

CARLY ROZINS

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EDUCATION

PhD in Applied Mathematics

Sept., 2016

Queen's University

Thesis: An impulsive differential equation model for Marek's disease.

Advisors: Troy Day and Peter Taylor

MSc in Applied Mathematics

Sept., 2009

Queen's University

Thesis: Parameter estimation when there is process and observational error.

Advisor: Peter Taylor

BSc in Biology (major) and Mathematics (minor)

June, 2008

University of Guelph

EXPERIENCE

Assistant Professor, teaching

July, 2020- present

Natural Sciences, York University, Toronto, ON

Postdoctoral Research Fellow

Jan., 2019- July, 2020

Integrative Biology, University of California, Berkeley, CA

Postdoctoral Research Fellow

Sept., 2016- Dec., 2018

College of Life and Environmental Sciences, University of Exeter

Visiting Scholar: *Integrative Biology, University of California, Berkeley, CA*

University Lecturer

Jan., 2015- April., 2016

Queen's University, Kingston, ON

Mathematical Modelling and Surveillance Internship

Nov., 2009 - Feb., 2010

Canadian Consortium for Pandemic Preparedness Modelling

McGill University and Direction De La Santé Publique, Montreal, QC

PUBLICATIONS

1. Gentles , A., Guth, S., **Rozins, C.**, Brook, C.A. (2020). Review of mechanistic models of viral dynamics in bat reservoirs for zoonotic disease. *Pathogens and Global Health*. (accepted).
2. **Rozins, C.**, Hood, M.E. Cho, J.H, Antonovics, J. (2020). Exploring density and frequency dependent interactions experimentally: an R program for generating hexagonal fan designs. *Methods Ecol Evol*. 11.5: 678-683.
3. Bartlett*, L.J., **Rozins***, **C.**, Brosi, B.J., Delaplane, K.S., de Roode, J.C., White, A.R., Wilfert, L., Boots, M. (2019). Industrial bees: The impact of apicultural intensification on local disease prevalence. *J Appl Ecol*.

4. Silk, M., Hodgson, D.J., **Rozins, C.**, Croft D.P., Delahay, R.J, Boots, M., McDonald, R.A. (2019). Integrating behaviour, demography and disease dynamics through network models: applications to disease management in declining wildlife populations. *Philos Trans R Soc B.* 374(1781), 20180211.
5. **Rozins, C.** Day, T., Greenhalgh, S. (2019), Managing Marek's disease in the egg industry. *Epidemics.* 27: 52-58.
6. **Rozins***, C., Silk*, M., Croft, D.P., Delahay, R.J., Hodgson, D., McDonald, R.A., Weber, N., Boots, M. (2018), Social structure contains epidemics and regulates individual roles in disease transmission in a group?living mammal. *Ecol. Evol.* 8.23: 12044-12055.
7. **Rozins, C.** and Day, T. (2017). The industrialization of farming may be driving virulence evolution. *Evol Appl*, 10: 189-198.
8. **Rozins, C.** and Day, T. (2016). Disease eradication on large industrial farms, *J. Math. Biol.* 73(4): 885-902
9. Cressler, C.E., McLeod, D.V., **Rozins, C.**, Van Den Hoogen, J. and Day, T. (2016). The adaptive evolution of virulence: a review of theoretical predictions and empirical tests. *Parasitology*, 143(7): 915-930.

* joint lead authors

Preprints

1. Greenhalgh, S. and **Rozins, C.** Novel compartmental models of infectious disease transmission. *bioRxiv* (2019): 777250.
2. Visher, E., Evensen, C., Guth, S., Lai, E., Norfolk, M., **Rozins, C.**, Sokolov, N.A., Sui, M., Boots, M. The Three Ts of Pathogen Evolution During Zoonotic Emergence. *EcoEvoRxiv* (2021):10.32942/osf.io/tueyb

TECHNICAL REPORTS

1. Rozins, C., Greenhalgh, S., Day, T. (2017), The economic burden of Marek's disease on egg production. *Egg Farmers of Canada Fact Sheet.*
2. Rozins, C., Delorme, M, Charland, K, Dushoff, J., Buckeridge, D.L. (2011), Modeling the multiple-wave pattern of the 2009 A/H1N1 pandemic. *Canadian Consortium for Pandemic Preparedness Modelling Internship final report*

