

# Felicia Maria G. Magpantay

## OFFICE ADDRESS

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## CONTACT INFORMATION

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## EDUCATION

**Ph.D. Applied Mathematics** Sept. 2008–Feb. 2012  
**McGill University**, Montréal, QC, Canada

Thesis: *On the stability and numerical stability of a model state dependent delay differential equation*  
Awards: Pelletier Fellowship for the best thesis in the Dept. of Mathematics and Statistics

**M.Sc. Applied Mathematics** Sept. 2007–Aug. 2008  
**University of Western Ontario**, London, ON, Canada

Project: *Travelling wave solutions to the post-synaptic wave potential equation with axonal and feedback connections*

**B.Sc. (Honours) Physics and Mathematics** Sept. 2004–May 2007  
**Trent University**, Peterborough, ON, Canada

Awards: Trent International Scholarship, President's Honour Roll, Herzberg Research Award

**Undergraduate Program in Physics** (transferred to Trent University, Canada) June 2003–May 2004  
**University of the Philippines Main Campus**, Diliman, Quezon City, Philippines

Awards: Oblation Scholarship, Dean's List

## ACADEMIC POSITIONS

**Associate Professor** July 2021–present  
**Department of Mathematics and Statistics, Queen's University**, Kingston, ON, Canada

**Assistant Professor** July 2017–June 2021  
**Department of Mathematics and Statistics, Queen's University**, Kingston, ON, Canada

**Assistant Professor** Aug. 2015–June 2017  
**Department of Mathematics, University of Manitoba**, Winnipeg, MB, Canada

**Postdoctoral Fellow** Aug. 2013–July 2015  
**Rohani and King Labs, University of Michigan**, Ann Arbor, MI, USA

**Postdoctoral Fellow** Feb. 2012–July 2013  
**Department of Mathematics and Statistics, York University**, Toronto, ON, Canada

## INDIVIDUAL RESEARCH GRANTS

1. 2016–2022 NSERC Discovery Grant (\$33,000/year)  
Status: Active
2. 2020 Ontario Research Fund – Strategic Innovation Fund (\$150,000)  
Status: Active
3. 2019 Canadian Foundation for Innovation John R. Evans Leaders Fund (\$150,000)  
Status: Active
4. 2019–2022 Compute Canada Resources for Research Groups  
Status: Active
  - 2021–2022: 120 core-years, estimated value of \$14,561
  - 2020–2021: 101 core-years, estimated value of \$12,221
  - 2019–2020: 90 core-years, estimated value of \$10,873
5. 2017–2021 Queen’s University Research Initiation Grant (\$20,000)  
Status: Completed
6. 2015–2017 University of Manitoba Startup Grant (\$50,000)  
Status: Completed

## GROUP RESEARCH GRANTS

1. 2021 NSERC EIDM (\$1.5M/year)  
Project Name: Mathematics for Public Health  
Role: Co-applicant (1 applicant, 46 co-applicants). Status: Awarded
2. 2021 NSERC EIDM (\$625,000/year)  
Project Name: One-Society  
Role: Co-applicant (1 applicant, 11 co-applicants). Status: Awarded
3. 2020 Digital Supercluster Award (full amount: \$1.3M, subcontract to Queen’s: \$67,000)  
Project Name: Looking Glass led by Kings Distributed Systems  
Role: COVID-19 Predictive Modeling Co-Lead. Status: Active

## CONFERENCE GRANTS/FUNDING

1. Workshop on Mathematical Ecology (June 27–28, 2019)  
*Funded by the Fields Institute, Queen’s University, the Canadian Institute of Ecology and Evolution, and the Canadian Applied and Industrial Mathematics Society*

