

CONTACT INFORMATION Department of Mathematics  
University of Toronto  
40 St. George Street, Rm 6290  
Toronto, ON M5S 2E4  
(416) 946-7193  
stinch@math.toronto.edu

## a. ACADEMIC HISTORY

DEGREES **Courant Institute of Mathematical Sciences, New York University**  
New York, NY, USA

Ph.D. Mathematics, May 23 2013

- Dissertation Title: *New Approaches to Modeling Stochastic Gene Expression*
- Advisors: Daniel Tranchina and Charles S. Peskin

**University of Waterloo**  
Waterloo, ON, Canada

B.Math Mathematical Physics, June 13 2008

- With Distinction - Dean's Honours List

EMPLOYMENT **Department of Mathematics, University of Toronto**  
Toronto, ON, Canada

Associate Professor, July 2023-present  
Assistant Professor, July 2017-June 2023  
Appointed to the Arts and Science School of Graduate Studies July 2017

**Department of Mathematics, University of Michigan**  
Ann Arbor, MI, USA


Postdoctoral Assistant Professor, Sept 2013-June 2017

- Academic Mentor: Daniel Forger


RESEARCH AWARDS **Adam Stinchcombe** 2023 CAIMS/PIMS Early Career Award C\$1,000

**Adam Stinchcombe** *Numerical Methods for Models of Biological Systems* NSERC  
Discovery Grant C\$96,000 2019/2020–2024/2025

**Adam Stinchcombe** *Numerical Methods for Models of Biological Systems* NSERC  
Discovery Launch Supplement C\$12,500 2019/2020

**Adam Stinchcombe** *An In-Silico Model of the Retina* University of Toronto, Con-  
naught New Researcher Award C\$9,500  2018

**Adam Stinchcombe** *Start-up funds* University of Toronto, 2017

**Adam Stinchcombe**, Douglas Zhou, David Cai, Daniel Forger *Efficient Computa-  
tional Approaches to Large Neuronal Networks* University of Michigan - Shanghai Jiao  
Tong University Collaboration US\$200,000 over 2 years  2015-2017

PROFESSIONAL  
AFFILIATIONS  
& ACTIVITIES

Member in the Society for Industrial and Applied Mathematics  
Member in the Canadian Applied and Industrial Mathematics Society  
Member in the Canadian Mathematical Society  
Member in the Society for Research on Biological Rhythms  
Member in the Canadian Society for Chronobiology  
Reviewer for the Journal of Computational Physics  
Review Editor for Frontiers in Integrative Neuroscience

## b. SCHOLARLY WORK

RESEARCH  
INTERESTS

Scientific computing and mathematical biology, especially pertaining to circadian biology, electrophysiology, the dynamics of neuronal networks, computational neuroscience, and stochastic gene expression.

PUBLICATIONS

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S Alexakis, **AR Stinchcombe**, T Tyni *A boundary integral equations approach to electrical impedance tomography: experiments on the KTC2023 data*, Appl Math Mod Challenges, Vol. 2, No. 2, 228–242, 2024. [🔗](#)

A Zhang, MR Ralph, **AR Stinchcombe** *Dynamics of dopamine-D2 self-regulation: a mathematical model for ultradian rhythms*, PLoS Comput Biol, Vol. 20, No. 5, e1012082, 2024. [🔗](#)

T Tyni, **AR Stinchcombe**, S Alexakis *A boundary integral equation method for the complete electrode model in electrical impedance tomography with tests on experimental data*, SIAM J Imaging Sci, Vol. 17, No. 6, 672–705, 2024. [🔗](#)

R Rahul, **AR Stinchcombe**, J Joseph, B Ingalls, *Kinetic modelling of  $\beta$ -cell metabolism reveals control points in the insulin-regulating pyruvate cycling pathways*, IET Syst Biol, Vol. 17, No. 6, 303–315, 2023. [🔗](#)

