome sequencing of *Staphylococcus aureus* clinical isolates Current position: PhD student, University of Buenos Aires

Microbiology (MBIO4530) Undergraduate Project Students

2006-2007	Aida Sivro. Complementation of A *paaa* mutant in *Burkholderia cenocepacia* Erin Larcombe. Construction of A *paak* mutant in *Burkholderia cenocepacia*
2007-2008	Stuart McCorrister. Characterization of *Caenorhabditis elegans-Burkholderia cenocepacia* Interactions Using RNAi Technology Ruhullah Bloodworth. Phenylalanine Degradation in *Burkholderia cenocepacia* Hanna El-Azzami. Phenylalanine Degradation in *Burkholderia cenocepacia*
2008-2009	Anene Peters. Characterization of essential genes of *B. cenocepacia* Alexander Nerbas. Analysis of metabolites produced by *B. cenocepacia* phenylacetic acid degradation mutants Haley Butcher. Cloning and expression of a TetR-like regulator gene in *B. cenocepacia*
2009-2010	Leigh McClarty. Phenylacetyl-CoA disrupts the DNA binding capabilities of PaaR, the negative transcriptional regulator of *Burkholderia cenocepacia*'s phenylacetic acid catabolic pathway
2010-2011	Chinelo Ezeonwuka. Characterizing essential genes in *Burkholderia cenocepacia* rhamnose conditional growth mutants Melanie Kehler. Is ShvR a positive regulator for the phenylacetic acid degradation pathway in *Burkholderia cenocepacia*?
2011-2012	Holly Hurst. Effect of hydrogen peroxide on essential genes in *Burkholderia cenocepacia* rhamnose conditional growth mutants Sara Madill. Improvement of an enhanced lethality assay to find MOA for novel antibiotics in *Burkholderia cenocepacia*
2012-2013	Gayanthi Tissera. Exploration of antibiotic activity against *Burkholderia cenocepacia* and profiling of Cefmetazole through enhanced sensitivity assay.
2014-2015	Mathew Choy. A novel *Burkholderia cenocepacia* two component system involved in resistance to antibiotics
2014-2015	Allison Balasko. Electrotransfer flavoprotein EtfBA. Cloning of the gene and protein purification.
2015-2016	Tarek Kanam. Use of an in vivo infection model to validate antimicrobial targets and novel antibiotics
2015-2016	Branden Gregorchuk. *Burkholderia cenocepacia* growth in low oxygen conditions
2016-2017	Vince Henega. Investigating the interaction of phenylacetic metabolic pathway with the quorum sensing response.
2017-2018	Haben Tofu. Synergy between a novel molecule with bactericidal effects and known antibiotics.

2017-2018	Samuel Wolfram. Phenylacetic acid as an inhibitor of quorum sensing
2018-2019	Kevin Jeffers. Improving the dynamic range of the rhamnose-inducible promoter for regulation of essential genes in *Burkholderia cenocepacia*
2018-2019	Stacey Line. Pathogenic phenotype of *Burkholdria cenocepacia* phenyl-acetyl CoA ligase mutants

NSERC, and Faculty of Science Summer Students

2007	Rebekah Van Bruggen. Identification of antibacterial targets for *Burkholderia cepacia* Complex
2008	Kali Teichroeb. Relevance of catabolic pathways in *Burkholderia cenocepacia* pathogenic processes
	Anene Peters. Characterization of novel genes required for growth in *Burkholderia cenocepacia*
2009	Kristyn Buchko. Growth curves of conditionally lethal mutants of *Burkholderia cenocepacia*
2010	Blair Peters. *Burkholderia cenocepacia PaaF* mutant produces 2-hydroxyphenylacetic acid in nematode growth media. Implications to phenylacetic acid degradation-related pathogenesis.
2011	Jesse Franklin. Characterization of novel antibacterial targets for *Burkholderia cenocepacia*
	Samira Atoui. Target identification of novel growth inhibitors for *Burkholderia cenocepacia*
	Alicia Ling. Development of a standardized protocol for high throughput inoculation of a conditional growth mutant library
2012	Aaron MacAulay. Developing a conditional mutagenesis protocol in *Burkholderia cenocepacia* by mutant enrichment with bactericidal antibiotics
	Shilpa Alex. Development of a genetic tool for single copy complementation in *Burkholderia cenocepacia*
2013	Idunnu Adeojo. Using a two-hybrid system to study essential protein interactions.
	Jessica Holben. Evaluating the antibiotic potential of small molecules with growth inhibitory activity against *Burkholderia cenocepacia*
	Nayara Martins Ribeiro. Evaluating the antibiotic potential of small molecules with growth inhibitory activity against *Burkholderia cenocepacia*
2014	Marcelly Chue Goncalvez. Evaluating the antibiotic potential of small molecules with growth inhibitory activity against *Burkholderia cenocepacia*
	Andrea Soriano. Profiling growth conditional mutants of *Burkholderia cenocepacia* against antibiotics of known action.
2015	Ryan Phung. Evaluating the interactions between *Burkholderia cenocepacia* and *Aspergillus fumigatus*
	Hongru Ren. Unraveling the function of the essential ETF in *Burkholderia cenocepacia*
	Carmichael Mabilangan. Building a high-density transposon mutant library in *Burkholderia cenocepacia*

