

Marcus M. Dillon, PhD

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Citizenship: Canadian

PROFESSIONAL EXPERIENCE

- 2023- Assistant Professor (Graduate Cross-Appointment), Department of Cell and Systems Biology, University of Toronto, Toronto, ON, CAN
- 2020- Assistant Professor (Graduate Cross-Appointment), Department of Ecology and Evolutionary Biology, University of Toronto, Toronto, ON, CAN
- 2020- Assistant Professor (Primary Appointment), Department of Biology, University of Toronto Mississauga, Mississauga, ON, CAN
- 2023- Assistant Professor (Graduate Cross-Appointment), Department of Cell and Systems Biology, University of Toronto, Toronto, ON, CAN
- 2016-2020 Postdoctoral Fellow, Department of Cell and Systems Biology, University of Toronto, Toronto, ON, CAN
- 2011-2016 Doctoral Researcher, Department of Molecular, Cellular, and Biomedical Sciences, University of New Hampshire, Durham, NH, USA
- 2015 Visiting Researcher, Department of Microbiology and Molecular Genetics, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA
- 2010-2011 Undergraduate Research Assistant, Department of Biology, Wake Forest University, Winston-Salem, NC, USA

EDUCATION

- 2011-2016 Ph.D., Microbiology, University of New Hampshire, Durham, NH, USA
Dissertation Title: The rate, spectrum, and effects of spontaneous mutations in bacteria with multiple chromosomes
Committee: **Vaughn Cooper**, Kelley Thomas, Kevin Culligan, Michael Lynch, Gregory Lang
Second Degree: Cognate in College Teaching
Date of Completion: May 21, 2016
- 2006-2011 B.A., Honors in Biology, Wake Forest University, Winston-Salem, NC, USA
Thesis Title: The yield of experimental yeast populations declines during selection
Committee: **Clifford Zeyl**, David Anderson, Michael Anderson
Second Degree: B.A. in French
Date of Completion: May 9, 2011

RESEARCH AWARDS AND FELLOWSHIPS

- 2023-2024 Controlled environmental systems for studying the impact of climate change on plants, animals, and host-microbe interactions, Research Tools and Instruments Grant (Lead

- Applicant), National Sciences and Engineering Research Council of Canada (NSERC) (\$141,978)
- 2022-2024 Probing the Plant Immune System for Robust and Durable Resistance, Connaught New Researcher Award, University of Toronto (\$20,000)
- 2021-2026 The Evolutionary Genomics of Infectious Phytopathogen Emergence, Discovery Grant (Individual), National Sciences and Engineering Research Council of Canada (NSERC) (\$150,000)
- 2021-2026 The Evolutionary Genomics of Infectious Phytopathogen Emergence, Early Career Researcher Discovery Launch Supplement, National Sciences and Engineering Research Council of Canada (NSERC) (\$12,500)
- 2021-2026 Multidisciplinary Infrastructure for Infectious Phytopathogen Research, John R. Evans Leaders Fund, Canada Foundation for Innovation (CFI) (\$120,000)
- 2021-2026 Multidisciplinary Infrastructure for Infectious Phytopathogen Research, MRI-JELF Matching Funds, Ontario Research Fund (ORF) (\$120,000)
- 2020-2021 Evolution of Antimicrobial Resistance in Dynamic Population Genetic Environments, UTM OVPR Research and Scholarly Activity Fund Award, University of Toronto Mississauga (\$10,000)
- 2020-2024 Microbial Ecology and Evolution Faculty Start-Up Package, University of Toronto Mississauga (\$250,000)
- 2018-2020 Advancing Teaching and Learning in Arts & Science Award, University of Toronto, Submitted with David Guttman (\$28,000)
- 2015-2016 Dissertation Year Fellowship, University of New Hampshire (\$18,330)
- 2012-2015 Slanetz Memorial Scholarship and Zsigray Academic Enrichment Award (\$3,000)
- 2012-2015 Graduate School Travel Grant, University of New Hampshire (\$1,200)
- 2013 Summer Teaching Excellence Fellowship, University of New Hampshire (\$3,150)
- 2012 Summer Teaching Excellence Fellowship, University of New Hampshire (\$3,150)