B Abuelnasr, **AR Stinchcombe** *A multi-scale simulation of retinal physiology*, Math Biosci, Vol. 363, 109053, 2023. [🔗](#)

KMS Park, **AR Stinchcombe**, *Deep reinforcement learning of viscous incompressible flow*, J Comput Phys, Vol. 467, 111455, 2022. [🔗](#)

CC Petersen, F Cao, **AR Stinchcombe**, RE Mistlberger, *Multiple entrained oscillator model of food anticipatory circadian activity rhythms*, Sci Rep, Vol. 12, 9306, 2022. [🔗](#)

F Cao, M Ralph, **AR Stinchcombe**, *A phenomenological mouse circadian pacemaker model*, J Biol Rhythms. Vol. 37, No. 3, 329–342, 2022. [🔗](#)

T Silverthorne, E Oh, **AR Stinchcombe**, *Promoter methylation in a mixed feedback loop circadian model*, Phys Rev E, Vol. 105, 034411, 2022. [🔗](#)

C Martin, H Zhang, J Costacurta, M Nica, **AR Stinchcombe**, *Solving elliptic equations with Brownian motion: bias reduction and temporal difference learning*, Methodol Comput Appl Probab, Vol. 24, 1603–1626, 2022. [🔗](#)

MR Ralph, SQ Shi, CH Johnson, P Houdek, TC Shrestha, P Crosby, JS O’Neill, M Sládek, **AR Stinchcombe**, A Sumová, *Targeted modification of the Per2 clock gene*

*alters circadian function in mPer2 luciferase (mPer2Luc) mice*, PLoS Comput Biol, Vol. 17, No. 5, e1008987, 2021. [🔗](#)

**AR Stinchcombe**, C Hu, OJ Walch, SD Faught, KY Wong, DB Forger, *M1-type, but not M4-type, melanopsin ganglion cells are physiologically tuned to the central circadian clock*, Front Neurosci, Vol. 15, 502, 2021. [🔗](#)

J Han, M Nica and **AR Stinchcombe**, *A derivative-free method for solving elliptic partial differential equations with deep neural networks*, J Comput Phys, Vol. 419, 109672, 2020. [🔗](#)

RM Shapiro, **AR Stinchcombe**, *Quantitative modeling of azacitidine resistance in patients with myelodysplastic syndrome identifies distinct phenotypes of disease progression: evidence for the presence of a disease versus native clone effect*, Blood, Vol. 134, Suppl. 1, 1723, 2019. [🔗](#)

RM Shapiro, A Lazo-Langner, **AR Stinchcombe**, *Quantitative modeling of ineffective hematopoiesis in myelodysplastic syndrome patients yields distinct clinical phenotypes and can identify a state of disease predictive of loss of response to azacitidine*, Blood, Vol. 132, Suppl. 1, 3104, 2018. [🔗](#)

**AR Stinchcombe**, JW Mouland, KY Wong, RJ Lucas, DB Forger, *Multiplexing visual signals in the suprachiasmatic nuclei*, Cell Rep, Vol. 21, No. 6, 1418–1425, 2017. [🔗](#)

JW Mouland, **AR Stinchcombe**, DB Forger, TM Brown, RJ Lucas, *Responses to spatial contrast in them mouse suprachiasmatic nuclei*, Curr Biol, Vol. 27, No. 11: 1633–1640.e3, 2017. [🔗](#)

**AR Stinchcombe** and DB Forger, *An efficient method for simulation of noisy coupled multi-dimensional oscillators*, J Comput Phys, Vol. 321, 932–946, 2016. [🔗](#)

**AR Stinchcombe**, Y Mori, and CS Peskin. *Well-posed treatment of space-charge layers in the electroneutral limit of electrodiffusion*, Communications on Pure and Applied Mathematics, Vol. 69, No. 12, 2221–2249, 2016. [🔗](#)

D DeWoskin, W Geng, **AR Stinchcombe**, DB Forger *It is not the parts, but how they interact that determines the behavior of circadian rhythms across scales and organisms*, Interface Focus. Vol. 4, No. 3, 20130076, 2014. [🔗](#)


