

Silvia T. Cardona, Ph.D

Curriculum Vitae

Department of Microbiology
University of Manitoba
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DEGREES

- 2002-2006 Postdoctoral Studies in Pathogenomics Department of Microbiology & Immunology, University of Western Ontario
- 1997-2001 Ph.D. Microbiology, University of Chile, Chile
- 1987-1995 Bachelor (Biology), University of Buenos Aires, Argentina
- 1983-1986 Pedagogy of Biology, CONSUDEC Institute, Buenos Aires, Argentina

ACADEMIC POSITIONS

- 2019-present Associate Head (Graduate Affairs), Department of Microbiology, Department of Microbiology, Faculty of Science, University of Manitoba
- 2019 -present Professor. Department of Microbiology, Faculty of Science, University of Manitoba
- 2019-present Professor (nil-salary). Department of Medical Microbiology & Infectious Diseases, Max Rady College of Medicine, University of Manitoba
- 2013-2019 Associate Professor. Department of Microbiology, Faculty of Science, University of Manitoba
- 2013-2019 Associate Professor (nil-salary). Department of Medical Microbiology & Infectious Diseases, Max Rady College of Medicine, University of Manitoba
- 2006-2013 Assistant Professor. Department of Microbiology, Faculty of Science, University of Manitoba

DISTINCTIONS

- 2022-2024 Elected Academic Co-Chair of the Gordon Research Conference on New Antibiotic Discovery and Development, Ventura, CA, March 2024
- 2017-2022 Ian C. P. Smith Integrated Science Faculty Scholar. Participated in the development of an Interdisciplinary Science Program for undergraduate education in science
- 2017 Faculty of Science Award for Best Mentor in the Life Science Category. Awarded after being nominated by graduate and undergraduate students
- 2013 Faculty of Science Celebration of Excellence - Mention for Research Funding
- 2012 Faculty of Science Celebration of Excellence - Mention for Research Funding
- 2011 Faculty of Science Celebration of Excellence - Mention for Research Funding
- 2007 Faculty of Science Celebration of Excellence - Mention for Research Funding
- 2005-2006 Cystic Fibrosis Canada (CFC) Fellowship Award (Renewal)
- 2003-2005 Cystic Fibrosis Canada (CFC) Fellowship Award

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1999–2001	FONDECYT (National Fund for Science and Technology Development) Ph.D. Student Grant N° 2990035, Santiago, Chile
1997-2001	DAAD (German Institute for Academic Exchange) Ph.D. Scholarship to pursue doctoral studies at the University of Chile

RESEARCH

Research Statement

My long-term research goal is to understand the molecular mechanisms that control microbial growth in diverse environments, such as infection sites and biotechnological processes. To that end, our lab builds genomic and synthetic biology tools focusing on essential genes. We apply these tools to the discovery of antimicrobials, the synthesis and degradation of bioplastics, and other biotechnological applications. We develop some of these applications in *Burkholderia*, a group of Gram-negative bacteria that have extraordinary biotechnological potential and cause opportunistic infections. Ongoing research projects are:

- Deep learning-based prediction of antibiotic activity and antibiotic mechanism of action
- Discovery and development of plant-based antimicrobials for the food industry
- Synthetic biology tools for bacteria of the genus *Burkholderia*

Active Funding

2022 - 2027	Synthetic Biology tools to unleash <i>Burkholderia</i> biotechnological potential. NSERC Discovery Grant. \$240,000
2020 -2025	Prediction of antibiotic activity and antibiotic mode of action by Illumina sequencing of knockdown mutant libraries and machine learning. CIHR Project Grant. Principal Investigator. Co-investigators: Pingzhao Hu and Rebecca Davis \$799,450
2021-2023	Development of hop-based antimicrobials for the food industry. Sponsored Research Agreement with Nature Recombined Sciences (under review by the University of Manitoba Legal Services) \$80,000
2021 - 2023	Nosocomial spread of <i>Burkholderia contaminans</i> . A genomic approach to find molecular mechanisms of resistance to disinfectants. (Contaminación del ambiente hospitalario por <i>Burkholderia contaminans</i> . Búsqueda a escala genómica de marcadores moleculares asociado a la resistencia a biocidas). Fondo para la Investigación Científica y Tecnológica (FONCyT) Proyecto de Investigación Triannual PICT-2019-III-A. Categoría Raíces. Co-Investigador (Principal Investigator: Maria Alejandra Bosch); Co-investigators: Silvia T. Cardona, Osvaldo Yantorno. ARS 2,165,625.00 (CAN\$ 25,000)
2019 - 2023	Antibiotic discovery for cystic fibrosis pathogens. Cystic Fibrosis Canada Basic Research Grant. Principal Investigator. (Applicant. Co-investigators: Pingzhao Hu and Rebecca Davis) \$300,000
2018-2023	Antibiotic discovery for <i>Burkholderia cepacia</i> complex. Cystic Fibrosis Foundation. Pilot and Feasibility Award. Principal Applicant. Co-Investigators: Pingzhao Hu and Rebecca Davis USD 107,838.
2019 - 2022	International <i>Burkholderia Cepacia</i> Working Group (IBCWG) 22nd Meeting. CIHR Planning and Dissemination Grant. Principal Applicant. Co-applicants: Elizabeth Tullis, Valerie Waters. \$10,000

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Funding under Review

2023-2026 Machine Learning Driven Antibiotic Discovery for Cystic Fibrosis Pathogens. Under review in Cystic Fibrosis Canada \$300,000

Past Funding

2021 Evaluation of the antimicrobial activity of hop aqueous extracts Mitacs Accelerate. \$15,000

2020 - 2022 Towards zero plastic waste: Identifying bioplastic degradation genes and enzymes. Co-Investigator: David Levin. University Collaborative Research Program (UCRP) \$25,000

2019 - 2022 International Burkholderia Cepacia Working Group (IBCWG) 22nd Meeting. CIHR Planning and Dissemination Grant. Principal Applicant. Co-applicants: Elizabeth Tullis, Valerie Waters. \$10,000

2017-2019 Elucidation of the mechanism of action of a novel antibiotic targeting cell division. Research Manitoba Mid-Career Operating Grant. \$146,700

2017-2018 Prediction of novelty and mode of action of antibacterial compounds by machine learning. University Collaborative Research Program (UCRP). Co-investigator. \$24,200

2016 Genomic libraries for dereplication of novel antibiotics. University of Manitoba Research Grant (URGP) \$7,400

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

2014-2015 International *Burkholderia cepacia* working group (IBCWG) 19th Meeting. CIHR. Planning and Dissemination Grants. \$10,000

2013-2017 Target identification of novel growth-inhibitory small molecules through genome-wide competitive growth in the multiple antibiotic-resistant *Burkholderia cenocepacia*. Cystic Fibrosis Canada (CFC) Research Initial Grant. \$301,790

2012-2013 Overcoming the knowledge gap between *Burkholderia cepacia* complex-related infections in cystic fibrosis (CF) patients from North America and Argentina. International Development Research Centre (IDRC). Canada-Latin America and the Caribbean Research Exchange Grants Program (LACREG). \$15,000.