PUBLICATIONS

1. Agarwal V, Stubits R, Nassrullah Z, and **Dillon MM**. 2023. Pangenome insights into the diversification and disease specificity of worldwide *Xanthomonas* outbreaks. *Frontiers in Microbiology*. 14: 1213261.
2. Rana A, Patton D, Turner T, **Dillon MM**, Cooper VS, and Sung W. 2021. Precise measurement of the fitness effects of spontaneous mutations by droplet digital PCR in *Burkholderia cenocepacia*. *Genetics*. 219(2): iyab117.
3. **Dillon MM**, Ruiz Bedoya T, Bundalovic-Torma C, Guttman KM, Kwak H, Middleton MA, Wang PW, Horuz S, Aysan Y, and Guttman DS. 2021. Comparative genomic insights into the epidemiology and virulence of plant pathogenic pseudomonads from Turkey. *Microbial Genomics*. 7: 000585.

4. Martel A, Laflamme B, Seto D, Bastedo DP, **Dillon MM**, Almeida RND, Guttman DS, and Desveaux D. 2020. Immunodiversity of the Arabidopsis ZAR1 NLR is conveyed by receptor-like cytoplasmic kinase sensors. *Frontiers in Plant Science*. 11: 1290.
5. Laflamme B*, **Dillon MM***, Martel A*, Almeida RND, Desveaux D, and Guttman DS. 2020. The pan-genome effector-triggered immunity landscape of a host-pathogen interaction. *Science*. 367: 763-768. (Co-first authors).
6. **Dillon MM**, Almeida RND, Laflamme B, Martel A, Weir BS, Desveaux D, and Guttman DS. 2019. Molecular evolution of *Pseudomonas syringae* type III secreted effector proteins. *Frontiers in Plant Science*. 10: 418.
7. **Dillon MM***, Thakur S*, Almeida RND, and Guttman DS. 2019. Recombination of ecologically and evolutionary significant loci maintains genetic cohesion in the *Pseudomonas syringae* species complex. *Genome Biology*. 20(3): 1-28. (Co-first authors).
8. **Dillon MM**, Sung W, Lynch M, and Cooper VS. 2018. Periodic variation of mutation rates in bacterial genomes associated with replication timing. *mBio*. 9: e01371-18.
9. Grosser MR, Paluscio E, Thurlow LR, **Dillon MM**, Cooper VS, Kawula TH, and Richardson AR. 2018. Genetic requirements for *Staphylococcus aureus* nitric oxide resistance and virulence. *PLoS Pathogens*. 14(3): e1006907.
10. **Dillon MM**, Sung W, Lynch M, Sebra R, and Cooper VS. 2017. Genome-wide biases in the rate and molecular spectrum of spontaneous mutations in *Vibrio fischeri* and *Vibrio cholerae*. *Molecular Biology and Evolution*. 34(1): 93-109.
11. **Dillon MM**, and Cooper VS. 2016. The fitness effects of spontaneous mutations nearly unseen by selection in a bacterium with multiple chromosomes. *Genetics*. 204(3): 1225-1238.
12. Sung W, Ackerman MS, **Dillon MM**, Platt T, Fuqua C, Cooper VS, and Lynch M. 2016. The drift barrier governs mutation rate evolution. *G3: Genes, Genomes, Genetics*. 6(8): 2583-2591.
13. Wang Y, Arenas-Diaz C, Stoebel D, Flynn KM, Knapp E, **Dillon MM**, Wünsche, Hatcher PJ, Moore FB, Cooper VS, and Cooper TF. 2016. Benefit of transferred mutations depend mostly on the initial fitness of natural isolates of *E. coli*, not their ecological or genetic similarity. *Proceedings for the National Academy of Sciences USA*. 113(18): 5047-5952.
14. **Dillon MM**, VanDam B, Rouillard NP, Gallet R, and Cooper VS. 2016. Diverse phenotypic and genetic responses to short-term selection in evolving *Escherichia coli* populations. *Evolution*. 70(3): 586-599.
15. **Dillon MM**, Sung W, Lynch M, and Cooper VS. 2015. The rate and molecular spectrum of spontaneous mutations in the GC-rich multi-chromosome genome of *Burkholderia cenocepacia*. *Genetics*. 200(3): 935-946.
16. Jasmin JN, **Dillon MM**, and Zeyl C. 2012. The yield of experimental yeast populations declines during selection. *Proceedings of the Royal Society B-Biological Sciences*. 279: 4382-4388.