K Abdelnour, **A Stinchcombe**, M Porfiri, J Zhang, and S Childress, *Wireless powering of ionic polymer metal composites toward hovering micro-swimmers*, IEEE-ASME T. MECH., Vol. 17, No. 5, 924–935, 2012. [🔗](#)

**AR Stinchcombe**, CS Peskin and D Tranchina, *Population density approach for discrete mRNA distributions in generalized switching models for stochastic gene expression*, Phys Rev E, Vol. 85, 061919, 2012. [🔗](#)

K Abdelnour, **A Stinchcombe**, M Porfiri, J Zhang, and S Childress, *Bio-inspired hovering and locomotion via wirelessly powered ionic polymer metal composites*, Proc. SPIE, Vol. 7975, Bioinspiration, Biomimetics, and Bioreplication, 2011. [🔗](#)

C Turner, **AR Stinchcombe**, M Kohandel, S Singh, and S Sivaloganathan, *Characterization of brain cancer stem cells: a mathematical approach*, Cell Prolif. Vol. 42, 529–540, 2009. [🔗](#)

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T Silverthorne, M Carlucci, A Petronis, **AR Stinchcombe** *PowerCHORD: constructing optimal experimental designs for biological rhythm discovery*, submitted to *PLoS Comput Biol.* 

K Bower, K Serkh, S Alexakis, **AR Stinchcombe** *Fast computation of electrostatic potentials for piecewise constant conductivities*, in preparation. 

E Oh, M Carlucci, T Silverthorne, **AR Stinchcombe**, A Petronis *Chrono-epigenetics of ontogenesis*, in preparation.

## TALKS

*A Mathematical Model for the Role of Dopamine-D2 Self-regulation in the Production of Ultradian Rhythms* 2024 Canadian Mathematical Society Winter Meeting, Richmond, BC (Dec 2024)

*A Simulation for Electroretinogram Design*

- Inverse Problems Seminar, University of Helsinki, Helsinki, Finland (Aug 2024)
- Applied and Computational Mathematics Seminar, University of Wisconsin-Madison, Madison, WI (Dec 2023)
- Department of Mathematics and Statistics, York University, Toronto, ON (Nov 2023)
- Math Bio Seminar, Brandeis University, Waltham, MA (May 2021)
- The University of New Mexico Applied Math Seminar (Mar 2021)
- The Mathematical Modeling of Ocular Dynamics Minisymposium at the SIAM Annual Meeting 2020 held virtually (July 2020)

*A Tour of Mathematical Models in Circadian Biology* University of Toronto Department of Psychology Brain and Behaviour Seminar Series, Toronto, ON (Apr 2024)

*Deep Reinforcement Learning of Viscous Incompressible Flow* The VI AMMCS International Conference, Waterloo, ON (Aug 2023)

*Biophysical Modelling of the Mammalian Circadian Clock Suggests Mechanisms for Altered Behaviour of *PER2::LUC* Mice* The VI AMMCS International Conference, Waterloo, ON (Aug 2023)

*A Kuramoto Model Reveals How Heterogeneous Food Entrainable Oscillators Mediate Food Anticipatory Activity* SIAM Conference on Applications of Dynamical Systems (DS23), Portland, OR (May 2023)

*Simulating the Mammalian Circadian Clock*

- Canadian Applied and Industrial Mathematics Society Annual Meeting, Fredericton, NB (June 2023)
- Biomath Seminar, University of Guelph, Guelph, ON (Jan 2020)
- Applied Mathematics Seminar, University of Ottawa, Ottawa, ON (Nov 2019)
- Canadian Society for Chronobiology 2019 Chrono-Insights Session, McGill University, Montreal, QC (May 2019)
- Southern Ontario Numerical Analysis Day 2019 at Ontario Tech University, Oshawa, ON (May 2019)