2012-2013 Genome Sequencing of three *Burkholderia contaminans* isolates from Argentinian and North American Hospitals. University of Manitoba Research Grants (established) (URGP). \$7,467

2011-2016 Growth in the host: catabolic capacities of opportunistic bacteria and possible links to virulence. NSERC Discovery Grant \$185,000

2011-2013 Target Identification of novel growth inhibitors for the multiple antibiotic-resistant *Burkholderia cenocepacia* through genome-wide conditional growth \$183,246. CIHR operating grant Priority Announcement Regional Partnership Program Manitoba

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- 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
- 2010-2011 Characterization of a conditional-growth mutant library in *Burkholderia cenocepacia*. University of Manitoba Research Grant Program, \$7,500
- 2009-2010 Environmental Pathogens Laboratory, Canadian Foundation for Innovation. Infrastructure Operating Fund (IOF) \$29,965
- 2007-2009 Antibacterial drug discovery for cystic fibrosis bacterial pathogens, Manitoba Health Research Council (MHRC) Operating Grant, \$ 104,000
- 2007-2008 Novel antibiotic drug targets of bacterial pathogens of cystic fibrosis, University of Manitoba Research Grant Program, \$7,500
- 2007-2008 Environmental Pathogens Laboratory, Canadian Foundation for Innovation, Leaders Opportunity Fund. \$249,706
- 2006-2011 Novel genes involved in survival in vivo in the environmental pathogen *Burkholderia cenocepacia*. NSERC Discovery Grant. \$180,000

Invited Lectures

- 11/01/2023 Keynote Speaker. Machine learning and chemogenomics to improve early antibiotic discovery. The 2nd Annual Center for Pathogen Research and Training (CPRT) Symposium. UMass Lowell, USA.
- 09/02/2022 Plenary Session Speaker. Antibiotic Discovery. Where are we now, where we want to be. The 29th international conference of Egyptian Society of Medical Microbiology in association with American Society for Microbiology. Presented online.
- 03/22/2022 Invited Seminar. My Human Host Tastes Good: How bacteria respond to nutrients to elicit a pathogenic response. Human Nutritional Sciences Graduate Program.
- 09/16/2021 Invited Plenary Conference Speaker. Synthetic Biology Tools for Burkholderia Biotechnological Applications V Congreso de Microbiología Agrícola y Ambiental September 15-17, 2021. Universidad Nacional de La Plata. Argentina
- 11/06/2020 Invited Seminar Speaker. Machine Learning Meets Antibiotic Discovery for *Burkholderia cepacia* Infections. Department of Medical Microbiology & Infectious Diseases, University of Manitoba
- 28/11/2019 Invited Seminar Speaker. New techniques for genetic manipulation in the Burkholderia genus and other collaboration opportunities at the University of Manitoba. Lecture at the Institute of Investigations in Agriculture and Environmental Sciences, University of Buenos Aires, Buenos Aires, Argentina

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- 20/11/2019 Invited Seminar Speaker. New techniques for genetic manipulation in the *Burkholderia* genus and other collaboration opportunities at the University of Manitoba. Lecture at the Institute of Biotechnology and Molecular Biology (IBBM) University of La Plata, La Plata, Argentina
- 11/6/2019 Invited Short Talk Speaker. Genomic approaches to uncover the mechanism of action of antibiotic molecules. 3rd International Caparica Conference in Antibiotic Resistance 2019
- 19/10/2018 Invited Symposium Speaker. Adaptation of *Burkholderia cenocepacia* to the cystic fibrosis lung environment. Host-Microbe Interactions. 32nd North American Cystic Fibrosis Conference, Denver, Colorado
- 20/06/2018 Invited Symposium Speaker. Adaptation of *Burkholderia cenocepacia* to the cystic fibrosis lung environment. 68th Annual Canadian Society of Microbiologists (CSM) Conference, Winnipeg, Manitoba
- 14/06/2017 Invited Symposium Speaker. Using next-generation sequencing to advance antibiotic discovery. geXc Symposium, University of Manitoba
- 8/2/2017 Invited Speaker, Departmental Seminar. Finding novel antibiotic targets and drugs for *Burkholderia cepacia* complex infections. Department of Biological Sciences. University of Alberta
- 24/6/2016 Invited Speaker. 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
- 14/6/2016 Invited Symposium Speaker. 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, University of Toronto, Toronto, ON
- 26/11/2015 Invited Speaker, Research Rounds. *Burkholderia cepacia* complex infections in cystic fibrosis and the quest for novel antimicrobials. Department of Immunology, University of Manitoba
- 29/01/2015 Invited Speaker, Research Rounds. A tale of bacteria turned superbug and the quest for novel antimicrobials. Public Health Ontario
- 28/01/2015 Invited Speaker, Departmental Seminar. Phenylacetic acid: a new player in quorum sensing-regulated microbial interactions? Department of Biological Sciences, University of Toronto at Scarborough
- 19/11/2014 Invited Speaker, Departmental Seminar. Metabolism of phenylacetic acid: a novel regulator of quorum sensing? Department of Medical Microbiology & Infectious Disease, University of Manitoba
- 10/1/2014 Invited Speaker. CAREG/LACREG Brown Bag Lunch Session. Overcoming the Knowledge Gap between Infections in Cystic Fibrosis Patients from North America and Argentina. Reflections on a LACREG-funded project. Hosted by the Office of Research Services, University of Manitoba
- 30/11/2013 Invited Symposium Speaker, Omics Symposium. Genomic tools to profile antibiotic mode of action., XXXV Congreso Chileno de Microbiología, Maintencillo, Chile.
- 22/11/2013 Invited Speaker, Departmental Seminar. Visualizing genomes with Artemis Software. Department of Microbiology, Immunology and Biotechnology, University of Buenos Aires

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- 19/11/2013 Invited Speaker, Departmental Seminar. Genomic libraries and their use for detection of antibiotic mode of action. Department of Microbiology, Immunology and Biotechnology, University of Buenos Aires
- 27/02/2013 Invited Speaker, Departmental Seminar. *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
- 07/12/2011 Invited Speaker, Research Group Seminar. A chemical genomic approach to find novel antibiotics for *Burkholderia cenocepacia*. Manitoba group in protein structure and function. University of Manitoba
- 15/04/2011 Session Chair. "Novel Antimicrobials" 15th International *Burkholderia cepacia* Working Group (IBCWG) Meeting. Prague, Czech Republic
- 02/02/2009 Invited Speaker, Departmental Seminar. *Burkholderia cenocepacia* pathogenesis in real-time: bacterial physiology and metabolism modelled in *Caenorhabditis elegans*. Department of Medical Microbiology, University of Manitoba
- 10/10/2008 Invited Speaker, Departmental Seminar. *Burkholderia cenocepacia* pathogenesis in Real Time: Bacterial Physiology and Metabolism Modeled in *Caenorhabditis elegans*. Department of Biology, University of Regina
- 25/07/2003 Departmental Seminar. Essential genes in *Burkholderia cepacia*: towards identifying new targets of antibiotics for the treatment of infections in cystic fibrosis patients. Technical University of Munich

Publications

H-index: 20; Citations: 1523; H-index since 2017: 15 (Google Scholar, 22/12/21). Citations Since 2017: 710

Trainees under Dr. Cardona's supervision are underlined.