PRESENTATIONS

1. Agarwal V, Stubits R, Nassrullah Z, and **Dillon MM**. 2023. Pangenome insights into the diversification and disease specificity of worldwide Xanthomonas outbreaks. *International Society for Molecular Plant-Microbe Interactions Congress*. Providence, RI. (Poster Presentation).

2. Agarwal V, Stubits R, Nassrullah Z, and **Dillon MM**. 2023. Pangenome insights into the diversification and disease specificity of worldwide *Xanthomonas* outbreaks. *Gordon Research Conference: Microbial Population Biology*. Andover, NH. (Poster Presentation).
3. Newfeld J, Shata E, and **Dillon MM**. 2023. Rapid evolution of a bacterial plant pathogen to a resistant host is driven by genomic island loss. *International Society for Molecular Plant-Microbe Interactions Congress*. Providence, RI. (Poster Presentation).
4. Bull E, Agarwal V, and **Dillon MM**. 2023. The genetic determinants of host specificity in the plant pathogen *Xanthomonas campestris*. *Canadian Society for Ecology and Evolution Conference*. Winnipeg, MB. (Poster Presentation).
5. Agarwal V, Stubits R, Nassrullah Z, and **Dillon MM**. 2023. Pangenome insights into the diversification and disease specificity of worldwide *Xanthomonas* outbreaks. *Canadian Society for Ecology and Evolution Conference*. Winnipeg, MB. (Invited Talk).
6. **Dillon MM**. 2023. Leveraging next-generation sequencing data to build pangenome profiles of bacterial species. Data Sciences Institute, *University of Toronto Mississauga*. Mississauga, ON. (Invited Talk).
7. Newfeld J, Shata E, and **Dillon MM**. 2022. Rapid evolution of a bacterial plant pathogen to a resistant host is driven by effector loss. *Great Lakes Evolutionary Genomics Symposium*. Buffalo, NY. (Poster Presentation).
8. Agarwal V, Navaratne N, and **Dillon MM**. 2022. Impact of effective population size on antibiotic resistance evolution in *Escherichia coli*. *Conference of the Canadian Society of Microbiologists*. Guelph, ON. (Contributed Talk; selected from abstracts).
9. Newfeld J, Shata E, and **Dillon MM**. 2022. Experimental dissection of bacterial plant pathogen emergence. *Conference of the Canadian Society of Microbiologists*. Guelph, ON. (Poster Presentation).
10. Agarwal V, and **Dillon MM**. 2022. Genus-wide exploration into the evolution and diversification of type III secreted effectors in *Xanthomonas*. *Atwood Colloquium in Ecology and Evolution*. Toronto, ON. (Contributed Talk).
11. **Dillon MM**. 2020. On the front lines: how bacterial effectors at the host-pathogen interface govern host specificity. *Department of Cell and Systems Biology, University of Toronto St. George*. Toronto, ON. (Invited Talk).
12. **Dillon MM**. 2020. On the front lines: how bacterial effectors at the host-pathogen interface govern host specificity. *Département de Microbiologie, Infectiologie et Immunologie, Université de Montréal*. Montreal, QC. (Invited Talk).
13. **Dillon MM**. 2019. On the front lines: how bacterial effectors at the host-pathogen interface govern host specificity in a major agricultural pathogen. *Department of Biology, University of Toronto Mississauga*. Mississauga, ON. (Invited Talk).
14. **Dillon MM**, Laflamme B, Almeida RND, Martel A, Desveaux D, and Guttman DS. 2019. The Pan-Genome Effector-Triggered Immunity Landscape of a Host-Pathogen Interaction. *Conference of the Canadian Society of Microbiologists*. Sherbrooke, QC. (Contributed Talk; Postdoctoral Symposium; Knowles Postdoctoral Research Award Finalist).