## PUBLICATIONS

### Journal Articles (published/accepted)

1. **L. Xue**, X. Ren, **F.M.G. Magpantay**, W. Sun and X. Fang (2021) Modeling and analysis of vaccinating strategies for mitigating dengue virus transmission. *Bull. Math. Biol.* 83(8)
2. **N. Akhavan Kharazian** and **F.M.G. Magpantay**. (2020) The honeymoon period after mass vaccination. *Math. Biosci. Eng.* 18(1): pp. 354–372
3. **F.M.G. Magpantay** and A.R. Humphries (2020) Generalised Lyapunov-Razumikhin techniques for scalar state-dependent delay differential equations. *Discrete Contin. Dyn. Syst. - S.* 13: pp. 85–104
4. **F.M.G. Magpantay**, A.A. King and P. Rohani (2019) Age-structure and transient dynamics in epidemiological systems. *J. Royal Soc. Interface.* 16(156): 20190151
5. K. Nah, **F.M.G. Magpantay**, A. Bede-Fazekas, G. Röst, A. János Trájer, X. Wu, X. Zhang and J. Wu (2019) Assessing systemic and non-systemic transmission risk of tick-borne encephalitis in Hungary. *PLOS One.* 14(6): e0217206.
6. M. Domenech de Cellès, **F.M.G. Magpantay**, A.A. King and P. Rohani (2018) Waning vaccinal immunity, the end of the honeymoon, and pertussis resurgence. *Sci. Transl. Med.* 10(434)
7. **F.M.G. Magpantay** (2017) Vaccine impact in homogeneous and age-structured models. *J. Math. Biol.* 75 (6-7): 1591-1617

8. M. Domenech de Cellès, **F.M.G. Magpantay**, A.A. King and P. Rohani (2016) The pertussis enigma: Reconciling epidemiology, immunology and evolution. *Proc. Roy. Soc. B.* 283(1822): 20152309
9. **F.M.G. Magpantay**, M. Domenech de Cellès, P. Rohani and A.A. King (2016) Pertussis immunity and epidemiology: mode and duration of vaccine-induced immunity. *Parasitology (Special Issue on Modeling Infectious Diseases)* 143: pp. 835–849
10. R. Judson, **F.M.G. Magpantay** and 17 more authors (2015) Integrated model of chemical perturbations of a biological pathway using 18 *in vitro* high throughput screening assays for the estrogen receptor. *Toxicological Sciences* 148(1): pp. 137–154
11. A.A. King, M. Domenech de Cellès, **F.M.G. Magpantay** and P. Rohani (2015) Avoidable errors in the modeling of outbreaks of emerging pathogens, with special reference to Ebola. *Proc. Roy. Soc. B.* 282(1806)
12. **F.M.G. Magpantay** and P. Rohani (2014) Dynamics of Pertussis Transmission in the United States. *Am. J. Epidemiol.* 181(12): pp. 921–931
13. D. Munther, Y. Luo, J. Wu, **F.M.G. Magpantay** and P. Srinivasan (2015) A mathematical model for pathogen cross-contamination dynamics during produce wash. *Food Microbiology* 51: pp. 101–107
14. X. Wu, **F.M.G. Magpantay**, J. Wu and X. Zou (2014) Stage-structured population systems with temporally periodic delay. *Math. Method. Appl. Sci.* 38(16): pp. 3464–3481
15. **F.M.G. Magpantay**, M.A. Riolo, M. Domenech de Cellès, A.A. King and P. Rohani (2014) Epidemiological consequences of imperfect vaccines for immunizing infections. *SIAM J. Appl. Math.* 74(6): pp. 1810–1830
16. **F.M.G. Magpantay**, N. Kosovalić and J. Wu (2014) An age-structured population model with state-dependent delay: derivation and numerical integration. *SIAM J. Numer. Anal.* 52(2), pp. 735–756
17. N. Kosovalić, **F.M.G. Magpantay**, Y. Chen and J. Wu (2013) Abstract algebraic-delay differential systems and age structured population dynamics. *J. Differential Equations* 255(3) pp. 593–609
18. A.R. Humphries, O. DeMasi, **F.M.G. Magpantay** and F. Upham (2012) Dynamics of a delay differential equation with multiple state dependent delays. *Discrete Contin. Dyn. Syst. - A* 32(8): pp. 2701–2727
19. **F.M.G. Magpantay** and X. Zou (2010) Wave front in neuronal fields with nonlocal post-synaptic axonal connections and delayed nonlocal feedback connections. *Math. Biosci. Eng.* 7(2): pp. 421–442

#### Journal Articles (under review or revision)

1. A.R. Humphries and **F.M.G. Magpantay**. Lyapunov-Razumikhin techniques for state-dependent delay differential equations. Second revision submitted to *J. Differential Equations* ([arxiv](#))
2. **A. Liu** and **F.M.G. Magpantay**. Quantification of long transient dynamics. Under second review at *SIAM J. Appl. Math.*
3. **A. Le** and **F.M.G. Magpantay**. The impact of different types of infection-derived immunity. Under revision at *J. Math. Biol.*