Peer-reviewed articles

Preprint/Submitted/revision requested

1. Leon B, Casco D, Bettiol M, Leguizamon M, D'Alessandro V, Prieto C, Vita C, Figoli CB, Vescina C, Renteria F, Yantorno OM, **Cardona ST**, Bosch A. 2022. Association between *Burkholderia contaminans* phenotypes and poor clinical outcome in chronic lung infection of patients with cystic fibrosis. *Microbes and Infection* 2022. Review requested.
2. Hogan AM, Natarajan A, Léon B, Batun Z, Motnenko A, Bosch A, Cardona ST. 2022. Profiling cell envelope-antibiotic interactions reveals vulnerabilities to β -lactams in a multidrug-resistant bacterium, bioRxiv preprint. <https://www.biorxiv.org/content/10.1101/2022.11.01.510852v1>
3. Liu Ch, Sun Y, Davis R, **Cardona ST**, Hu P.
ABT-MPNN. An atom-bond Transformer-based message passing neural network for molecular property prediction. Submitted to J. of Bioinformatics, Nov 2022.

Published/in press/ accepted

48. Rahman ASM Z, Liu Ch, Sturm H, Hogan AM, Davis R, Hu P, **Cardona ST**. 2022. A Machine Learning Model trained on a High-Throughput Antibacterial Screen Increases the Hit Rate of Drug Discovery. *PLOS*

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Computational Biology PLOS Computational Biology 18(10): e1010613.

<https://doi.org/10.1371/journal.pcbi.1010613>

47. Hooppaw A, McGuffey J, Di Venanzio G, Ortiz-Marquez J, Weber B, [Lightly TJ](#), van Opijnen T, Scott N, **Cardona ST**, and Feldman M. 2022. The phenylacetic acid catabolic pathway regulates antibiotic and oxidative stress responses in *Acinetobacter*. *mBio*. 13(3):e0186321. doi: 10.1128/mbio.01863-21. <https://journals.asm.org/doi/10.1128/mbio.01863-21>
46. [Liu Ch](#), [Hogan AM](#), Sturm H, Kahn, MW, Islam Md M, Rahman ASM Z, David ,Davis R, **Cardona ST**, Hu P. 2022. Deep learning - driven prediction of drug mechanism of action from large-scale chemical-genetic interaction profiles. *Journal of Cheminformatics*. 14(1):12. doi: 10.1186/s13321-022-00596-6. PMID: 35279211; PMCID: PMC8917716. <https://jcheminf.biomedcentral.com/articles/10.1186/s13321-022-00596-6>
45. [Hogan AM](#), **Cardona ST**. 2022. Gradients in Gene Essentiality Reshape Antimicrobial Research. *FEMS Microbiology Reviews*. FEMS Microbiology Reviews. 46(3):fuac005. doi: 10.1093/femsre/fuac005. PMID: 35104846; PMCID: PMC9075587.
44. [Hadipour H](#), [Liu Ch](#), Davis R, **Cardona ST**, Hu P. 2022. Deep clustering of small molecules at large-scale via variational autoencoder embedding and K-means. *BMC Bioinformatics* 23 (Suppl 4), 132 <https://doi.org/10.1186/s12859-022-04667-1> <https://bmcbioinformatics.biomedcentral.com/articles/10.1186/s12859-022-04667-1>
43. [Rahman ASM Z](#), [Timmerman L](#), [Gallardo E](#), **Cardona ST**. 2022. Identification of essential protein domains from high-density transposon insertion sequencing. *Sci Rep* 12, 962 <https://www.nature.com/articles/s41598-022-05028-x>
42. Yossief M, Singh V, [Maydaniuk D](#), **Cardona ST**, Kuss S. 2021. Electrochemical Characterization of the Antibiotic Auranofin in Aqueous Solutions. *Electroanalysis*. <https://doi.org/10.1002/elan.202100378>
41. [Maydaniuk D](#), Wu B, Truong D, Liyanage SH, [Hogan AM](#), [Yap ZL](#), Yan M, **Cardona ST**. 2021. New auranofin analogs with antibacterial properties against *Burkholderia* clinical isolates. *Antibiotics*. <https://www.mdpi.com/2079-6382/10/12/1443>
40. [Hogan AM](#), [Jeffers KR](#), [Palacios A](#), **Cardona ST**. 2021. Improved dynamic range of a rhamnose-inducible promoter for gene expression in *Burkholderia*. *Applied and Environmental Microbiology*. 87(18)e006472
39. [Haim MS](#), Zaheer R, Bharat A, Di Gregorio S, Di Conza J, Galanternik L, Lubovich S, Golding GR, Graham M, Van Domselaar **Cardona ST**, Mollerach M. 2021. Genome plasticity of *Staphylococcus aureus* as an adaptive strategy in lung colonization of cystic fibrosis patients. *Microbial Genomics* 7(3): [mgen000510](#)
38. [Hogan AM](#), [Rahman ASM Z](#), [Lightly TJ](#), **Cardona ST**. 2019. A broad-host-range CRISPRi toolkit for silencing gene expression in *Burkholderia*. *ACS Synthetic Biology* doi: 10.1021/acssynbio.9b00232. doi: [10.1021/acssynbio.9b00232](#).
37. [Lightly T](#), [Frejuk KL](#), Groleau MC, Ras C, Buroni S, Déziel E, Sorensen JL, **Cardona ST**. 2019. Phenylacetyl-CoA, not phenylacetic acid, attenuates the quorum sensing-regulated virulence of *Burkholderia cenocepacia* *Appl Environ Microbiol*. 85(24). pii: e01594-19. doi: 10.1128/AEM.01594-19. <https://journals.asm.org/doi/10.1128/AEM.01594-19>
36. Nunvar J, [Hogan AM](#), Buroni S, Savina S, Makarov V, Cardona ST, Drevinek P. 2019. The effect of 2-thiocyanate pyridine derivative 11026103 on *Burkholderia cenocepacia*: resistance mechanisms and systemic impact. *Antibiotics (Basel)* 21;8(4). pii: E159. doi: 10.3390
35. Mittal N, [Tesfu H](#), [Hogan AM](#), **Cardona ST**. 2019. Sorensen JL. Synthesis and antibiotic activity of novel acylated phloroglucinol compounds against methicillin-resistant *Staphylococcus aureus*. *The Journal of Antibiotics* 72(5):253-259.
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.