COURSES (LECTURER)

The Nature and Growth of Ideas in Mathematics, <i>Division of Natural Science</i> (110 students), York University	<i>Sept., 2020 - April, 2021</i>
Mathematics of Politics, <i>Division of Natural Science</i> (150 students), York University	<i>Sept., 2020 - Dec, 2020</i>
Mathematics for the Life and Social Sciences, <i>Department of Mathematics and Statistics</i> (260 students), York University	<i>Sept., 2020 - April, 2020</i>
Introduction to Quantitative Methods in Biology, <i>Department of Integrative Biology</i>	<i>Jan., 2020 - April, 2020</i>

(20 students), UC Berkeley, California

Calculus II for Engineers,
Faculty of Engineering and Applied Science
(222 students), Queen's University, Ontario

Jan., 2016 - April, 2016

Calculus I for Engineers,
Faculty of Engineering and Applied Science
(288 students), Queen's University, Ontario

Sept., 2015 - Dec., 2015

Differential and Integral Calculus I,
Faculty of Arts and Sciences (online)
(150 students), Queen's University, Ontario

June, 2015 - Aug., 2015

Introduction to Linear Algebra,
Faculty of Arts and Sciences
(207 students), Queen's University, Ontario

Jan., 2015 - April, 2015

AWARDS

Engineering and Applied Science Best First Year Instructor Teaching Award Winter, 2016
Queen's University, Kingston, ON.

Best Student Poster Award Dec., 2013
Canadian Mathematics Society, Winter Meeting, Ottawa, ON.

OTHER ACADEMIC TEACHING EXPERIENCE

Guest Lecturer

- Infectious Disease Dynamics, University of California, Berkeley Winter, 2019
- Host-Pathogen Interactions, University of California, Berkeley Fall, 2017
- Infectious Disease Dynamics, University of California, Berkeley Winter, 2016
- Biomathematics, Queen's University Fall, 2016
- Statistics for Psychology, St. Lawrence College Winter, 2014
- Evolutionary Game Theory (three lectures), Queen's University Fall, 2011

Course Coordinator

- TA Coordinator for Differential and Integral Calculus I and II, Queen's University 2013/2014
- TA Coordinator for Calculus I, UBC, Okanagan Winter, 2011

Teaching Assistant Appointments

- *Lab and Tutorial Instructor*
 - Numerical Methods, Queen's University Winter, 2014
 - MATLAB for Civil Engineers, Queen's University Fall, 2011/2012
 - Introductory Physics (Mechanics), UBC, Okanagan Fall, 2010
- *Field Course Assistant*
 - Models in Evolution, Bamfield Marine Science Center, University of Victoria Summer, 2010
- *Course Teaching Assistant / Marker*
 - Calculus I, II, III, Queen's University 2008-2014
 - Linear Algebra, Queen's University, UBC, Okanagan
 - Partial Differential Equations, UBC, Okanagan

Evolutionary Game Theory, Queen's University
Biomathematics, Queen's University
Numerical Methods, Queen's University

STUDENT PROJECT SUPERVISION

- Laura Alexander** (PhD Student), University of California, Berkeley. 2017 - 2020
Project: Evolution of multiple transmission modes.
- Graham Northrup** (PhD Student), University of California, Berkeley. 2018 - 2020
Project: Modelling the evolution of virulence in systems with hyperparasites.
- Whitney Mgbara** (PhD Student), University of California, Berkeley. 2018 - 2020
Project: Modelling the multiple wave pattern of the 2009 AH1N1 pandemic.
- Allison Mahoney** (Undergraduate Student), Siena College, NY. Summer, 2018
Project: The threat of bacterial kidney disease in salmon aquaculture.
- Lewis Bartlett** (PhD Student), University of California, Berkeley. 2016-2017
Project: Industrial bees: when agricultural intensification doesn't impact local disease prevalence.