	William MacDougall. Using genomic libraries to identify the mode of action of novel molecules with antibacterial properties.
2016	Carmichael Mabilangan. Building a high-density conditional growth mutant library. Allison Balasko. Investigating ETF protein interactions. Osasumwen (Ossi) Osifo. Investigating persister cell formation in conditional growth mutants
2018	Kara Frejuk. Investigating the virulence phenotypes of *B. cenocepacia* phenylacetic acid degradation mutants.
2018	Armando Palacios Chaparro. Building a barcoded plasposon for high-density transposon mutagenesis and Bar-Seq.

Co-op Students

2011	Fatima Kabanangi. *B. cenocepacia-C. elegans* Host Pathogen Interactions
2013	Michelle Park. High Throughput Transposon Mutagenesis in *B. cenocepacia*
2017	Nelson Mok. Activity of a novel antibiotic molecule against Gram negative cystic fibrosis pathogens
2018	Kartik Sachar. Building genetic tools for genome-wide expression of essential genes in *B. cenocepacia*

Visiting students

2013-2014	Agustina Lopez de Volder. PhD student. Genome sequencing of *Burkholderia contaminans* strains from Argentina. LACREG grant
2016	Maria Sol Haim. PhD student. Genome sequencing of Staphylococcus aureus clinical isolates.
2018	Armando Palacios. Mitacs Globalink. Building genetic tools for genome -wide expression of essential genes in *B. cenocepacia*

Thesis advising and examination committees

2007-2012	Carrie Selin. Regulatory Mechanisms Underlying Biological Control Activity of *Pseudomonas chlororaphis*. Department of Microbiology.
2008-2010	Terry James. A structural examination of the Crimean-Congo Hemorrhagic Fever Virus Otu protease domain in the presence of the Ubiquitin and ISG15 substrates. Department of Microbiology.

2008-2011	Jalil Nasiri. Identification and analysis of Rob, a transcriptional regulator from *Serratia marcescens*. Department of Microbiology.
2009-2013	Megan Regan. The effects of the SCCmec element and colony spreading on the virulence of methicillin resistant *Staphylococcus aureus* in a nematode model. MSc thesis. Department of Medical Microbiology, Faculty of Medicine
2010-2015	Damien Riviers, Characterization of RhaK and its Role in Rhamnose Transport in Rhizobium leguminosarum. PhD thesis. Department of Microbiology.
2011-2015	Jilagamazhi Fu, Metabolic diversity and synthesis of medium chain length polyhydroxyalkanoates by *Pseudomonas putida* LS46 cultured with biodiesel-derived by-products. PhD thesis. Biosystems Engineering, Faculty of Engineering.
2012-2013	Hamza Safi, MSc thesis. Examining the roles of microRNAs in mosquito spermatogenesis. MSc thesis. Department of Biology.
2013-2014	Yichen Zhao, Pseudomonas aeruginosa Type III secretion system: Regulation and the role in interspecies interaction. MSc thesis. Department of Oral Biology
2015-2016	Farzaneh Taleb Sereshki. MSc thesis. Stereoselective Ortho-alkylation of Aromatic Ketones by Wilkinson Catalyst. MSc thesis. Department of Chemistry
2012-present	Ben Balley-Elkin, Structural biology of viral cysteine proteases involved in host innate immune evasion. PhD thesis. Department of Microbiology
2014-present	Robert Bertrand. Production of polyketide antibiotics by lichens. PhD thesis. Department of Chemistry
2016-present	Manu Singh. Functional characterization of MexJK pumps in P. aeruginosa to understand its interaction with outer membrane factor (OMF) proteins OprM and OpmH. PhD thesis.
2016-present	Akrm Ghergab. The interaction of the biocontrol agent Pseudomonas chlororaphis PA23 and *Pseudomonas brassicacearum* DF41 with the grazing predator Acanthamoeba castellanii. PhD thesis.
2017-present	Guanyu Wang. MSc thesis. Department of Chemistry
2018-present	Alexander Diamandas. PhD thesis. Department of Microbiology

External reviewer of PhD theses

2013	Allison Marie McDonald. Pathogen-Induced Inflammation in Immunocompromised Condition. University of British Columbia.
2014	Deng Liyu. Exploration of the transcription factors that regulate the expression of the haloacid operon in *Burkholderia caribensis* MBA4. School of Biological Sciences. University of Hong Kong.
2014	Cambria Alpha. Antimicrobial properties of the volatile organic compounds produced by *Muscodor albus* and other members of the *Muscodor genus*. Department of Molecular Biophysics & Biochemistry. Yale University.
2017	Rachel Kinsella. Investigating the roles of O-linked protein glycosylation and type two secretion in the pathogenesis of Acinetobacter. Biological Sciences, University of Alberta.
2017	Jessica Duong. Phenotypic and Genotypic Evaluation of the Prairie Epidemic Strain (PES). Biological Sciences, University of Alberta. Biological Sciences, University of Alberta.