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- Antimicrobial Agents and Chemotherapy. 62(12). pii: e01231.
<https://journals.asm.org/doi/full/10.1128/AAC.01231-18> Highlighted in [UM today](#).
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. *Frontiers in Cellular and Infection Microbiology* 8:56 doi: 10.3389/fcimb.2018.00056.
 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.
 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.
 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.
 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.
 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.
 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.
 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.
 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.
 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.
 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.
 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.
 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.
 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.
 18. **Cardona ST**, [Selin C](#), and [Gislason AS](#). 2015. Genomic tools to profile antibiotic mode of action. *Crit Rev Microbiol* 4: 465-472.
 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.
 16. [Bloodworth RAM](#), [Gislason AS](#), and **Cardona ST**. 2013. A *Burkholderia cenocepacia* conditional growth mutant library created by random promoter replacement of essential genes. *MicrobiologyOpen*. 2:243-258.

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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.
14. Yakandawala N, Gawande P, LoVetri K, **Cardona ST**, Romeo T, Nitz M. and Madhyastha S. 2011. Characterization of Poly- β -1, 6-N-Acetylglucosamine Polysaccharide Component of *Burkholderia* Biofilms. *Applied and Environmental Microbiology*. 77:8303-8309.
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.
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.
11. Hamlin JN, Bloodworth RAM, **Cardona ST** 2009. Regulation of phenylacetic acid degradation genes of *Burkholderia cenocepacia* K56-2. *BMC Microbiology* 8:222.
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.
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.
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.
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.
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.
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.
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.
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.
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.
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 trehalose crystallization. *Journal of Food Science*. 62: 105-112.

Conference Proceedings

6. Hadipour H, Liu C, Davis R, **Cardona ST**, Hu P. 2021. Deep clustering of molecules via variational autoencoder embedding and K-means at a large scale. 20th International Conference on Bioinformatics (*InCoB 2021*).
5. 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.

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4. Lightly T, Kumar B, **Cardona ST**. 2018. Adaptation of *Burkholderia cenocepacia* to the cystic fibrosis lung environment. *Pediatric Pulmonology* 53:89-90.
3. Selin C, Brown ED, and **Cardona ST**. 2013. High-throughput screening for growth inhibitors of *Burkholderia cenocepacia*." *Pediatric Pulmonology* 48:111-112.
2. **Cardona ST**, 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 Preto, Brazil, September 16-19*, p. 345-354. Elsevier.
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.

Conference Abstracts

81. Natarajan A, Hogan AM, **Cardona ST**. A CRISPRi approach to investigating iron dependent activity of cefiderocol and its mechanism of uptake in *B. cenocepacia*. (Oral Presentation). 22nd Meeting of the International Burkholderia cepacia Working Group, August 24-27, Toronto, Ontario, Canada.
80. Devarajan A, Rahman ASMZ, Liu Ch, Sturm H, Hogan AM, Davis R, Hu P, **Cardona ST**. Elucidating the target and the mechanism of action of a novel broad-spectrum antibacterial active against *Burkholderia cenocepacia*. (Oral Presentation). 22nd Meeting of the International Burkholderia cepacia Working Group, August 24-27, Toronto, Ontario, Canada.
79. Maydaniuk D, Hogan AM, Martens B, Truong D, Liyanage S, Yan M, **Cardona ST**. Mechanism of Action of Novel Antibacterials Revealed via Chemogenetic Profiling of a Barcoded Transposon Mutant Library. International Burkholderia cepacia Working Group. (Oral Presentation). 22nd Meeting of the International Burkholderia cepacia Working Group, August 24-27, Toronto, Ontario, Canada.
78. Hogan AM, Léon B, Batun Z, Motnenko A, Natarajan A, Lohmann R, Bosch A, **Cardona ST**. 2022. Chemogenomics reveals susceptibility determinants of cell envelope-targeting antibiotics in *Burkholderia cenocepacia* (Oral Presentation). 22nd Meeting of the International Burkholderia cepacia Working Group, August 24-27, Toronto, Ontario, Canada.
77. **Cardona ST**, Hogan AM, Léon B, Batun Z, Motnenko A, Bosch A. 2022. Chemogenomics reveals susceptibility determinants of cell envelope-targeting antibiotics in *Burkholderia cenocepacia* (Poster). New Antibacterial Discovery and Development Gordon Research Conference, July 24-29, Lucca, Italy.
76. Hogan AM, Léon B, Batun Z, Motnenko A, Bosch A, **Cardona ST**. 2022. Chemogenomics reveals susceptibility determinants of cell envelope-targeting antibiotics in *Burkholderia cenocepacia* (Poster). 71st, Annual Canadian Society of Microbiologists Conference, June 26-29, Guelph, Ontario, Canada.
75. Rahman ASMZ, Liu Ch, Sturm H, Hogan AM, Davis R, Hu P. **Cardona ST**. A Machine Learning Model Trained on a High-Throughput Antibacterial Screen Increases the Hit Rate of Drug Discovery. ASM Microbe, Washington, USA, June 9-13, 2022.
74. Kuss S, Lopes L, Maydaniuk D, **Cardona ST**, Schweizer F, Kumar A. Electrochemical Detection of Antibiotic Resistance in Pathogens. 240th ECS Meeting, Orlando, FL, USA. October 10-14, 2021.
73. Yap ZL, Tesfu H, Hawkins J, Oresnik I, Levin DB, **Cardona ST**. Towards zero plastic waste: Identifying bioplastic degradation genes and enzymes in *Burkholderia*. 43rd Symposium on Biomaterials, Fuels and Chemicals. April 26-28, 2021.
72. Maydaniuk D, Wu B, Truong D, Liyanage S, Yan M, **Cardona ST**. Auranofin derivatives as potent bactericidal antimicrobials against cystic fibrosis pathogen *Burkholderia cenocepacia*. The 1st International Electronic Conference on Antibiotics—The Equal Power of Antibiotics and Antimicrobial Resistance. May 5 -17, 2021.