15. **Dillon MM**, Laflamme B, Almeida RND, Martel A, Desveaux D, and Guttman DS. 2019. The Effector-Triggered Immunity Landscape Limits the Host Range of a Major Agricultural Pathogen. *Great Lakes Evolutionary Genomics Symposium*. Buffalo, NY. (Contributed Talk; selected from abstracts).
16. **Dillon MM**, Laflamme B, Almeida RND, Martel A, Desveaux D, and Guttman DS. 2019. The Effector-Triggered Immunity Landscape Limits the Host Range of a Major Agricultural Pathogen. *Fields Conference on the Evolutionary Genetics of Infectious Disease*. Ottawa, ON. (Contributed Talk; selected from abstracts).
17. **Dillon MM**, Laflamme B, Almeida RND, Martel A, Desveaux D, and Guttman DS. 2018. Distribution and molecular evolution of type III secreted effector proteins across the *Pseudomonas syringae* species complex. *Microbiology and Infectious Disease Research Day*. Toronto, ON. (Poster Presentation; selected for poster award).
18. **Dillon MM**, and Cooper VS. 2018. Periodic variation of mutation rates in bacterial genomes associated with replication timing. *Population, Evolutionary, and Quantitative Genetics Conference*. Madison, WI. (Contributed Talk; selected from abstracts).
19. **Dillon MM**, Jamnik A, and Guttman DS. 2017. Experimental evolution of *Pseudomonas syringae* on a novel plant host. *Gordon Research Conference: Microbial Population Biology*. Andover, NH. (Poster Presentation).
20. **Dillon MM**, Jamnik A, and Guttman DS. 2017. Experimental evolution of *Pseudomonas syringae* on a novel plant host. *Conference of the Canadian Society of Microbiologists*. Waterloo, ON. (Contributed Talk; selected from abstracts).
21. **Dillon MM**, Sung W, Lynch M, and Cooper VS. 2015. The rate and molecular spectrum of spontaneous mutations in divided bacterial genomes. *Gordon Research Conference: Microbial Population Biology*. Andover, NH. (Poster Presentation).
22. **Dillon MM**, Sung W, Lynch M, and Cooper VS. 2015. The rate and molecular spectrum of spontaneous mutations in divided bacterial genomes. *Gordon Research Seminar: Microbial Population Biology*. Andover, NH. (Contributed Talk; selected from abstracts).
23. **Dillon MM**, Sung W, Lynch M, and Cooper VS. 2015. The rate and molecular spectrum of spontaneous mutations in divided bacterial genomes. *Society for Molecular Biology and Evolution: Satellite Meeting on Mutation, Repair, and Evolution*. Bloomington, IN. (Invited Talk).
24. **Dillon MM**, Sung W, Lynch M, and Cooper VS. 2015. The rate and molecular spectrum of spontaneous mutations in divided bacterial genomes. *Janelia Research Conference: Evolutionary Cell Biology*. Ashburn, VA. (Poster Presentation and Contributed Talk).
25. **Dillon MM**, Sung W, Lynch M, and Cooper VS. 2014. The distinct mutational landscapes of different chromosomes in divided bacterial genomes. *American Society for Microbiology, Experimental Microbial Evolution*. Washington, DC. (Poster Presentation).
26. **Dillon MM**, Sung W, Lynch M, and Cooper VS. 2014. The role of replication timing in mutation rate variation within divided bacterial genomes. *American Society for Microbiology*. Boston, MA. (Contributed Talk; selected from abstracts).
27. **Dillon MM** and Cooper VS. 2013. Operon membership and transcription timing increase local purifying selection and codon-bias in bacteria. *Society for Molecular Biology and Evolution*. Chicago, IL. (Poster Presentation).

28. **Dillon MM**, Flynn KM, and Cooper VS. 2012. The form of pleiotropy of a globally beneficial mutation varies among *Escherichia coli* isolates. *First Joint Congress on Evolutionary Biology*. Ottawa, ON. (Contributed Talk; selected from abstracts).