SERVICE

Service to the Department of Microbiology

2007	Search Committee (Assistant Professor in Microbiology)
2008 - 2010	Committee on Microbiology Course offerings
2012	Search Committee (Assistant Professor in Microbiology)
2012- present	Graduate Studies Committee
2017	Acting Associate Head (Graduate Studies)
2018	Search Committee (Assistant Professor in Systems Microbiology)

Service to the Faculty of Science

2012	Tenure and Promotion Committee
2012 - 2014	Faculty of Science Executive Committee
2012	Search Committee (Biosafety Advisor)
2012-2015	Tenure Committee
2015	Promotion Committee
2017	Promotion Committee
2017	LabTrek: Conducted laboratory guided visits for First Year Science students
2017-present	Chair of the Bioactives Interdisciplinary Research Group
2018	Delivered a presentation as a Keynote Speaker in the event “Girls in Science” organized by University of Manitoba female students to encourage interest in a Science Career among secondary school female students.

Service to the University

2012 - 2014	Biological Safety Advisory Committee member
2013- 2016	Internationalization Committee
2016 - present	Representative to the University of Manitoba Faculty Association (UMFA)

Service to the Scientific Community

Conference Organization

2012	ASM General Meeting Graduate Student Mentor
2012	Co-Chair of the 16th International *Burkholderia cepacia* Working Group (IBCWG.org) Meeting, Montreal, QB
2015	Chair of the 21st International *Burkholderia cepacia* Working Group (IBCWG.org) Meeting, Vancouver, BC
2016	CSM Oral Student Symposium Competition Judge

2018	Infection and Immunity Symposium Co-Chair at Canadian Society of Microbiologists 68th Annual Conference, Winnipeg, MB

Member of Grant Review Panels

2014-2016	Cystic Fibrosis Canada. Reviewed more than 20 applications.
2014	Canada-Latin America and the Caribbean Research Exchange Grants (LACREG) COMPETITION. Reviewed 15 applications.
2015	Saskatchewan Health Research Foundation. Collaborative Innovation Development Grants- Biomedical committee. Reviewed more than 20 applications.
2016	Michael Smith Foundation for Health Research. Panel Member. Reviewed 6 applications
2016	Saskatchewan Health Research Foundation. Collaborative Innovation Development Grant- letter of Intent. Reviewed more than 20 applications.
2017	CIHR Microbiology & Infectious Diseases Committee for Project Grant Applications. Reviewed 7 applications

Peer Reviewer of Articles

- Canadian Journal of Microbiology
- BMC Biotechnology and BMC Microbiology
- FEMS Microbiology Letters
- Microbial Pathogenesis
- BMC Genomics
- Antimicrobial Agents and Chemotherapy
- Infection and Immunity
- Journal of Biomolecular Screening
- Current Microbiology
- Journal of Medical Microbiology
- BMC Microbiology
- Journal of Clinical Microbiology
- Frontiers in Microbiology
- ACS Synthetic Biology
- Microbiology

External Reviewer of Grant Applications

- CFI LOF
- NSERC Discovery Grants
- Cystic Fibrosis Canada (CFC) Research Grant
- Collaborative Health Research Project (CHRP)
- NSERC Strategic Project Grants
- FWO Research Foundation, Flanders, Belgium
- CIHR Planning and Dissemination Grants
- FONCYT, Argentina
- Biotechnology and Biological Sciences Research Council (BBSCRC), U.K.

Service to the General Community

2007-2009	Sanofi-Aventis Biotech Challenge. Judge and mentor
2011	Promoted "All Science Challenge" Event in Radio Canada International (Interview Conducted in Spanish May 7th, 2011)
2013	Antibiotics and Genomic Libraries. Interview during the program "Dosis de Radio" of Radio UBA. University of Buenos Aires Radio Station. Interview Conducted in Spanish December 2th, 2013
2013	Wiley Microbiology Advisory Board Member for publication of the textbook Wessner Microbiology
2014	Women in Science at the U of M. Text interview for "The Manitoban", the students' newspaper of the University of Manitoba. Posted March 4, 2014
2014	Translation and modification of the article: Vertex Phase 3 Combination Studies of Ivacaftor (KALYDECO®) and Lumacaftor (VX-809) Show Promising Clinical Results in Most Common CF Mutation, by Ken Chan (CFC) for the Argentinian Association against Cystic Fibrosis (FIPAN)
2015	Fundraising for the Cystic Fibrosis Canada Great Strides Walk Event. Enrolled the laboratory personnel as a fundraising team. Fundraised more than $1,000 toward a cure for cystic fibrosis
2017-2018	Science Fair Mentor
2018	Fundraising for the Cystic Fibrosis Canada Event "Walk to Make Cystic Fibrosis History" in support of a student's initiative