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71. Rahman ASMZ, Liu Ch, Timmerman L, Hogan AM, Davis R, Hu P, **Cardona ST**. Prediction of Antibiotic Activity against *Burkholderia cenocepacia* Using a Machine Learning Model. The 1st International Electronic Conference on Antibiotics—The Equal Power of Antibiotics and Antimicrobial Resistance. May 5 -17, 2021.
70. Hogan AM, Frantzeskakis L, Aftab AUJ, **Cardona ST**. Towards a Genome-wide Fingerprint of Antibiotic Resistance Determinants in the Cystic Fibrosis Pathogen *Burkholderia cenocepacia*. The 1st International Electronic Conference on Antibiotics—The Equal Power of Antibiotics and Antimicrobial Resistance. May 5 -17, 2021.
69. Maydaniuk D, Wu B, Hogan AM, Rahman Z, Leon LB, Yan M, **Cardona ST**. Repurposing Auranofin Derivatives as Antimicrobials Against *Burkholderia*. 103rd Canadian Chemistry Conference and Exhibition. Virtual Meeting due to COVID-19 – 2020
68. Rahman Z, Hogan AM, **Cardona ST**. Development and Application of a Tunable CRISPRi Gene Silencing in *Burkholderia*. Western Canada RNA Conference, Winnipeg, Canada, June 23-26, 2019.
67. Lightly TJ, Frejuc KL, Ras C, Buroni S, Sorensen JL, **Cardona ST**. Phenylacetic Acid Pathway Metabolites Regulate the Virulence of *Burkholderia cenocepacia* via a CepR-independent Quorum Sensing Mechanism. ASM Microbe, San Francisco, United States, June 20-24, 2019.
66. Hogan AM, Rahman Z, **Cardona ST**. Development and Application of a Tunable CRISPRi Gene Silencing in *Burkholderia*. ASM Microbe, San Francisco, United States, June 20-24, 2019.
65. Islam MM, Jeffers K, Hogan AM, Liu Q, Davis R, **Cardona ST**, Hu P. 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, Vancouver, Canada, July 2018.
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.
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
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.
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) 21st Meeting. May 2-5, 2018. Dublin, Ireland.
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) 21st Meeting. May 2-5, 2018. Dublin, Ireland.
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.
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.
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.
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*

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- aureus* in a Cystic Fibrosis Patient from Argentina Using Next-Generation Sequencing. ASM Microbe. June 1 -5, 2017 New Orleans, LA. USA.
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.
 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.
 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.
 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.
 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.
 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 cenocepacia* Working Group (IBCWG) 20th Meeting. April 27-30, 2016. Columbus, Ohio, USA.
 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 cenocepacia* Working Group (IBCWG) 20th Meeting. April 27-30, 2016. Columbus, Ohio, USA.
 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.
 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) 65th Annual Conference. June 15-18, 2015. University of Regina, Saskatchewan.
 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) 65th Annual Conference. June 15-18, 2015. University of Regina, Saskatchewan.
 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.
 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.
 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 cenocepacia* 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 cenocepacia* Working Group (IBCWG) 19th Meeting. April 15-18, 2015. Vancouver, Canada.

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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.
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.
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.
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
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.
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.
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.
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.
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.
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.
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.
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.
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.
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.
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.
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.

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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.
24. Bamforth, J. M, Giraud, E, Doublet B, Cloeckert, 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. 3rd ASM Conference on Salmonella: Biology, Pathogenesis & Prevention. Aix-en-Provence, France, October 5-9, 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.
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.
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.
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.
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.
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 superbug. Antibiotics- Where Now? Royal Society of Chemistry Conference. Royal Institute of British Architects, London, United Kingdom, January 21, 2008.
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.
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.
15. Ortega XP, **Cardona ST**, Brown AR, Loutet SA, Flannagan RS, Campopiano 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.
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 Arbor, Michigan, USA, April 19-22, 2007.
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.
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.
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.

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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.
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.
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.
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.
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.
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.
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.
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.
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.
1. **Cardona ST**, 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.

Patents

1. Sarna L, Lim KG, Sun M, **Cardona ST**, Sorensen J, Motnenko A. 2022. Aqueous Hop Extracts and Their Use to Prevent American Foulbrood. US 63/398,324, Filed August 16, 2022.
2. Sarna L, Lim KG, Sun M, **Cardona ST**, Sorensen J, Motnenko A. 2022. Aqueous Hop Extracts and Their Use as Antimicrobial Agents. USSN 63/335,184, filed June 24, 2022. Provisional patent.
3. **Cardona ST**, Hu P, Davis R, Liu Ch, Rahman Z, Hogan AM, Sturm H. 2022. Novel Antimicrobial Compounds Isolated Using a Machine Learning Model Trained on A High-Throughput Antibacterial Screen. USSN 63/348,701, filed June 3, 2022. Provisional patent.

TEACHING AND MENTORING

Graduate Courses

2019-present	MBIO 7040 Graduate Microbiology (Co-teaching) Module: Navigating Graduate Studies
2018	MBIO 7010 Seminars in Microbiology (Co-teaching)

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2008-2019 MBIO 7040 Graduate Microbiology (Co-Teaching) Module: Methods to identify and characterize Essential Genes

Undergraduate Courses

2022 - MBIO 4442 Research in Systems Microbiology (not teaching in 2023 due to research leave)

2012-2019 MBIO4440 Systems Microbiology

2020 SCI 2000 Overcoming antimicrobial drug resistance

2018 MBIO 4030 Special Topics in Microbiology

2014-2016 MBIO 1220 Essentials of Microbiology

2010-2014 MBIO 1010 Microbiology

2007-2009 MBIO 3480 Microbial Diversity

2006-2009 MBIO 2100 General Microbiology

Research Personnel and Graduate Students

Current

Dr. Anna Motnenko, Postdoctoral Fellow. Plant-derived antimicrobials for the food industry. CRISPRi methods for pathogen detection

Atif Ul Aftab, Part-time Bioinformatician. Bioinformatics support for graduate students

Andrew Hogan. Ph.D. Candidate. Chemogenomics approaches to understand mechanisms of action of novel antibacterial molecules for *Burkholderia cenocepacia*. Cystic Fibrosis Canada Doctoral Scholarship. Vanier Canada Graduate Scholarship (Vanier CGS)

Zisanur Rahman. Ph.D. Candidate. CRISPRi library in *Burkholderia cenocepacia*. University of Manitoba Graduate Fellowship

Zhong Lin Yap. Ph.D. Student. Catabolic capacities in *Burkholderia cenocepacia*. Research Manitoba Graduate Scholarship

Dustin (Nelson) Maydaniuk. Ph.D. Student. Antibiotic Discovery in *Burkholderia cenocepacia*. CIHR CGS Masters Scholarship

Rebecca Lohman. Master's Student. Streamlining site-directed mutagenesis in *Burkholderia cenocepacia*. NSERC CGS Masters Scholarship

Zayra Batun. Master's Student. CRISPRi of essential genes for bio-containment of *Burkholderia* industrial applications, Mitacs Globalink Scholarship

Julieta Novomisky. Master's Student. Machine Learning based prediction of antibiotic properties in small molecules.

