Timothy C. Reluga

Contact Information

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Professional History

Assistant Professor of Mathematics at Pennsylvania State University (July, 2007 - present)

Postdoctoral Researcher at Los Alamos National Lab (September, 2006 - June, 2007)

Research Fellow in Epidemiology and Public Health at Yale (October, 2004 - May, 2006)

Ph.D. in Applied Mathematics, supervised by Prof. Mark Kot,
University of Washington, Seattle, WA (June, 2004),
"Results on Temporal and Spatial Heterogeneity in Theoretical Ecology"

Boeing Award for Excellence
Department of Applied Mathematics, University of Washington, 2004

VIGRE Graduate Fellow, University of Washington
(September, 2001 - June, 2003)

Graduate Student, Teaching Assistant, and Lecturer at the University of Washington (September, 1998 - June, 2004)

B.S. with majors in Biology and Mathematics,
Tufts University, Medford, MA (June, 1998)

Publications

T. Reluga, J. Medlock, and A. S. Perelson. *Backward bifurcations and multiple equilibria in epidemic models with structured immunity*. Submitted, October 2007.

J. Medlock and T. Reluga. *Life history, dispersal, and stochasticity: multi-type branching random walks*. Submitted, October 2007.

T. Reluga, D. B. Walton, R. Meza, and A. Galvani. *Reservoir interactions and emerging infectious diseases*. Theoretical Population Biology, November 2007, volume 72, 400-408.

T. Reluga, J. Medlock, E. Poolman, and A. Galvani. *Optimal timing of disease transmission in an age-structured population*. Bulletin of Mathematical Biology, November 2007, volume 69, 2711-2722.

T. Reluga and J. Medlock. *Resistance mechanisms matter in SIRS models*. Mathematical Biosciences and Engineering, July 2007, volume 4, 553-563.

A. Galvani, T. Reluga, and G. Chapman. *Long-standing influenza vaccination policy is in accord with individual self-interest but not with the utilitarian optimum*. PNAS, March 27, 2007, volume 104, 5692-5697.

T. Reluga, C. Bauch, and A. Galvani. *Evolving public perceptions and stability in vaccine uptake*. Mathematical Biosciences, November 2006, volume 204, 185-198.

T. Reluga, J. Medlock, and A. Galvani. *A model of spatial epidemic spread when individuals move within overlapping home ranges*. Bulletin of Mathematical Biology, February, 2006, volume 68, 401-416.

T. Reluga. *On antibiotic cycling and optimal heterogeneity*. Mathematical Medicine and Biology, March 18, 2005, volume 22, 187-208.

T. Reluga and S. Viscido. *A model for the evolution of selfish herd behavior*. Journal of Theoretical Biology, January 2005, volume 234, 213-225.

H. Qian and T. Reluga. *Nonequilibrium thermodynamics of a nonlinear biochemical switch in a cellular signaling process*. Physical Review Letters, January 21, 2005, 028101.

M. Kot, J. Medlock, T. Reluga, and D. B. Walton. *Stochasticity, invasions, and branching random walks*. Theoretical Population Biology, November 2004, volume 66, 175-184.

T. Reluga. *Analysis of periodic growth–disturbance models*. Theoretical Population Biology, September 2004, volume 66, 151-161.

T. Reluga. *A two-phase epidemic driven by diffusion*. Journal of Theoretical Biology, July 2004, volume 229, 249-261.

Selected Talks

Population Games for Vaccination and Epidemiology (DIMACS Workshop on Game Theoretic Approaches to Epidemiology and Ecology, October 15, 2007)

Modelling Influenza Vaccine Choice (Canadian Mathematical Society-MITACS Joint Conference, June 1, 2007)

Preliminary work on T cell recirculation and HIV infection (SIAM Annual Meeting, July 14, 2006)

Modeling ecological invasions (Yale Institute for Biospheric Studies, October 14, 2005)

Interaction-free particle systems for infectious disease modeling (Modeling the Dynamics of Human Diseases Conference, July 21, 2005)

Perspectives on optimizing vaccination policies (DIMACS Workshop on Evolutionary Considerations in Vaccine Use, June 28, 2005)

On spatial epidemic models and waves (WPI Invited Math Talk, March 23, 2005)

Poisson Bellman–Harris Orstein–Uhlenbeck processes and epidemic spread (MITACS-MSRI-PIMS Special Program on Infectious Diseases, July 1, 2004)

The theory of antibiotic cycling (UW Mathematical Biology Seminars, March 9 & 11, 2004)

Diffusion equations: Fourier to theoretical ecology (Applied Mathematics and Computer Science Seminar, 5th of December, 2003)

Problems in integrating evolution and ecology: Ising models and the virtues of incrementalism (Mathematical Biology Seminars, April 15 & 17, 2003)

Community Activities

Articles reviewed for *Theoretical Population Biology*, *Journal of Theoretical Biology*, *Mathematical Biosciences*, *Mathematical Biosciences and Engineering*, *Journal of Applied Ecology*, *Population Ecology*, *Advances in Complex Systems*, *Mathematical Medicine and Biology*, *Applied Mathematical Modelling*, *PLOS One*, and conference proceedings. Contributed to reviews for *Nature*, *PLOS*, and *PNAS*.

Co-organizer for DIMACS *Game Theoretic Approaches to Epidemiology and Ecology* Workshop, October, 2007.

Disease Mechanisms in the Human Body minisymposium organizer at SIAM'06.

Organizer of the Theoretical Immunology Journal Club at LANL (September, 2006 - March, 2007).

Co-Organizer of the UW Mathematical Ecology Journal Club (October, 2002 - June, 2004)

Co-Founder and Treasurer of the SIAMUW (August, 2003 - July, 2004)

UW Graduate and Professional Student Senator (Fall, 2002 - Spring, 2004)

Professional Society Memberships

Society for Mathematical Biology (SMB, since 2001)

Society for Industrial and Applied Mathematics (SIAM, since 2001)

Mathematical Association of America (MAA, since 2001)

American Mathematical Society (AMS, since 2001)

Federation of American Scientists (FAS, since 2002)

American Economics Association (AEA, since 2005)

References

Senior Fellow Alan Perelson (Postdoctoral supervisor)
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Los Alamos National Laboratory
Los Alamos, NM 87545
505.667.6829
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Assistant Professor Alison Galvani (Postdoctoral supervisor)
Department of Epidemiology and Public Health
Yale University Medical School
P.O. Box 208034
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Associate Professor Mark Kot (Doctoral Adviser)
Department of Applied Mathematics
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Seattle, WA 98195-2420 USA
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Professor Hong Qian (PhD Committee Member)
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Associate Professor Carl T. Bergstrom (PhD Committee Member)
Department of Biology
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Professor Selim Tuncel (Teaching and General Reference)
Department of Mathematics
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selim@math.washington.edu