#### Journal Articles (in preparation, drafts available upon request)

1. **C. Allotey**, **N. Akhavan Kharazian** and **F.M.G. Magpantay**. A comparison of measles models
2. **L. Li**, **S. Liu** and **F.M.G. Magpantay**. A comparison of Kalman-type filters and particle filters

#### Book Chapters

1. A.A. King, M. Domenech de Cellès, **F.M.G. Magpantay**, and P. Rohani (2018), “Pertussis Immunity and the Epidemiological Impact of Adult Transmission: Statistical Evidence From Sweden and Massachusetts” in P. Rohani and S. Scarpino (eds.) *Pertussis: Epidemiology, Immunology and Evolution*. Oxford University Press, Oxford.

#### Conference Papers

1. **F.M.G. Magpantay** and N. Kosovalić. An age-structured population model with state-dependent delay: Dynamics. *12th IFAC Workshop on Time Delay Systems*
2. **J.A. Collera** and **F.M.G. Magpantay**. Dynamics of a stage-structured intraguild predation model. *Proceedings of the AMMCS 2017*

## Letters (published in journals)

1. M. Domenech de Cellès, M. Riolo, **F.M.G. Magpantay**, P. Rohani and A.A. King (2014) Letter: Acellular pertussis vaccines and herd immunity: the epidemiological evidence. *Proc. Natl. Acad. Sci.* 111(7): pp. E716–E717

## POSTDOCTORAL SUPERVISION AND VISITING SCHOLARS

1. Tyler Meadows  
Postdoctoral Fellow, Queen's University (starting Sept. 2021, co-supervised by Troy Day)
2. Pedro Rangel  
Postdoctoral Fellow, Queen's University (Jul. 2020–present, co-supervised by Troy Day)
3. Ling Xue  
PIMS Postdoctoral Fellow, University of Manitoba (Jan. 2017–Dec. 2017, co-supervised by Julien Arino)  
Current position: Faculty, Dept. of Mathematics, Harbin Engineering University.
4. Juancho Collera  
Abel Visiting Scholar, University of Manitoba (Oct. 2016–Dec. 2016)  
Current position: Faculty, Dept. of Mathematics and Computer Science, University of the Philippines Baguio.

## GRADUATE SUPERVISION

1. Sicheng Zhao  
Ph.D. Student, Mathematics and Statistics, Queen's University (2020–present)
2. Ankai Liu (co-supervised by Kenzu Abdella)  
Ph.D. Student, Mathematics and Statistics, Queen's University (2018–present)
3. Adam Le  
M.Sc. Student, Mathematics and Statistics, Queen's University (2019–2020)  
Position after graduation: Junior Data Science Specialist, St. Michael's Hospital, Toronto, Canada
4. Linke Li  
M.Sc. Mathematics and Statistics, Queen's University (2019–2020)  
Position after graduation: Ph.D. Student, Biostatistics Division, University of Toronto
5. Nazila Akhavan Kharazian  
M.Sc. Mathematics and Statistics, Queen's University (2016–2018)  
Position after graduation: Mathematics Applications Developer, Kings Distributed Systems Ltd.
6. Clifford Allotey  
M.Sc. Mathematics, University of Manitoba (2015–2017)  
Position after graduation: Resource Coordinator, Dept. of Mathematics, University of Manitoba.

## UNDERGRADUATE SUPERVISION

1. Anji Deng (Summer 2020, Summer 2021 NSERC USRA)  
Project: Mathematical modeling with imperfect/incomplete covariate information
2. Bijan Betel Miri (Summer 2020, Summer 2021 NSERC USRA)  
Project: Mathematical modeling with imperfect/incomplete covariate information
3. Linke Li (Summer 2018, Summer 2019)  
Project: Extensions of Kalman filters
4. Shikai Liu (Summer 2019)  
Project: Extensions of Kalman filters
5. Adam Le (Fall–Winter 2019)  
Project: Computing the impact of infection-derived immunity

## PRESENTATIONS (all talks are invited unless otherwise specified)

*Due to the COVID-19 pandemic, many events planned for 2020 were canceled and have been omitted from this list.*

