

Jessica Maral Conway

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CONTACT INFORMATION

Department of Mathematics
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EDUCATION

Ph.D., Applied Mathematics, 2008; Northwestern University, Evanston, IL, USA

Dissertation advisor: Prof. Hermann Riecke

Dissertation title: "Complex Patterns in Oscillatory Systems"

M.S. Applied Mathematics, 2003; Northwestern University, Evanston, IL, USA

B.S. Honours Applied Mathematics, 2002; McGill University, Montreal, Qc, Canada

PROFESSIONAL HISTORY

- 2014 - Present **Assistant Professor**, Pennsylvania State University
- 2012 - 2014 **Postdoctoral Fellow**, Los Alamos National Laboratory
- 2008 - 2012 **Postdoctoral Fellow**, Department of Mathematics, University of British Columbia
- 2008 - 2010 **Postdoctoral Fellow**, Division of Mathematical Modeling (DMM), UBC Centre for Disease Control, University of British Columbia
- 2003-2008 **Graduate Research Assistant**, Engineering Sciences and Applied Mathematics Department, Northwestern University
- Summer 2002 **Undergraduate Research Assistant**, Department of Mathematics, McGill University

HONORS

- May 2013 *Mathematics Travel Grants for Women Researchers*, Association of Women in Mathematics (SIAM Conference on Applications of Dynamical Systems; \$1350 USD)
- Jun 2010-Nov 2011 *Fellowship Award in the Area of Biomedical / Clinical HIV/AIDS Research* (\$67 500 CAD) Canadian Institutes of Health Research (CIHR), Canada
- 2010 *Postdoctoral Teaching Award*, for excellence in mathematics teaching UBC Department of Mathematics
- 2008-2009 (declined) *Visiting Fellowships in Canadian Government Laboratories (VF)* National Sciences and Engineering Research Council, Canada
- Mar-Jun 2008 *Smith Fellowship* (approx. \$6800 USD) Northwestern University
- Sep 2002-Jun 2003 *Walter P. Murphy Fellowship* (approx \$50 000 USD), Northwestern University

PUBLICATIONS

- B. Konrad, D. Taylor, J.M. Conway, G. Ogilvie, and D. Coombs, "On the duration of the period between exposure to HIV and detectable infection," *submitted*.
- J.M. Conway and A.S. Perelson, "Residual viremia in treated HIV+ individuals," *PLoS Comput Biol* **12**(2016):e1004677.
- T.T. Immonen, J.M. Conway, E. Romero-Severson, A.S. Perelson, and T. Leitner, "Recombination facilitates survival of latent HIV1 lineages in the replicating population," *PLoS Comput Biol* **11**(2015):e1004625.
- J.M. Conway and A.S. Perelson, "Post-treatment control of HIV infection," *PNAS* **112**(2015):54675472.
- L. Canini, S. DebRoy, Z. Mariño, J.M. Conway, G. Crespo, M. Navasa, M. D'Amato, P. Ferenci, S.J. Cotler, and A.S. Perelson, "Severity of liver disease affects hepatitis C virus kinetics in patients treated with intravenous silibinin monotherapy," *Antivir Ther* **20**(2015):149-155.
- J.M. Conway and A.S. Perelson, "A hepatitis C virus infection model with time-varying drug effectiveness: solution and analysis," *PLoS Comput Biol* **10**(2014):e1003769.

- L. Canini, J.M. Conway, A.S. Perelson, and F. Carrat, "Impact of Different Oseltamivir Regimens on Treating Influenza A Virus Infection and Resistance Emergence: Insights from a Modelling Study," *PLoS Comput Biol* **10**(2014):e1003568.
- J.M. Conway, B.P. Konrad, and D. Coombs, "Stochastic analysis of pre- and post-exposure prophylaxis against HIV infection," *SIAM J Appl Math* **73**(2013):904-928.
- J.M. Conway et al, "Vaccination against 2009 pandemic H1N1 in a population dynamical model of Vancouver, Canada: timing is everything," *BMC Public Health*, **11**(2011):932.
- J.M. Conway and D. Coombs, "A stochastic model of latently infected cell reactivation and viral blip generation in treated HIV patients," *PLoS Comput Biol* **7**(2011):e1002033.
- J.M. Conway and H. Riecke, "Superlattice patterns in the complex Ginzburg-Landau equation with multi-resonant forcing," *SIAM J of Appl Dyn Sys* **8**(2009):977.
- J.M. Conway and H. Riecke, "Quasipatterns in a model for chemical oscillations forced at multiple resonance frequencies," *Phys Rev Lett* **99**(2007):218301.
- J.M. Conway and H. Riecke, "Multiresonant forcing of the complex Ginzburg-Landau equation: pattern selection," *Phys Rev E* **76**(2007):057202.