*Understanding the Circadian Clock and Rhythms Using Mathematical Modelling* Canadian Society for Chronobiology 2019 Mini-School McGill University, Montreal, QC (May 2019)

*Using Brownian motion processes to compute the electroneutral limit of electrodiffusion*

- SIAM Great Lakes Section Annual Meeting, Detroit, MI (Apr 2018)
- IMA Workshop Electrohydrodynamics and Electrodiffusion in Material Sciences and Biology, Minneapolis, MN (Mar 2018)

*Understanding Myelodysplastic Syndromes from Blood Cell Counts*

- Canadian Mathematical Society Winter Meeting, Toronto, ON (Dec 2019)
- CAIMS Annual Meeting, Toronto, ON (June 2018)
- Canadian Mathematical Society Winter Meeting, Waterloo, ON (Dec 2017)

*The Population Density Particle Method to Simulate Oscillator Populations*

- University of Ontario Institute of Technology Modelling and Computational Science Seminar, Oshawa, ON (Jan 2019)
- University of Toronto Computer Science Numerical Analysis Seminar, Toronto, ON (Nov 2018)
- University of Michigan Particle Day, Ann Arbor, MI (Oct 2018)
- University of Waterloo Math Biology Seminar, Waterloo, ON (Sept 2018)
- University of Toronto Department of Mathematics Colloquium, Toronto, ON (Dec 2017)
- Ryerson University Department of Mathematics Colloquium, Toronto, ON (Nov 2017)
- Biomathematics / Computational Biology Colloquium, Courant Institute of Mathematical Sciences, New York, NY (Nov 2017)

*Noisy Coupled Oscillators of the Suprachiasmatic Nucleus*

- University of Toronto Department of Mathematics Colloquium, Toronto, ON (Dec 2017)
- Biomathematics / Computational Biology Colloquium, Courant Institute of Mathematical Sciences, New York, NY (Nov 2017)
- Ryerson University Department of Mathematics Colloquium, Toronto, ON (Nov 2017)
- SIAM Annual Meeting, Pittsburgh, PA (July 2017)

*Summer school lectures at Shanghai Jiao Tong University*

Shanghai, China June 6–10, 2016

- *Models of neuronal membrane voltage*
- *Compartment models of disease with computer lab on disease spread over a network of populations*
- *A model of mammalian ovulation with computer lab on optimal control of mammalian ovulation*
- *Stochastic gene expression with a computer lab on fitting data to the Lotka-Volterra equations*
- *A model of the circulatory system*

*A Population Density Approach with Particles*

- Applied and Interdisciplinary Mathematics Seminar, University of Michigan, Ann Arbor, MI (Feb 2015)
- SIAM Great Lakes Section Conference, Grand Valley State University, Grand Rapids, MI (May 2015)

*Effects of Micro-Swimmer Locomotion in Peristaltic Pumping*, 2014 SIAM Annual Meeting, Chicago, IL (July 2014)

*Randomness in the Expression of Genes*

- Quantitative Biology Seminar, University of Michigan, Ann Arbor, MI (Jan 2013)
- Annual Meeting and Conference of the Society for Mathematical Biology, Knoxville, TN (July 2012)
- The 9th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, FL (July 2012)
- 1st Graduate Center Interdisciplinary Science Student Conference, New York, NY (Apr 2012)
- Biomathematics/Computational Biology Colloquium, Courant Institute of Mathematical Sciences, New York, NY (Feb 2012)
- Raj Lab Meeting, Philadelphia, PA (Aug 2011)

*Stabilization of the Electroneutral Model*, Quantitative Biology Seminar, University of Michigan, Ann Arbor, MI (Sept 2013)

*Synchronization of Pulse-Coupled Oscillators*, Courant Student Retreat (May 2012)

*Locomotion by Friction - A Mechanical Toy*, Mostly Biomathematics Lunchtime Seminar, Courant Institute of Mathematical Sciences, New York, NY (Nov 2010)