### Conferences or Workshops

1. 2021 CAIMS Annual Meeting, University of Waterloo, Waterloo, ON, Canada (online)
2. 2021 International Conference on Dynamical Modeling, Analysis, and Applications in Mathematical Biosciences, Harbin Engineering University, Harbin, China (online)
3. 2021 Canadian Mathematical Society Summer Meeting, Mathematical modelling in epidemiology and public health, Ottawa, ON, Canada (online)
4. 2021 Canadian Mathematical Society Summer Meeting, Recent advances in theory and applications of functional differential equations, Ottawa, ON, Canada (online)
5. 2021 AMS Spring Southeastern Sectional Meeting, Georgia Institute of Technology, GA, USA (online)
6. 2020 AMS Fall Eastern Sectional Meeting, Penn State University, PA, USA (online)
7. 2019 Canadian Mathematical Society Winter Meeting, Toronto, ON, Canada
8. 2019 Canadian Undergraduate Mathematics Conference, Queen's University, ON, Canada (keynote)
9. 2019 Society for Mathematical Biology Annual Meeting, Université de Montréal, Montréal, QC, Canada
10. 2019 International Council for Industrial and Applied Mathematics, Universitat de València, València, Spain
11. 2019 CAIMS Annual Meeting, Whistler, BC, Canada (contributed)
12. 2019 Southern Ontario Numerical Analysis Day, Ontario Tech University, Oshawa, ON, Canada (keynote)
13. 2019 International Workshop on Mathematical Biology, Panglao Island, Bohol, Philippines (plenary)
14. 2018 Ecological Society of America Annual Meeting, New Orleans, LA, USA
15. 2018 American Institute of Mathematical Sciences Conference on Dynamical Systems, Differential Equations and Applications, National Taiwan University, Taipei, Taiwan
16. 2018 BioMath Days, University of Ottawa, Ottawa, ON, Canada
17. 2018 Workshop on Infectious Disease Epidemiology, Banach Center, Warsaw, Poland
18. 2017 XI Americas Conference on Differential Equations and Nonlinear Analysis, University of Alberta, Edmonton, AB, Canada
19. 2017 China-Canada International Conference on Disease Modelling, Shanghai University, Shanghai, China
20. 2017 SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, USA
21. 2016 International Conference on Patterns of Dynamics, Freie Universität Berlin, Germany (contributed)
22. 2016 SIAM Life Sciences Conference, Boston, MA, USA
23. 2015 12th IFAC Workshop on Time Delay Systems, Ann Arbor, MI, USA
24. 2015 Mathematical Biology III session, Joint Mathematics Meetings, San Antonio, TX, USA (contributed)
25. 2014 Canadian Mathematical Society Winter Meeting, Hamilton, ON, Canada
26. 2013 CAIMS Annual Meeting, Château Laurier, Québec City, QC, Canada
27. 2013 Montréal Scientific Computing Days, Université de Montréal, Montréal, QC, Canada
28. 2013 SIAM Conference on Dynamical Systems, Snowbird, UT, USA
29. 2013 Incubation Day, York University, Toronto, ON, Canada
30. 2012 Canadian Mathematical Society Winter Meeting, Montréal, QC, Canada
31. 2012 CAIMS Annual Meeting, Fields Institute, Toronto, ON, Canada
32. 2012 CAIMS Annual Meeting, Fields Institute, Toronto, ON, Canada
33. 2012 Recent Trends in Delay Differential Equations, Cortona, Italy
34. 2011 International Congress in Industrial and Applied Mathematics, Vancouver, BC, Canada
35. 2009 International Workshop on State Dependent Delay Equations, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
36. 2009 CAIMS Annual Meeting, University of Western Ontario, London, ON, Canada

## Seminars and Colloquiums

1. 2020 Applied Mathematics Seminar (Dec. 3, 2020), California State University Northridge, CA, USA (online)
2. 2018 CAMBAM Seminar (Jan. 25, 2018), McGill University, Montréal, QC, Canada
3. 2017 Colloquium (July 28, 2017), University of the Philippines Baguio, Baguio, Philippines
4. 2016 Seminar (July 19, 2016) Institut Pasteur, Paris, France
5. 2014 IIMAS seminar (Aug. 27, 2014), Universidad Nacional Autónoma de México, D.F., Mexico
6. 2013 Applied Mathematics seminar (Sept. 20, 2013), University of Western Ontario, London, ON, Canada
7. 2013 Numerical Analysis Seminar (June 4, 2013), Università degli Studi di Trieste, Trieste, Italy
8. 2013 SHARCNet Scientific Computing Seminar (March 7, 2013), University of Ontario Institute of Technology, Oshawa, ON, Canada
9. 2013 Biomathematics Seminar (Feb. 7, 2013), Ryerson University, Toronto, ON, Canada
10. 2012 CDM Weekly Meeting (Oct. 24, 2012), York University, Toronto, ON, Canada
11. 2012 Numerical Analysis Seminar (June 12, 2012), University of Oxford, Oxford, UK
12. 2012 CDM Weekly Meeting (March 14, 2012), York University, Toronto, ON, Canada