SCIENTIFIC PRESENTATIONS (2010-present)

'Within-host viral infections'

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|-----------|---------------|---|
| Jan 2016 | (invited) | Fred Hutch Math Modeling Affinity Group Seminar, Fred Hutchinson Cancer Research Center, Seattle WA |
| Jan 2016 | (invited) | AMS Special Session on Recent Advances in Dynamical Systems and Mathematical Biology; 2016 Joint Mathematics Meetings, Seattle WA |
| Oct 2015 | (invited) | Applied Math Seminar, University of Missouri-Kansas City, Kansas City MO |
| Oct 2015 | (invited) | 5th International Conferences on Mathematical Modelling and Analysis of Populations in Biological Systems, London ON, Canada |
| Aug 2015 | (invited) | CNLS Seminar, Los Alamos National Laboratory, Los Alamos NM |
| Jul 2015 | (contributed) | 2nd Workshop on Virus Dynamics, Fields Institute, Toronto ON Canada |
| Jul 2015 | (invited) | Minisymposium on Modeling HIV Latency, Persistence and Treatment; Society for Mathematical Biology Annual Meeting, Atlanta GA |
| May 2015 | (invited) | Minisymposium on Advances in Viral Infection Modeling; SIAM Conference on Applications of Dynamical Systems, Snowbird UT |
| May 2015 | (invited) | 22nd International HIV Dynamics & Evolution, Hungarian Academy of Sciences, Budapest, Hungary |
| Mar 2015 | (invited) | Special Session on Within-Host Disease Modeling; AMS Spring Eastern Sectional Meeting, Georgetown University, Washington, D.C. |
| Oct 2014 | (invited) | Applied Mathematics Seminar, University of Delaware, Newark DE |
| Oct 2014 | (poster) | Strategies for an HIV Cure, NIH Main Campus, Bethesda MD |
| Oct 2014 | (invited) | Seventh International Symposium on Biomathematics and Ecology: Education and Research (BEER), Claremont CA |
| Sept 2014 | (invited) | Center for Infectious Disease Dynamics (CIDD) Seminar, Pennsylvania State University, University Park PA |
| Aug 2014 | (invited) | Minisymposium on Advances in Mathematical Modeling of Complex Aspects and Control of Some Prevalent Infectious Diseases; SIAM Conference on the Life Sciences, Charlotte NC |
| Jul 2014 | (invited) | Minisymposium on Recent Advances in Mathematical Epidemiology, Ecology and Population Dynamics; 2014 SIAM Annual Meeting, Chicago IL |
| Feb 2014 | (invited) | Mathematical Biology Seminar, Department of Mathematics, Duke University, Durham NC |
| Feb 2014 | (invited) | Special Colloquium, Department of Mathematics, Pennsylvania State University, University Park PA |

SCIENTIFIC PRESENTATIONS (2010-present), CONT'D

'Within-Host viral infections' (cont'd)

- Nov 2013 (invited) Mathematical Biology Seminar, Department of Mathematics, Florida State University, Gainesville FL
- May 2013 (invited) Minisymposium on Branching Processes in Biology; SIAM Conference on Applications of Dynamical Systems, Snowbird UT
- Feb 2013 (invited) Mathematical Biology and Physiology Seminar, Department of Mathematics, Pennsylvania State University, University Park PA
- Jan 2013 (invited) Disease Dynamics 2013: Immunization, a true multi-scale problem Vancouver, BC Canada
- Jul 2012 (contributed) Society for Mathematical Biology Annual Meeting, Knoxville TN USA
- Mar 2012 (contributed) Frontiers in Mathematical Biology: Young Investigators Conference, College Park MD USA
- Feb 2012 (invited) MSCS Colloquium, Marquette University, Milwaukee WI USA
- Feb 2012 (invited) Department of Mathematics Colloquium, Iowa State University, Ames IA USA
- Feb 2012 (invited) Mathematics Colloquia, University of Michigan-Dearborn, Dearborn MI USA
- Jan 2012 (invited) Department of Mathematics Colloquium, Virginia Tech, Blacksburg VA USA
- Jan 2012 (invited) Mathematics & Statistics Colloquium, American University, Washington DC USA
- Jan 2012 (contributed) International Workshop - Systems Approaches in Immunology: Advances and Challenges in Multi-Scale Modeling, Santa Fe NM USA
- Jan 2012 (contributed) International Workshop - Systems Approaches in Immunology: Advances and Challenges in Multi-Scale Modeling, Santa Fe NM USA
- Jul 2011 (contributed) International Congress on Industrial & Applied Mathematics, Vancouver BC Canada
- Jul 2011 (invited) Computational Math Day 2011, Simon Fraser University
- Jun 2011 (contributed) European Conference on Mathematical and Theoretical Biology, Krakow, Poland
- Jan 2011 (invited) Applied and Industrial Mathematics Seminar, York University
- Jul 2010 (invited) Fields Institute Summer 2010 Thematic Program on the Mathematics of Drug Resistance in Infectious Diseases, Theme Weeks on Mathematical Immunology.
- Mar 2010 (invited) Probability Seminar, University of British Columbia
- Jan 2010 (poster) International Workshop - Systems Approaches in Immunology: Advances and Challenges in Multi-Scale Modeling, Santa Fe NM USA