PRESENTATIONS

Invited Talks

- *University of Ottawa, Apples Math Seminar.* Ottawa, ON, Canada Dec., 2020
- *University of Guelph, Pathobiology.* Guelph, ON, Canada March, 2020
- *Rochester Institute of Technology, School of Mathematical Sciences.* Rochester, NY, USA Feb., 2020
- *San Jose State University, Colloquium, Department of Mathematics.* San Jose, CA, USA Oct., 2019
- *Queen's University, EEB Seminar.* Kingston, ON, Canada Sept., 2019
- *McMaster University, Department of Biology.* Hamilton, ON, Canada Sept., 2019
- *Trent University, Department of Mathematics.* Peterborough, ON, Canada Dec., 2018
- *University of Guelph, Animal Biosciences.* Guelph, ON, Canada Oct., 2018
- *McMaster University, Department of Biology.* Hamilton, ON, Canada July, 2010
- *UBCO Graduate Seminar.* Kelowna, BC, Canada Oct., 2010
- *Direction de Santé Publique.* Montreal, QC, Canada Jan., 2010

Presentations

- *Society for Mathematical Biology.* Montreal, QC, Canada July, 2019
- *Disease Ecology Meeting Princeton/UCB/Hokkaido.* Sausalito, CA Sept., 2018
- *Society for Mathematical Biology.* Sydney, NSW, Australia July, 2018
- *Society for Mathematical Biology.* Salt Lake City, UT, USA July, 2017
- *Evolution.* Austin, TX, USA June, 2016
- *Society for Mathematical Biology.* Knoxville, TN, USA July, 2013
- *PIMS IGTC Summit.* Naramata, BC, Canada Oct., 2010

Posters

- *Ecology and Evolution of Infectious Diseases.* Santa Barbara, CA, USA June, 2017
- *Ecology and Evolution of Infectious Diseases.* Ithaca, NY, USA June, 2016
- *Ecology and Evolution of Infectious Diseases.* Athens, GA, USA May, 2015

- *Ecology and Evolution of Infectious Diseases*. Fort Collins, CO, USA May, 2014
- *Canadian Math Society Winter Meeting*. Ottawa, ON, Canada Dec., 2013

ACADEMIC SERVICE

Committees

- Science Curriculum Committee, York University, 2020-present

Journal Article Reviewer

- Evolution
- Journal of the Royal Society Interface
- Royal Society Open Science
- American Journal of Epidemiology
- Journal of Theoretical Biology
- Heliyon

Editor

- Newsletter Editor, Canadian Mathematics Education Study Group, 2016-2019

Science Camp Instructor/Coordinator

- *Math Festival*, Gr. 9-12, Marin Academy, Marin, CA Fall, 2016
- *Math Quest, Queen's Math Camp for Girls*, Gr.10-11, Queen's University 2014-2016
- *Enrichment Studies Unit , course for at risk students*, Gr.7-8, Queen's University Fall, 2015
- *Enrichment Studies Unit , academic mini course*, Gr.7-8, Queen's University Fall, 2014

Exhibit Organizer

- College Royal, Club Exhibit, Math&Stats Club, University of Guelph Winter, 2008

Voluntary Positions Held

- *High School Tutor*, Oakland Technical High School, Oakland, CA 2019
- *High School Tutor*, Girls Inc. of Alameda, Oakland, CA 2018 - 2019
- *President of the Graduate Math Society*, Queen's University 2013 - 2014
- *Tutor*, Westwood School (for students with mental health issues), Kingston, ON Fall, 2012
- *Science Fair Judge*, Glenmore Elementary School, (2010), Kelowna, BC Fall, 2010
- *President of the Mathematics and Statistics Club*, University of Guelph 2007- 2008
- *Student Council Member* , University of Guelph 2007 - 2008

GRANTS

Egg Farmers of Canada, \$10,000 CAD *Sept., 2016*
Reducing the economic impact of Marek's disease on egg production through the use of floor pens as hen housing.

SMB Landahl-Busenbergr travel grant, \$750 USD *Summer, 2018*

Queen Elizabeth II Graduate Scholarship in Science and Technology, \$15,000 CAD
 Queen's University, Kingston, ON. Winter, 2014