*A Mathematical Model for Brain Tumor Stem Cells*, Mostly Biomathematics Lunchtime Seminar, Courant Institute of Mathematical Sciences, New York, NY (Sept 2008)

POSTERS

*Deep Reinforcement Learning of Viscous Incompressible Flow*, **AR Stinchcombe**, KMS Park, Banff International Research Station Workshop ‘Mechanistic Learning as a Combination of Machine Learning and Modeling in Mathematical Oncology’ (Jan 2025)

*Multiple Entrained Oscillator Model of Food Anticipatory Activity Rhythms*, C Petersen, F Cao, **AR Stinchcombe**, R Mistlberger 2021 Cold Spring Harbor meeting: 85th Symposium: Biological Time Keeping (Virtual) (Jun 2021).

*Modeling Complex Interactions between SCN and a Dopamine Regulated Circadian Resonator (DARCR) Regulating Behavioral Rhythms in Mice* **AR Stinchcombe**, F Cao, TC Shrestha, A Sumová, MR Ralph 2020 Society for Research on Biological Rhythms Virtual Meeting (Jun 2020)

*Quantitative Modeling of Azacitidine Resistance in Patients with Myelodysplastic Syndrome Identifies Distinct Phenotypes of Disease Progression: Evidence for the Presence of a Disease Versus Native Clone Effect* RM Shapiro, **AR Stinchcombe** 61st American Society of Hematology 2019 Annual Meeting (Dec 2019)

*A Mathematical Model of a Dopamine Regulated Circadian Oscillator* **AR Stinchcombe**, C Martin, B Fattori, M Ralph XVI European Biological Rhythm Society Congress, Lyon, France (Aug 2019)

*Complex Behavioral Rhythms and the Neural Circuitry Underlying Sensorimotor Integration* MR Ralph, **AR Stinchcombe**, A Sumová 2019 Chronobiology Gordan Research Conference, Castelldefels, ES (Jun 2019)

*Simulating the Electrophysiology and Biochemistry of the Suprachiasmatic Nucleus* **AR Stinchcombe** Canadian Society for Chronobiology 2019, Montreal, QC (May 2019)

*Mathematical Modelling of Azacitidine Resistance in Myelodysplastic Syndrome Pa-*

*tients* **AR Stinchcombe** 2019 Canadian Mathematical Society Winter Meeting (Dec 2019) Toronto ON

*Quantitative Modeling of Ineffective Hematopoiesis in MDS Yields Distinct Clinical Phenotypes* RM Shapiro, A Lazo-Langner, **AR Stinchcombe** 60th American Society of Hematology Annual Meeting, San Diego, CA (Dec 2018)

*Modeling Spatial Information Processing in the Suprachiasmatic Nucleus* **AR Stinchcombe** 2018 Society for Research on Biological Rhythms Meeting, Amelia Island, FL (May 2018)

*A 3D Implementation of the Electro-Neutral Model* **AR Stinchcombe** Institute for Mathematics and its Applications Workshop on Mathematics of Biological Charge Transport: Molecules and Beyond, Minneapolis, MN (July 2015)

*Dynamics of Micro-Swimmers Inside a Peristaltic Pump* **AR Stinchcombe** Frontiers in Applied and Computational Mathematics, New Jersey Institute of Technology, Newark, NJ (June 2015)

*A Whole SCN Model Incorporating Noise and Population Behavior* **AR Stinchcombe** Society for Research on Biological Rhythms Meeting, Big Sky, MT (June 2014)