TEACHING AND MENTORSHIP

Teaching Experience

- 2020- Undergraduate Course Instructor, Department of Biology, University of Toronto Mississauga
- *Microbiology*, BIO370Y5, 2022-2023 (75 students, 350 TA hrs., 1.0 FCE)
 - *Microbiology*, BIO370Y5, Winter Term 2022 (102 students, 420 TA hrs., 0.5 FCE)
 - *Microbiology*, BIO370Y5, Winter Term 2021 (101 students, 420 TA hrs., 0.5 FCE)
- 2021 Undergraduate Course Development, Department of Biology, University of Toronto Mississauga
- *Introduction to Biological Data*, BIO259H5 (Designed and implemented biological data course for undergraduate students in Biology at UTM in collaboration with Alex Nguyen-Ba and Arbora Resulaj, 0.5 FCE)
- 2018-2020 Graduate Course Instructor, Department of Cell and Systems Biology, University of Toronto
- *Fundamentals of Genomic Data Science* (Designed curriculum and taught three iterations of the course to students in the Tri-Campus Graduate Department)
- 2012-2015 Undergraduate Guest Lecturer, Department of Molecular, Cellular, and Biomedical Sciences, University of New Hampshire
- *General Microbiology* (Mutation, Virology)
 - *Evolution* (Experimental Evolution)
 - *Microbial Ecology and Evolution* (Evolution of the Mutation Rate)
 - *Molecular Evolution* (Mechanisms of Mutation)
- 2012-2013 Lead Teaching Assistant, Department of Molecular, Cellular, and Biomedical Sciences, University of New Hampshire
- General Microbiology Laboratory
- 2009 Secondary School Summer Instructor, Durham Board of Education, Oshawa, ON, CAN

Research Mentorship

- 2023- Postdoctoral Fellow Supervisor
- Hind Emad, Ph.D. *Environmental fluctuations and the outcomes of plant-pathogen interactions*. Department of Biology, University of Toronto Mississauga (2023-present).
- 2021- Graduate Student Thesis Supervisor
- Tsz Chung (David) Chan, Ph.D. *Relative roles of chance, history, and selection in the emergence of novel phytopathogens*. Department of Ecology and Evolutionary Biology, University of Toronto (2023-present).
 - Viplav Agarwal, Ph.D. *Evolutionary genomics of host-pathogen interactions in infectious phytopathogens*, Department of Ecology and Evolutionary Biology, University of Toronto (2021-present).

- Elise Bull, M.Sc. *The genetic underpinnings of host specificity and disease in Xanthomonas campestris*, Department of Ecology and Evolutionary Biology, University of Toronto (2022-present).
- Jacy Newfeld, M.Sc. *Experimental characterization of bacterial plant pathogen emergence*, Department of Ecology and Evolutionary Biology, University of Toronto (2021-2023).

2020-

Graduate Student Committee Member

- Xiaoyi Hu, Ph.D. *Genomic diversity and population structure in phytopathogenic Pseudomonas syringae populations from local to global scales*, Department of Cell and Systems Biology, University of Toronto (2022-present).
- Luna Taguchi, Ph.D. *Testing evolutionary theory for virulence evolution with malaria field data*. Department of Ecology and Evolutionary Biology, University of Toronto (2022-present).
- Racquel Singh, Ph.D. *An evolutionary and functional analysis of 'hrp box' promoters in Pseudomonas syringae*. Department of Cell and Systems Biology, University of Toronto (2022-present).
- Christopher Blackman (Bonner), Ph.D. *Molecular determinants of susceptibility and resistance in the Fusarium sambucinum species complex*. Department of Cell and Systems Biology, University of Toronto (2021-present).
- Karolina Szlapa, Ph.D. *Diversity and persistence of lytic algal viruses in sediment strata*, Department of Ecology and Evolutionary Biology, University of Toronto (2020-present).
- Tamar Av-Shalom, Ph.D. *Systems analysis of pathogen effector-effector interactions that suppress host immunity*, Department of Cell and Systems Biology, University of Toronto (2020-present).