## WORKSHOP/CONFERENCE/MINI-SYMPOSIUM ORGANIZATION

*Due to the COVID-19 pandemic, many events planned for 2020 were canceled and have been omitted from this list.*

1. 2019 ICIAM, Mini-Symposium on Current Trends in Applications of Delay Equations (Parts I–II)  
Universitat de València, València, Spain  
*Co-organizers: Maria Vittoria Barbarossa (University of Heidelberg) and Gergely Röst (University of Szeged)*
2. 2019 Workshop on Mathematical Ecology  
Queen's University, Kingston, Canada  
*Co-organizer: Bill Nelson (Biology, Queen's University)*

## OTHER CONFERENCES, WORKSHOPS AND SUMMER SCHOOLS ATTENDED

1. Mathematical Biosciences Institute Workshop on Socioepidemiology (March 5–9, 2018)  
The Ohio State University, Columbus, OH, USA
2. Mathematics Inspired by Immuno-Epidemiology (Aug. 24–28, 2015)  
American Institute of Mathematics, San Jose, CA, USA
3. EWM Mathematical Theories Toward Environmental Models (May 27–June 1, 2013)  
International Centre for Theoretical Physics, Trieste, Italy
4. Conference on Dynamics of Differential Equations (March 16–20, 2013)  
Georgia Institute of Technology, Atlanta, GA, USA
5. Modeling Problems Related to our Environment (Jan. 14–18, 2013)  
American Institute of Mathematics, Palo Alto, CA, USA
6. Monte Carlo Methods in the Physical and Biological Sciences (Oct. 29–Nov. 2, 2012)  
ICERM workshop, Brown University, Providence, RI, USA
7. Current Challenges in Stability Issues for Numerical Differential Equations  
CIME-EMS Summer School in Applied Mathematics (June 27–July 2, 2011), Cetraro, Italy

## TEACHING

*Due to the COVID-19 pandemic, the 2020–2021 academic year had to be taught online.*

- Winter 2021: BIOM 300 (Modeling Techniques in Biology, online)
- Fall 2020: MTHE 351 (Probability I, online), STAT 268 (co-instructor for Statistics and Probability I, online)
- Winter 2020: MATH 835 (Mathematical Biology)
- Fall 2019: MTHE 351 (Probability I), MTHE/STAT 455/855 (Stochastic Processes)
- Winter 2019: MTHE/STAT 353 (Probability II)
- Fall 2018: MTHE/STAT 351 (Probability I), MTHE/STAT 455/855 (Stochastic Processes)
- Fall 2017: MTHE/STAT 351 (Probability I), MATH 121 (Calculus)

Winter 2017: (University of Manitoba): MATH 1300 (Vector Geometry and Linear Algebra, online)

Fall 2016: (University of Manitoba): MATH 3440 (Ordinary Differential Equations), MATH 1500 (Calculus)

Fall 2015: (University of Manitoba): MATH 3440 (Ordinary Differential Equations), MATH 1500 (Calculus)

## **COURSE DEVELOPMENT**

1. MATH 835: Mathematical Biology
2. MATH 3440: Ordinary Differential Equations (University of Manitoba)

## **ACADEMIC SERVICE (INTERNAL)**

### **Thesis/Project Committees**

1. Ph.D. Supervisory Committee

2019–present: Somya Singh (Ph.D. Student, Mathematics, Queen’s University)

2. M.Sc. Thesis Examining Committee

2020: Shengnan Kang (M.Sc. Applied Modelling and Quantitative Methods, Trent University)

2020: Greg Harrington (M.A.Sc. Mathematics, Queen’s University)

2019: Glen Ross (M.Sc. Applied Modelling and Quantitative Methods, Trent University)

2017: Bo Min (M.Sc. Statistics, University of Manitoba)

2016: Jason Rose (M.Sc. Mathematics, University of Manitoba)

2016: Mahnaz Alavinejad (M.Sc. Mathematics, University of Manitoba)