### c. LIST OF COURSES

LIST OF COURSES UNDERGRADUATE	Winter 2024	Mathematical Modelling (APM348)
	Winter 2023	Applied Nonlinear Equations (APM446)
	Winter 2023	Mathematical Modelling (APM348)
	Fall 2022	Modelling with Differential and Difference Equations (MAT231)
	Winter 2022	Mathematical Modelling (APM348)
	Winter 2022	Introduction to Ordinary Differential Equations (MAT244)
	Fall 2021	Independent Research: Modelling the Opioid Epidemic (APM496)
	Winter 2021	Mathematical Modelling (APM348)
	Fall 2020	EngSci Calc III - Ordinary Differential Equations (MAT292)
	Winter 2020	Mathematical Modelling (APM348) <sup>1</sup>
	Winter 2020	Independent Research: A Model for Forest Fire Management (MAT497)
	Fall 2019	EngSci Calc III - Ordinary Differential Equations (MAT292)
	Winter 2019	Topic in Mathematics: Math Models (MAT482)
	Winter 2019	Reading Course: Advanced Monte Carlo Methods (MAT495)

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<sup>1</sup>Course designed by me.

	Fall 2018	EngSci Calc III - Ordinary Differential Equations (MAT292)
	Winter 2018	Topic in Mathematics: Math Models (MAT482)
	Fall 2017	EngSci Calc III - Ordinary Differential Equations (MAT292)
LIST OF COURSES GRADUATE	Winter 2024	Linear Algebra & Optimization (MAT1850)
	Winter 2023	Applied Nonlinear Equations (MAT1508)
	Fall 2019	Methods of Applied Mathematics I (MAT1800) <sup>1</sup>
	Fall 2018	A Survey of Numerical Methods (MAT1750) <sup>1</sup>
	Winter 2018	Topics in Mathematics: Math Models (MAT1750)
TRAINEE SUPERVISION POSTDOCTORAL	Mentor - Jihun Han	<i>Brownian motion based numerical methods for elliptic/parabolic problems</i> July 2019 - Aug 2020
TRAINEE SUPERVISION PHD	Supervisor - Andrew Zheng	<i>Numerical aspects of the electrical impedance tomography inverse problem</i> Sept 2024 - present
	Supervisor - Tresa LeBlanc-Doucet	<i>Circadian disruption in attention-deficit/hyperactivity disorder (ADHD)</i> Sept 2024 - present
	Supervisor - Turner Silverthorne	<i>A model of chronoepigenetics</i> Sept 2022 - present
	Co-Supervisor (with S. Alexakis) - Kyle Bower	<i>Fast computation for the conductivity problem</i> Sept 2019 - present
	Supervisor - Belal Abuelnasr	<i>A simulation for electroretinogram design</i> Sept 2018 - Jun 2024 graduated
	Supervisor - Kevin Min Seong Park	<i>Reinforcement learning for incompressible viscous flows</i> Sept 2019 - Dec 2023 graduated
	Supervisory Committee Member - Maziar Farahzad	<i>Discrete models of quantum field theorys</i> Jan 2023 - present
	Supervisory Committee Member - Adam Morgan	<i>The generalized Benjamin-Bona-Mahony-Burgers equation on a network of intervals</i> Sept 2020 - Dec 2023 graduated

Supervisory Committee Member - Daniel Hyun Seong Park  
*Kuramoto white matter network model with adaptive state-dependent delays*  
Sept 2017 - Apr 2021 graduated

Supervisory Committee Member - Mario Palasciano  
*Autocratic strategies for stochastic games*  
Sept 2018 - present

Supervisory Committee Member - Afroditi Talidou  
*Near-pulse solutions of the FitzHugh-Nagumo equations on cylindrical surfaces*  
Sept 2017 - Winter 2020 graduated

TRAINEE  
SUPERVISION  
MSC

Summer Research Supervisor - Xinwen Ding  
*Learning-based walk on boundary method*  
Summer 2024

Summer Research Supervisor - Chris Middlebrook and Indira Mishra  
*Hunting in creeping flow*  
Summer 2024

Research Supervisor - Andrew Zheng  
*Numerical aspects of the electrical impedance tomography inverse problem*  
Sept 2023 - Aug 2024

Research Supervisor - Tresa LeBlanc-Doucet  
*Circadian disruption in attention-deficit/hyperactivity disorder (ADHD)*  
Sept 2022 - Aug 2024