2020-

Graduate Student Examiner

- Tia Harrison, Ph.D. *Patterns, consequences, and processes of mutualism evolution in the legume-Rhizobium system*, Department of Ecology and Evolutionary Biology, University of Toronto (2023).
- Siyu Wang, Ph.D. *Tracking seasonal variations and detecting the response of drought stress of conifer and deciduous forest*, Department of Ecology and Evolutionary Biology, University of Toronto (2022).
- Arjan Banerjee, Ph.D. *Plastid genome evolution in the parasitic genera Cuscuta (Convolvulaceae) and Krameria (Krameriaceae)*. Department of Ecology and Evolutionary Biology, University of Toronto (2022).
- Julia Boyle, Ph.D. *The factors governing plant associated microbial community structure and their consequence for plant performance*. Department of Ecology and Evolutionary Biology, University of Toronto (2022).
- Christine Palermo, Ph.D. *Diversity, relative abundance, and functional potential of viral and bacterial communities*. Department of Physical and Environmental Sciences, University of Toronto (2021-2022).
- Rose Mastin Wood, M.Sc. *Examination of infection dynamics within a viral consortium infecting the haptophyte alga Chrysochromulina parva*. Department of Ecology and Evolutionary Biology, University of Toronto (2021).
- Michael Greenberg, M.Sc. *Host specificity of Pseudomonas syringae in common bean plants*, Department of Cell and Systems Biology, University of Toronto (2021).

2020-

Undergraduate Student Research Supervisor

- Sean Yam, *The genetic underpinnings of A. thaliana Kas-1 specificity in Xanthomonas campestris*. BIO481 Honours Thesis Student, Department of Biology, University of Toronto Mississauga (2023-2024).
- Sienna Valley (co-supervised with Mike Phillips), Plant metabolic responses to host-pathogen interactions. ROP399 Research Opportunity Student, Department of Biology, University of Toronto Mississauga (2023-2024).
- Mateja Perc, Probing the plant immune system for Xanthomonas effector triggered immune interactions. NSERC USRA Student, Department of Biology, University of Toronto Mississauga (2023).
- Affan Ahmed, *Quantifying the evolutionary pathways that enable host-shifts in bacterial plant pathogens*. BIO481 Honours Thesis Student, Department of Biology, University of Toronto Mississauga (2022-2023)
- Mateja Perc, *High-throughput screening of effector triggered immune interactions among Xanthomonas pathogens*, BIO481 Honours Thesis Student, Department of Biology, University of Toronto Mississauga (2022-2023).
- Zain Nassrullah, *Distribution and diversification of type III secretion systems in the Xanthomonas genus*, BIO481 Honours Thesis Student, Department of Biology, University of Toronto Mississauga (2022-2023).
- Simran Rakhra, *The genomics of host specificity in Xanthomonas campestris*, ROP299 Research Opportunity Student, Department of Biology, University of Toronto Mississauga (2022-2023).
- Sean Yam, *The genomics of host specificity in Xanthomonas campestris*, ROP299 Research Opportunity Student, Department of Biology, University of Toronto Mississauga (2022-2023).
- Muhammad Muhammad, *Genomic identification of ICE elements harbouring critical virulence factors in Xanthomonas pathogens*. Department of Biology, University of Toronto Mississauga (2022-present).
- Rachel Stubits, *Comparative genomic investigation of host specificity determinants in Xanthomonas species*, BIO481 Honours Thesis Student, Department of Biology, University of Toronto Mississauga (2021-2022).
- Nial Navaratne, *The evolution of antimicrobial resistance in dynamic population genetic environments*, BIO481 Honours Thesis Student, Department of Biology, University of Toronto Mississauga (2021-2022).
- Erka Shata, *Experimental dissection of HopAR1 immune evasion in the Arabidopsis–Pseudomonas pathosystem*, BIO481 Honours Thesis Student, Department of Biology, University of Toronto Mississauga (2021-2022).
- Mateja Perc, *The evolutionary genomics of host specificity in an infectious phytopathogen*, ROP299 Research Opportunity Student, Department of Biology, University of Toronto Mississauga (2021-2022).
- Zain Nassrullah, *The evolutionary genomics of host specificity in an infectious phytopathogen*, ROP299 Research Opportunity Student, Department of Biology, University of Toronto Mississauga (2021-2022).
- Elana Maria, *The evolution of host range in microbial pathogens*. Department of Biology, University of Toronto Mississauga (2021-2022).
- Joshua Hung, *Pangenome analysis of Xanthomonas outbreaks on agricultural crops*, BIO481 Honours Thesis Student, Department of Biology, University of Toronto Mississauga (2020-2021).