3. M.Sc. Project Examining Committee

2018: Stefanie Knebel (M.Sc. Applied Mathematics, Queen’s University)

2018: Madeleine Baker (M.Sc. Applied Mathematics, Queen’s University)

4. Thesis Defence Chair

2021: Jordan Kokocinski (M.Sc. Statistics, Queen’s University)

2019: Scott Kyle (M.A.Sc. Mathematics and Engineering, Queen’s University)

5. Thesis Prospectus Exam Chair

2020: Tariq Osman (Ph.D. Candidate in Mathematics, Queen’s University)

2019: Wen Teng (Ph.D. Candidate in Statistics, Queen’s University)

### **Department Committees**

1. Advisory Committee on Policy (2019–2021, Secretary)

2. Colloquium Committee (2019–2021)

3. Core of the Appointments Committee

- Statistics Search (2019–2020)

- Mathematics and Engineering Search (2018–2019)

4. Fields@Queen’s Committee (2018–)

5. Postdoc Committee (2017–2019)

6. Graduate Committee (2017–2019)

7. Social Committee (2016–2017)

University of Manitoba, Winnipeg, MB, Canada

8. Internal Expert for the NSERC Internal Review Panel (Oct. 2016)

University of Manitoba, Winnipeg, MB, Canada

9. Comprehensive Exam Committee for Numerical Analysis (Apr. 2016)

University of Manitoba, Winnipeg, MB, Canada

### **University-level service**

1. Major Admission Awards Reader (2018, 2019, 2020)
2. Co-organizer of Women in Science events at Queen's University (2018–present)

### **ACADEMIC SERVICE (EXTERNAL)**

1. Reviewer for journals
  - 2021: Physical Review E, Acta Applicandae Mathematicae, Proceedings of the Royal Society - B, PLOS Biology
  - 2020: Mathematical Biosciences and Engineering (x2), Journal of Applied Mathematics, Physical Review X, Physical Review Research, Ecological Modeling, Journal of Mathematical Biology, Acta Applicandae Mathematicae, Proceedings of the Royal Society - B, Physical Review E
  - 2019: Mathematical Biosciences and Engineering, SIAM Journal on Applied Mathematics, Epidemics
  - 2018: Journal of Nonlinear Science, Mathematical Biosciences and Engineering, Differential Equations and Dynamical Systems
  - 2017: Discrete and Continuous Dynamical Systems B, Journal of Theoretical Biology (x2), Mathematical Biosciences (x2), Journal of Mathematical Biology
  - 2016: Journal of Nonlinear Science, Journal of Theoretical Biology, Mathematical and Computer Modeling of Dynamical Systems
  - 2015: BMC Infectious Diseases, Bulletin of Mathematical Biology, Communications in Nonlinear Science and Numerical Simulation, Journal of Computational and Applied Mathematics, Mathematical Biosciences and Engineering, Mathematical Biosciences, SIAM Journal on Applied Mathematics
  - 2014: SIAM Journal on Applied Mathematics
  - 2013: Advances in Difference Equations, Mathematical Biosciences and Engineering
2. Reviewer for the Sir Henry Wellcome Postdoctoral Fellowships (2020)
3. NSERC External Reviewer (2020)

### **ACADEMIC AWARDS**

1. Association for Women in Mathematics Travel Grant (2015)
2. Best Presentation Award at the Montreal Scientific Computing Days (2013)
3. McGill University Alexis and Charles Pelletier Fellowship (2012)
4. Institut des Sciences Mathématiques Scholarship (2009-2011)
5. McGill University Molson and Hilton Hart Fellowship (2010)
6. McGill University Honourable Mention for the Teaching Assistant Award (2009)
7. McGill University Lorne Trottier Science Accelerator Scholarship (2008)
8. Trent University Herzberg Research Award (2007)
9. Top 10% Standing in the Putnam Competition (2006)
10. Trent University Lodge Physics Scholarship (2005)
11. Trent International Tuition Scholarship and Award (2004–2007)
12. University of the Philippines Oblation Scholarship (2003)

### **OUTREACH**

1. Volunteer Category Judge at the Frontenac, Lennox and Addington Science Fair (2018)
2. Public Presentation at the University of Manitoba Faculty of Science Homecoming Luncheon (2016)
3. Women in Science, an event for high school girls held at the Manitoba Legislative Building (2015)