'Epidemic modeling'

- Jul 2011 (invited) Minisymposium on Epidemic Spread on Networks; International Congress on Industrial & Applied Mathematics, Vancouver BC Canada
- May 2011 (invited) Minisymposium on Epidemiology, Population Dynamics and Networks I; SIAM Conference on Applications of Dynamical Systems, Snowbird UT USA
- Jan 2011 (invited) CIC Workshop on Mathematics in Emerging Infectious Diseases, Cuernavaca Mexico
- May 2010 (contributed) University of British Columbia, Mathematical Biology Work-in-Progress
- Mar 2010 (invited) Grand Rounds, BC Centre for Disease Control
(with Drs. Malcolm Steinberg, Mel Krajden, and Bill Coleman)

ACTIVITIES**Service**

- Aug 2015 BIRS Workshop on Viral Dynamics and Cancer: Modeling Oncogenic and Oncolytic Viruses (15w5095), Oaxaca, Mexico
Conference organizer (co-lead) with Rafael Meza (University of Michigan), Mads Kaern (University of Ottawa), and Jack Tuszynski (University of Alberta)
- Jul 2015 Society for Mathematical Biology Annual Meeting, Atlanta GA, USA
Organizer, contributed mini-symposium on Modeling HIV Latency, Persistence and Treatment, with Ruian Ke (North Carolina State University)

ACTIVITIES, CONT'D**Service (cont'd)**

- Jun 2015 Penn State's Science U camp: Infection!, State College PA, USA
Week-long science camp aimed at high-school students on causes and consequences of an infectious disease outbreak; *Instructor* with Lauren Quevillon (director) and David Hughes (Penn State)
- May 2015 SIAM Conference on Applications of Dynamical Systems, Snowbird, UT USA
Organizer; contributed mini-symposium on Advances in Viral Infection Modeling, with Naveen Vaidya (University of Missouri-Kansas City)
- May 2013 SIAM Conference on Applications of Dynamical Systems, Snowbird, UT USA
Organizer; contributed mini-symposium on Branching Processes in Biology, with Paul Tupper (Simon Fraser University)
- Jan 2013 Disease Dynamics 2013: Immunization, a true multi-scale problem, Vancouver, BC Canada
Conference organizer (lead) with Daniel Coombs (University of British Columbia) and Rafael Meza (University of Michigan)
- Jul 2010 31st CAIMS*SCMAI Annual Meeting, St John's NL Canada
Organizer; contributed mini-symposium on Mathematical Techniques in Disease Modeling
- Jul 2009 Annual Meeting of the Society for Mathematical Biology, Vancouver BC Canada
Scientific planning, aided in selection from contributed talks/posters for presentation at the meeting.

Additional training

- Jun 2010 *American Association of Immunologists 2010 Introductory Course in Immunology*
University of Pennsylvania, Philadelphia PA USA
Intensive two-part course, taught by world-renowned immunologists, that provides a comprehensive overview of the basics of immunology.

TEACHING EXPERIENCE**Instructor**

- *Honors Ordinary and Partial Differential Equations*, The Pennsylvania State University
- *Honors Calculus with Analytic Geometry II*, The Pennsylvania State University
- *Calculus and Biology I*, The Pennsylvania State University
- *Ordinary Differential Equations*, University of British Columbia
- *Partial Differential Equations*, University of British Columbia
- *Linear Differential Equations*, University of British Columbia
- *Multiple Integration and Vector Calculus*, Northwestern University

Supervisor

- Sep 2015 - present *Student*: Hannah Herriott, undergraduate, Pennsylvania State University
Project: "Predictive effectiveness of on-demand pre-exposure prophylaxis to prevent HIV"
- Jan 2015 - present *Student*: Rachel Hoellman, undergraduate, Pennsylvania State University
Project: "Optimizing vaccine distribution mid-influenza epidemic"
- Spring 2009 *Student*: Mani Hamidi, undergraduate, University of British Columbia
Final Report: "Computational Study of Multi-Strain Pathogen Dynamics in Host Networks"

LANGUAGES

English (fluent), French (fluent)

Computer Languages and Software: Fortran, Matlab, R, Maple, Mathematica, LaTeX, html

SOCIETY MEMBERSHIP

Society for Industrial and Applied Mathematics (SIAM)

Society for Mathematical Biology (SMB)