2017-2020 Postdoctoral Mentor for Undergraduate Students

- Yi Fei Huang, *A database for Pseudomonas syringae type III secreted effectors*, Department of Cell and Systems Biology, University of Toronto (2019-2020)
- Hae Kwak, *Comparative genomic analysis of Pseudomonas citrus pathogens*, Department of Cell and Systems Biology, University of Toronto (2019)

- Kevin Guttman, *Comparative genomic analysis of Pseudomonas pith pathogens*, Department of Cell and Systems Biology, University of Toronto (2019).
- Helen Huang, *Experimental analysis of Pseudomonas syringae host specificity on the model host Arabidopsis thaliana*, Department of Cell and Systems Biology, University of Toronto (2018-2019).
- Matt Renaud, *Diversity and epistasis of the HopZ effector in Pseudomonas syringae pathogens*, Department of Cell and Systems Biology, University of Toronto (2017-2018).

2012-2015 Graduate Mentor for Undergraduate Students

- Nicholas Rouillard, *The pleiotropic effects of beneficial mutations in short-term Escherichia coli evolutions*, Department of Molecular, Cellular, and Biomedical Sciences, University of New Hampshire (2013-2015).
- Chelsea Jones, *The distribution of effects of spontaneous mutations in Vibrio fischeri*, Department of Molecular, Cellular, and Biomedical Sciences, University of New Hampshire (2012-2013).
- Brian Van Dam, *The accumulation of spontaneous mutations in bacteria with multiple chromosomes*, Department of Molecular, Cellular, and Biomedical Sciences, University of New Hampshire (2011-2013).

PROFESSIONAL SERVICE AND AFFILIATIONS

Academic Service

- 2022-2024 Biology Seminar Committee (Co-chair), Department of Biology, University of Toronto Mississauga
- 2022-2023 Biology PTR Committee, Department of Biology, University of Toronto Mississauga
- 2022-2023 Biology Executive Committee, Department of Biology, University of Toronto Mississauga
- 2022-2023 Immunology Search Committee, Department of Biology, University of Toronto Mississauga
- 2021-2022 Biology Safety Committee, Department of Biology, University of Toronto Mississauga
- 2020-2022 Graduate Admissions Committee, Department of Ecology and Evolutionary Biology, University of Toronto
- 2020-2022 Computational Curriculum Planning Committee, Department of Biology, University of Toronto Mississauga
- 2020-2021 Curriculum Committee, Department of Biology, University of Toronto Mississauga
- 2020 Selection Committee for the Hottest Paper Award, Department of Biology, University of Toronto Mississauga
- 2020 Session Chair and Judge, Great Lakes Evolutionary Genomics Virtual Meeting
- 2014-2015 Graduate Representative, MCBS Department Seminar Series, University of New Hampshire.
- 2011-2014 President, American Society for Microbiology, University of New Hampshire.

2011-2014 President, Environmental Microbiology Journal Club, University of New Hampshire.

Professional Service

2022- Review Editor, Microbe and Virus Interactions with Plants, *Frontiers in Microbiology*

Professional Affiliations

2016- Canadian Society of Microbiologists

2016-2018 Genetics Society of America

2012-2018 American Society of Microbiology

2012-2014 Society for the Study of Evolution

Outreach Activities

2023 Faculty Mentor, UTM STEM High School Research Experience Opportunity Program, University of Toronto Mississauga (6 students mentored)

Reviewed Manuscripts

Since 2016, I have reviewed 34 manuscripts as an *ad hoc* reviewer for *Bioinformatics*, *BMC Genomics*, *Frontiers in Microbiology* [x8], *G3: Genes, Genomes, Genetics*, *Genome Biology and Evolution* [x6], *Genomics*, *Journal of Molecular Evolution*, *Journal of Visualized Experiments*, *Marine Life Sciences and Technology*, *Molecular Microbiology*, *Molecular Plant Microbe Interactions*, *Molecular Plant Pathology*, *Phytopathology* [x2], *Plant Pathology*, *PLOS Computational Biology*, *PLOS Genetics*, *PLOS Pathogens* [x3], *Scientific Reports*, and *Trends in Ecology and Evolution*.