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Sarah Iqbal. Honors Project Student. Elucidation of the relationship between ROS production and antibacterial killing in *Burkholderia cenocepacia*

Ryan Darragh. Honors Project Student. Screening bioplastic degradation capacities in Bacteria

Past

Postdoctoral Fellows

- 2014-2016 Dr. Maria Silvina Stietz. Exploration of small inhibitory RNAs as antibiotics against *Burkholderia cepacia* complex
Current position: Research Scientist at FREDSense Technologies, Calgary, AB
- 2012-2014 Dr. Carrie Selin. MHRC Postdoctoral Fellow. Identification of target/mechanism of action of molecules with antibacterial properties for treatment against *Burkholderia cepacia* complex
Current position: Indigenous Science Engagement Coordinator, University of Manitoba
- 2009-2010 Dr. Arbia Arfaoui. MHRC Postdoctoral Fellow. In Vitro And In Vivo Antibacterial Activity of Three Novel Imido-Piperidines Against *Burkholderia cepacia* Complex. Current position: undisclosed

Graduate Students

Masters Theses

- 2018-2021 Haben Tesfu M. Sc Thesis. Identification and characterization of extracellular mcl-PHA depolymerases and lipases in proteobacteria
Current position: Research Technician. Belmonte Lab. University of Manitoba.
- 2015-2017 Matthew Choy. M. Sc. Thesis. A novel *Burkholderia cenocepacia* two-component system involved in resistance to antibiotics
Current position: Optometry Student
- 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: Dentist
- 2009-2011 Ijeme Imolorhe. Ms. Sc Thesis. Functional Characterization of The Phenylacetyl-CoA Ligase Genes of *Burkholderia cenocepacia*
Current position: undisclosed
- 2008-2010 Harry Yudistira. Ms. Sc Thesis. Metabolism of *Burkholderia cenocepacia* in the Cystic Fibrosis Lung.
Current position: Research Scientist NutriAg Ltd
- 2007-2009 Robyn J. Law. Ms. Sc Thesis. The Relationship between Phenylacetic Acid Catabolism and Pathogenicity of *Burkholderia cenocepacia* K56-2 In the *Caenorhabditis elegans* Host. NSERC Scholarship. Current Position: Technology Transfer Officer. University of British Columbia
- 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

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Curriculum Vitae

Doctoral Theses

- 2014-2019 Tasia Lightly. Ph.D. Thesis. Phenylacetic acid metabolism as a regulator of quorum sensing during microbial interactions.
Current position: Staff Scientist Cytophage Technologies
- 2012-2017 Brijesh Kumar. Ph.D. 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: Commercial Director Info-Tech Research Group
- 2011-2017 April Gislason. Ph.D. Thesis. Identification of the essential genome of *Burkholderia cenocepacia* K56-2 to uncover novel antibacterials.
Current position: Research Facilitator, University of Manitoba
- 2008-2015 Ruhullah Bloodworth. Ph.D. Thesis. Essential genes and genomes of the *Burkholderia cepacia* complex.
Current position: undisclosed.

Visiting Ph.D. Students

- 2013-2014 Agustina Lopez de Volder. Genome sequencing of *Burkholderia contaminans* strains from Argentina.
Current position: Teaching Faculty, University of Buenos Aires
- 2016 Maria Sol Haim. Genome sequencing of *Staphylococcus aureus* clinical isolates Emerging Leaders in the Americas Program (ELAP). Current position: Ph.D. student, University of Buenos Aires
- 2019 Beltina Leon Tn-seq in *Burkholderia contaminans*. Emerging Leaders in the Americas Program (ELAP). Current position: Ph.D. student, University of Buenos Aires

Undergraduate Students

Microbiology (MBIO 4530) Honors Projects

- 2022-2023 Ryan Darragh. Screening bioplastic degradation capacities in bacteria
- 2022-2023 Sarah Iqbal. Elucidation of the relationship between ROS production and antibacterial killing in *Burkholderia cenocepacia*
- 2021-2022 Brielle Martens. Elucidation of the relationship between ROS production and persister killing in *Burkholderia cenocepacia*
- 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 *Burkholderia cenocepacia* phenyl-acetyl CoA ligase mutants
- 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

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

NSERC and Faculty of Science Summer Scholars

- 2022 Ayash Natarajan. Cefiderocol uptake mechanism by *Burkholderia cenocepacia*
- 2022 Krish Patel. Sinergy of plan-based antimicrobials

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Curriculum Vitae

- 2020 Flynn Gallardo. Developing a method for identifying multidomain proteins with non-essential and essential domains
- 2019 Shelly Lam. Characterization of a conditional growth mutant library in *Burkholderia cenocepacia*
- 2019 Nathaniel Sertu. Finding regulatory elements of phenylacetic acid metabolism and virulence
- 2018 Kara Frejuk. Investigating the virulence phenotypes of *B. cenocepacia* phenylacetic acid degradation mutants
- 2015 Hongru Ren. Unravelling the function of the essential ETF in *Burkholderia cenocepacia*
- 2015 Ryan Phung. Evaluating the interactions between *Burkholderia cenocepacia* and *Aspergillus fumigatus*
- 2015 Carmichael Mabilangan. Building a high-density transposon mutant library in *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
- 2013 Nayara Martins Ribeiro. Evaluating the antibiotic potential of small molecules with growth inhibitory activity against *Burkholderia cenocepacia*
- 2013 Jessica Holben. Evaluating the antibiotic potential of small molecules with growth inhibitory activity against *Burkholderia cenocepacia*
- 2013 Idunnu Adejo. Using a two-hybrid system to study essential protein interactions
- 2012 Aaron MacAulay. Developing a conditional mutagenesis protocol in *Burkholderia cenocepacia* by mutant enrichment with bactericidal antibiotics
- 2012 Shilpa Alex. Development of a genetic tool for single copy complementation in *Burkholderia cenocepacia*
- 2011 Jesse Franklin. Characterization of novel antibacterial targets for *Burkholderia cenocepacia*
- 2011 Samira Atoui. Target identification of novel growth inhibitors for *Burkholderia cenocepacia*
- 2011 Alicia Ling. Development of a standardized protocol for high throughput inoculation of a conditional growth mutant library
- 2010 Blair Peters. *Burkholderia cenocepacia* *PaaF* mutant produces 2-hydroxyphenylacetic acid in nematode growth media. Implications to phenylacetic acid degradation-related pathogenesis
- 2009 Kristyn Buchko. Growth curves of conditionally lethal mutants of *Burkholderia cenocepacia*
- 2008 Kali Teichroeb. Relevance of catabolic pathways in *Burkholderia cenocepacia* pathogenic processes

