

# Eli E. Goldwyn

## Education

- 2008 **PhD**, *University of California, Davis*.  
When Can Dispersal Synchronize Populations?  
*Advisor*: Alan Hastings
- 2003 **MS**, *New York University, Courant Institute*.  
Continuous and Discrete Disease Transmission Models  
*Thesis Advisor*: Jerome Percus
- 1999 **BA**, *Pomona College*.  
Dissipation in Food Web Models  
*Thesis Advisor*: Richard Elderkin

## Research Interests

I am interested in understanding the mechanisms driving ecological and epidemiological systems over different spatial and temporal scales through the use of techniques in dynamical systems, perturbation theory, asymptotic analysis, and likelihood inference.

## Academic Positions

- 1/2011–current **NSF Lecturer**, *University of California, Davis*, Dept. of Mathematics.  
Calculus II for Biological Sciences
- 1/2010–1/2011 **Postdoctoral Research Fellow**, *University of Michigan*, Dept. of Ecology and Evolutionary Biology.  
Supervisor: Pejman Rohani  
Applied synthetic likelihood techniques on mechanistic disease transmission models with pertussis incidence data in the United States.
- 9/2008–12/2010 **Postdoctoral Fellow**, *University of Chicago*, Dept. of Ecology and Evolution.  
Supervisor: Greg Dwyer  
Developed data driven disease models of the gypsy moth and its two pathogens
- 2009–current **Research Mentor**, *University of Chicago*, Dept. of Ecology and Evolution.  
Student: Hidetoshi Inamine  
Studied the effects of stochasticity on the between-season dynamics of the North American gypsy moth
- 2003–2008 **Graduate Student Researcher**, *University of California, Davis*, Dept. of Mathematics.  
Alan Hastings  
Studied the roles of dispersal and the Moran effect on synchrony in spatial coupled predator-prey models

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## Additional Teaching Experience

- Fall 2005 & 2006 **Associate Instructor**, *University of California, Davis*, Dept. of Mathematics.  
Pre-Calculus
- 3 quarters **Teaching Assistant**, *University of California, Davis*, Dept. of Mathematics.  
Ordinary Differential Equation  
Introduction to Ordinary Differential Equations  
Calculus I and II

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## Academic Service

- 2007-2008 **Representative to Graduate Group in Applied Mathematics**, *University of California, Davis*, Dept. of Mathematics.  
Acted as liaison between faculty and graduate students
- 2007-2008 **Executive Committee Member**, *Davis Chapter Student SIAM Club*.  
Organized Davis SIAM Student Research Conference (DSSRC)  
Served on five person committee organizing and running SIAM club

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## Additional Research Experience

- 2003-2004 **Researcher**, *Sloan Kettering Research Center*, Larry Norton.  
Studied the growth of tumor cells using Gompertzian dynamics and fractal geometry

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## Publications

- [1] E.E. Goldwyn and A. Hastings. When can dispersal synchronize populations? *Theoretical Population Biology*, 73:395–402, 2008.
- [2] E.E. Goldwyn and A. Hastings. Small heterogeneity has a large effect on predator-prey oscillators. *Bulletin of Mathematical Biology*, 71:130–144, 2009.
- [3] E.E. Goldwyn and A. Hastings. The roles of the Moran Effect and dispersal in synchronizing oscillating populations. *Journal of Theoretical Biology*, 289:237 – 246, 2011.
- [4] E.E. Goldwyn and P. Rohani. Pertussis reporting bias and its public health implications. *American Journal of Epidemiology*, In Review, .
- [5] E.E. Goldwyn and G. Dwyer. Data-driven models of pathogen competition in gypsy moth competitions. in prep .
- [6] E.E. Goldwyn and P. Rohani. Seasonality and spatial lag in us pertussis outbreaks. in prep .

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## Presentation

### Select Talks

- January 2011 **Ecology and Evolutionary Biology Theory Group, University of Michigan**,  
*Data Driven Models of Pathogen Competition in Gypsy Moth Populations*.
- November 2010 **Eco-Shake, University of Chicago**, *Data Driven Models of Pathogen Competition in Gypsy Moth Populations*.
- May 2008 **Student Run Math/Applied Math Seminar, University of California, Davis**,  
*When Can Dispersal Synchronize Populations?*.

- July 2007 **Society of Mathematical Biology, Annual Meeting**, *Phase Models and Synchrony in Predator-Prey Oscillators*.
- May 2006 **Undergraduate Math Seminar, University of California, Davis**, *Effects of Migration on Predator-Prey Oscillators*.
- December 2005 **Mathematical Biology Seminar, University of California, Davis**, *Phase Behavior Predator-Prey Oscillators*.
- April 1999 **Mathematics Seminar, Pomona College**, *Dissipation in Food Web Models*.

### Poster Sessions

- June 2011 **Ecology and Evolution of Infectious Diseases Conference**, *Maximum Likelihood and MCMC Methods in Multi-Pathogen Competition Models in Gypsy Moth Populations*.
- March 2010 **USDAs Agriculture Research Service (ARS) Awardee Workshop**, *Data Driven Models of Multi-Pathogen Competition in Gypsy Moth Populations*.
- May 2009 **Math Biology Workshop on Building an Interdisciplinary Career**, *Multi-Pathogen Competition Models in Gypsy Moth Populations*.

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### Reviewer

Journal of Mathematical Biology  
 Journal of Theoretical Ecology  
 Journal of Theoretical Biology  
 Journal of Biological Dynamics

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### Grants Awarded

- 2007 **VIGRE Summer Research Fellowship**, *University of California, Davis*, Dept. of Mathematics.
- 7 quarters **VIGRE Fellowship**, *University of California, Davis*, Dept. of Mathematics.

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### Computer skills

C, MatLab, XPP,  $\text{\LaTeX}$

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### References

**Alan Hastings**, [amhastings@ucdavis.edu](mailto:amhastings@ucdavis.edu), University of California, Davis.  
**Greg Dwyer**, [gdwyer@uchicago.edu](mailto:gdwyer@uchicago.edu), University of Chicago.  
**Timothy Lewis**, [tjlewis@ucdavis.edu](mailto:tjlewis@ucdavis.edu), University of California, Davis.