MScAC Research Project Academic Supervisor - Yuwei Liu  
*Vital sign forecasting for sepsis and septic shock*  
Fall 2023 - Winter 2024 graduated

Research Supervisor - Turner Silverthorne  
*A model of chronoepigenetics*  
Fall 2020 - Fall 2022 graduated

Research Supervisor - Federico Cao  
*A phenomenological model of the mouse circadian clock*  
Fall 2019 - Winter 2021 graduated

MScAC Research Project Academic Supervisor - Abenezer Teklemariam  
*Denoising biological magnetic resonance spectra*  
Fall 2020 - Winter 2021 graduated

Dissertation Reader - Hareem Naveed  
*Comparing prediction methods for early warning systems*  
Sept 2018 - Jan 2019 graduated

Research Project Supervisor - Kyle Bower  
*Nested iteration in finite difference methods*  
Summer 2018

Research Project Supervisor - Kevin Min Seong Park

*Stokes flow, model formulation and computation*  
Summer 2018

Research Project Supervisor - Kingeon Tsang  
*A numerical method for delay differential equations*  
Summer 2018

TRAINEE  
SUPERVISION  
UNDERGRADUATE

Research Supervisor - Hanqi Zhang and Ruile Lu  
*A mathematical model of preferential looking*  
Jan 2024 - Jun 2024

Research Supervisor - Marek Wazny  
*A phenomenological model of foraging behaviour*  
Summer 2023

Research Supervisor - Nick Hong Jia Zhu and Yuka Saito  
*A mathematical model of tumour immunotherapy*  
Fall 2023 - Winter 2024

Research Supervisor - Ethan Bottomley-Mason and Joshua Fadelle  
*Numerical aspects of the electrical impedance tomography inverse problem*  
Summer 2023 and Summer 2024

Research Supervisor - Quinn Arbolante, Charles Beall, Amandin Chyba, and Diba Heydari  
*2022 Fields undergraduate summer research program: boundary integral equations with random walks and reinforcement learning*  
Summer 2022

Independent Research Course Supervisor - Anne Collins, Quinn Fisher, Simone Collier  
*Modelling the opioid epidemic*  
Fall 2021

Independent Research Course Supervisor - Nick Fellini  
*A model for forest fire management*  
Fall 2019 - Winter 2020

Independent Research Course Supervisor - Caroline (Ruo Yi) Lin  
*Monte Carlo and numerical methods*  
Winter 2019

Research Supervisor - Julia Costacurta, Cameron Martin, Hongyuan Zhang  
*2019 Fields undergraduate summer research program: machine learning methods for numerical solutions of partial differential equations*  
Summer 2019

Research Supervisor - Cameron Martin, Ben Fattori  
*Modelling of the dopamine regulated circadian resonator*  
Summer 2019

Research Supervisor - Cameron Martin  
*A model of the dopamine regulated circadian Oscillator*  
Summer 2018

Research Supervisor - Isabel Beach  
*A model of butterfly wing development*  
Summer 2018

#### **d. ADMINISTRATIVE POSITIONS**

ADMINISTRATIVE POSITIONS	2024-27 University of Toronto Academic Board, Teaching Staff Member
	2023-24 Mathematics computer, teaching technologies, data security committee chair
	2023-24 Mathematics applied math search committee
	2023-24 Mathematics second-year learning community faculty advisor
	2022-23 Mathematics computer, teaching technologies, data security committee chair
	2021-22 Mathematics merit committee
	2021-22 Mathematics computer and data security committee
	2020-21 Mathematics postdoctoral fellowship committee
	2020-21 Mathematics computer, teaching technologies, and data security committee
	2020 University of Toronto COVID-19 action initiative - 2020 Review College
	2019-20 Mathematics computer and data security committee
	2019-20 Mathematics applied math search committee
	2018-19 Mathematics applied math search committee
	2018-19 Math-CS joint position search committee
	2018-19 Mathematics computer and data security committee
	2017-18 Applied math search committee
	2017-18 Mathematics data security committee chair