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Curriculum Vitae

Anene Peters. Characterization of novel genes required for growth in *Burkholderia cenocepacia*

2007 Rebekah Van Bruggen. Identification of antibacterial targets for *Burkholderia cepacia* Complex

Co-op Students

2020 Brandon Dash. Building a new database for managing strains, plasmids and bacterial libraries in the Cardona laboratory

2019 Fathima Asfal. Identifying genetic elements of polyhydroxyalkanoate degradation in *Burkholderia* sp.

2019 Lukas Timmerman. Data mining for Antibiotic Drug Discovery

2019 Hoang Anh Koy (Roy) Nguyen. Machine learning approaches for antibiotic drug discovery

2019 Ryan Ha. Building genetic tools for genome-wide expression of essential genes in *B. cenocepacia*

2018 Kartik Sachar. Building genetic tools for genome-wide expression of essential genes in *B. cenocepacia*

2017 Nelson Mok. Activity of a novel antibiotic molecule against Gram-negative cystic fibrosis pathogens

2013 Michelle Park. High Throughput Transposon Mutagenesis in *B. cenocepacia*

2011 Fatima Kabanangi. *B. cenocepacia*-*C. elegans* Host-Pathogen Interactions

Mitacs Globalink students

2022 Archit Devarajan. Elucidating the target and the mechanism of action of a novel broad-spectrum antibacterial active against *Burkholderia cenocepacia*

2019 Zayra Batun. Developing a Bar-seq library in *Burkholderia cenocepacia* for antibiotic drug discovery

2018 Armando Palacios. Mitacs Globalink. Building genetic tools for genome-wide expression of essential genes in *B. cenocepacia*

Thesis advising and examination committees

2021 Hamid Hadipour Ph.D. Thesis. Department of Computer Science

2021 Hunter Sturn Ph.D. Thesis. Department of Chemistry

2021 Kurt Kolson (co-advisor) MSc. Thesis. Department of Microbiology

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- 2021- Mahamud Haque. Ph.D. thesis. Department of Oral Biology
- 2021- Jhannelle Francis. MSc thesis. Department of Microbiology
- 2021- Matthew Van Schepdael. MSc thesis. Department of Microbiology
- 2020- Neil Lorente. Ph.D. thesis. Department of Microbiology
- 2019-2022 Chengyou Liu. Masters thesis. Department of Computer Science
- 2020-2021 Ola Salama. MSc thesis. Department of Microbiology
- 2018-2019 Alexander Diamandas. MSc thesis. Department of Microbiology
- 2017-2019 Guanyu Wang. MSc thesis. Department of Chemistry
- 2016-2020 Akrm Ghergab. The interaction of the biocontrol agent *Pseudomonas chlororaphis* PA23 and *Pseudomonas brassicacearum* DF41 with the grazing predator *Acanthamoeba castellanii*. Ph.D. thesis
- 2016-2019 Manu Singh. Functional characterization of MexJK pumps in *P. aeruginosa* to understand its interaction with outer membrane factor (OMF) proteins OprM and OpmH. Ph.D. thesis
- 2014-2019 Robert Bertrand. Production of polyketide antibiotics by lichens. Ph.D. thesis. Department of Chemistry
- 2012-2019 Ben Balley-Elkin, Structural biology of viral cysteine proteases involved in host innate immune evasion. Ph.D. thesis. Department of Microbiology
- 2015-2016 Farzaneh Taleb Sereshki. MSc thesis. Stereoselective Ortho-alkylation of Aromatic Ketones by Wilkinson Catalyst. MSc thesis. Department of Chemistry
- 2015-2016 Farzaneh Taleb Sereshki. MSc thesis. Stereoselective Ortho-alkylation of Aromatic Ketones by Wilkinson Catalyst. MSc thesis. Department of Chemistry
- 2013-2014 Yichen Zhao, *Pseudomonas aeruginosa* Type III secretion system: Regulation and the role in interspecies interaction. MSc thesis. Department of Oral Biology
- 2012-2013 Hamza Safi, MSc thesis. Examining the roles of microRNAs in mosquito spermatogenesis. MSc thesis. Department of Biology
- 2011-2015 Jilagamazhi Fu, Metabolic diversity and synthesis of medium chain length polyhydroxyalkanoates by *Pseudomonas putida* LS46 cultured with biodiesel-derived by-products. Ph.D. thesis. Biosystems Engineering, Faculty of Engineering
- 2010-2015 Damien Riviers, Characterization of RhaK and its Role in Rhamnose Transport in *Rhizobium leguminosarum*. Ph.D. thesis. 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

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Curriculum Vitae

- 2008-2011 Jalil Nasiri. Identification and analysis of Rob, a transcriptional regulator from *Serratia marcescens*. 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
- 2007-2012 Carrie Selin. Regulatory Mechanisms Underlying Biological Control Activity of *Pseudomonas chlororaphis*. Department of Microbiology

External reviewer of Ph.D. theses

- 2022 Mara Goodyear. Using a proteomics-based approach to uncover mechanisms of antibiotic resistance in epidemic strains of *Pseudomonas aeruginosa*. Department of Molecular and Cellular Biology. University of Guelph.
- 2020 Mir Salma Akter. Functional genomics provides insights into the genetic network(s) associated with the function of the *cmd* operon in *Rhizobium leguminosarum* bv. *Viciae*. Department of Biology, University of Regina
- 2017 Jessica Duong. Phenotypic and Genotypic Evaluation of the Prairie Epidemic Strain (PES). Biological Sciences, University of Alberta
- 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
- 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
- 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
- 2013 Allison Marie McDonald. Pathogen-Induced Inflammation in Immunocompromised Condition. University of British Columbia

SERVICE

Service to the Department of Microbiology

- 2022 Acting Departmental Head during Head's vacation (Sept 12- Sept 23).
- 2022 Search Committee (Instructor position in Microbiology) declined due to conflict of interest.
- 2019 – As the Graduate Chair:
- Mentoring new faculty members on graduate student recruitment and graduate student supervision.
 - Organization of New Graduate Student Orientation Event welcoming new graduate students and delivering introductory information about the program to 10 to 15 students every term.

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- Creation and update of the Departmental website graduate component, including a program navigator, mental health resources, and career information.
- Established the Departmental Leadership and Service Award for graduate students, including promoting the award, evaluating applications, and presenting awards. Four students have received awards to date.
- Organization of the departmental 3MM (3 min. of Microbiology) competition during the 2019 Microbiology Retreat. Designed to encourage students to participate in the 3-minute thesis competition.

2019 -	COVID recovery phase for graduate student lunch and gathering space
2018	Search Committee (Assistant Professor in Systems Microbiology)
2017	Acting Associate Head (Graduate Studies)
2012-	Graduate Studies Committee
2012	Search Committee (Assistant Professor in Microbiology)
2008 - 2010	Committee on Microbiology Course offerings
2007	Search Committee (Assistant Professor in Microbiology)

Service to the Faculty of Science

2022	Cross Discipline Course Development
2022	Search Committee (Assistant Professor, Organic Synthesis, Chemistry)
2019	Interdisciplinary Seminars Advisory Committee. Provided input on possible speakers and contributed to selection
2019-2022	Nucleus Promotion Committee. Appointed by the Dean of Science
2019	Tenure Guidelines Advisory Committee.
2017	LabTrek: Conducted laboratory guided visits for First Year Science students
2015-2017	Promotion Committee
2012-2015	Tenure Committee
2012	Search Committee (Biosafety Advisor)
2012	Tenure and Promotion Committee

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Curriculum Vitae

Service to the University

- 2022 Presidential Advisory Committee – Dean faculty of Graduate Studies
- 2022-2025 Member of Banting Postdoctoral Fellowship Subcommittee
- 2020- Member of CFI Advisory Committee. Reviewed CFI JELF applications
- 2019 Joined a discussion panel during the event “Girls in Science” organized by University of Manitoba female students to encourage interest in a Science Career among secondary school female students.
- 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
- 2016- 2019 Representative to the University of Manitoba Faculty Association (UMFA) of 2016. Promoted collegiality and respect for everybody’s opinions during the strike of 2016.
- 2013- 2016 Internationalization Committee
- 2012- 2014 Biological Safety Advisory Committee member

Service to the Scientific Community

Participation in Conference Organization

- 2022 Co-Chair of the 24th International *Burkholderia cepacia* Working Group (IBCWG.org) Meeting, University of Toronto, ON, Canada August 24th to 27th, 2022
- 2021 Organizing Committee for the 1st International Electronic Conference on Antibiotics—The Equal Power of Antibiotics and Antimicrobial Resistance
- 2020 Canadian Society of Microbiologists. Murray Award Committee. Evaluated applications and presented nominations to the society
- 2018 Infection and Immunity Symposium Co-Chair at Canadian Society of Microbiologists 68th Annual Conference, Winnipeg, MB
- 2015 Chair of the 21st International *Burkholderia cepacia* Working Group (IBCWG.org) Meeting, Vancouver, BC
- 2016 CSM Oral Student Symposium Competition Judge
- 2012 ASM General Meeting Graduate Student Mentor
- 2012 Co-Chair of the 16th International *Burkholderia cepacia* Working Group (IBCWG.org) Meeting, Montreal, QB

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Participation in Grant Review Panels

2021-2023	Genomics: Systems and computational biology (GMX) committee. Review Committee Member
2022	CIHR Microbiology & Infectious Diseases Committee for Project Grant Applications. Spring competition. Review Committee Member
2022	Cystic Fibrosis Canada. Basic research grants competition. Scientific Review Panel member. Reviewed and ranked Basic Science Grant applications
2022	Food for thought (University of Guelph) external reviewer of a Canada First Research Excellence Fund (CFREF) funded work plan
2021	Research Manitoba Basic/Biomedical Masters/Ph.D. Studentship Review Committee. Review Committee Member
2021	Michael Smith Foundation for Health Research. Scientific Officer
2020	Research Manitoba Basic/Biomedical Masters/Ph.D. Studentship Review Committee. Review Committee Member
2020	Genomics: Systems and computational biology (GMX) committee. Peer-Reviewer of Project Grant Spring 2020 Competition. Review Committee Member
2019-2022	CSM. Murray Award Committee. Reviewed and evaluated nominations
2019-2021/2022	Cystic Fibrosis Canada. Basic Science Grant Review Panel. Review Panel Member
2019	Michael Smith Foundation for Health Research. Scientific Officer
2017	CIHR Microbiology & Infectious Diseases Committee for Project Grant Applications. Review Committee Member
2016	Michael Smith Foundation for Health Research. Panel Member
2016	Saskatchewan Health Research Foundation. Collaborative Innovation Development Grant
2014	Canada-Latin America and the Caribbean Research Exchange Grants (LACREG competition)
2014-2016	Cystic Fibrosis Canada. Basic Science Grant Review Panel. Review Panel Member

Editor of Scientific Journals

- 2021 – ongoing Area Editor Microbiology Spectrum, American Society of Microbiology. (Bacteriology)
- 2020 Antibiotics MDPI Section Editorial Board Member (Biochemical and Genetics Studies of Microorganisms)

Peer Reviewer of Scientific Journals

- Scientific Reports
- PLOS Pathogens
- Communications Biology

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- Nucleic Acid Research
- Antimicrobial Agents and Chemotherapy
- Infection and Immunity
- Journal of Clinical Microbiology
- ACS Synthetic Biology
- Current Opinion in Chemical Biology
- Frontiers in Microbiology
- Journal of Medical Microbiology
- BMC Genomics
- BMC Biotechnology and BMC Microbiology
- BMC Microbiology
- Microbial Pathogenesis
- FEMS Microbiology Letters
- Canadian Journal of Microbiology
- Journal of Biomolecular Screening
- Current Microbiology
- Microbiology
- Chemical Biology and Drug Design
- Environmental Microbiology
- Microbial Biotechnology
- Revista do Instituto de Medicina Tropical de São Paulo

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 (BBSRC), UK.
- Mitacs Accelerate

Service to the General Community

- | | |
|-----------|---|
| 2022 | Manitoba dropping self-isolation Requirement. Interview for “The Manitoban” March 8 |
| 2020 | Should we trust a COVID-19 vaccine? A virtual Town Hall Event in Pinamar, Argentina, organized by a group of community volunteers (Delivered in Spanish) |
| 2018-2022 | Fundraising for the Cystic Fibrosis Canada Great Strides Walk Event. Enrolled the laboratory personnel as a fundraising team. Fundraised more than \$1,000 every year |

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Curriculum Vitae

- 2019 Delivered an Interview to the Manitoban Branch of Cystic Fibrosis for release in their Newsletters
- 2018 Participated in a [local TV \(CTV\) news interview](#) on cystic fibrosis and *Burkholderia cepacia* complex infections.
- 2017-2018 Science Fair Mentor
- 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
- 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
- 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)
- 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
- 2013 Wiley Microbiology Advisory Board Member for publication of the textbook Wessner Microbiology
- 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 2, 2013
- 2011 Promoted “All Science Challenge” Event in Radio Canada International (Interview Conducted in Spanish May 7, 2011)
- 2007-2009 Sanofi-Aventis Biotech Challenge. Judge and mentor

Professional development

- Recognizing Student Distress and Crisis in a Digital World: February 4, 2022
- Resolving Conflict. March 24, 2022.