Eli E. Goldwyn

Department of Mathematics
Trinity College
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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, asymptotic analysis, and statistical inference.

Academic Positions

2014–current   **Harold L. Dorwart Visiting Assistant Professor**, *Trinity College*, Dept. of Mathematics.

2012–2014   **Lecturer**, *University of California, Davis*, Dept. of Mathematics.

2011–2012   **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.

2008–2010   **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

2003–2008   **Graduate Student**, *University of California, Davis*, Dept. of Mathematics.
Advisor: Alan Hastings
Studied the roles of dispersal and the Moran effect on synchrony in spatial coupled predator-prey models

Teaching Awards

2013   **ASUCD Excellence in Education Award**, University of California, Davis.
Division of Math and Physical Sciences

Teaching Experience

Trinity College

2014–Present   **Course Instructor**.
- Special Topics in Mathematical Biology
- Mathematical Modeling
- Statistical Data Analysis
- Calculus I
- Numerical Analysis

2015–Present   **Undergraduate Research Advisor**.
- *Modeling Disease Outbreaks at Colleges Using Social Networks*, Subekshya Bidari (2016)
  - Poster Presentation: Undergraduate Capstone Conference, Mathematical Biosciences Institute.
  - Poster Presentation: Pi Mu Epsilon Student Paper Sessions, Mathfest
- *Reaction Diffusion Models of Long-Bone Growth and Repair*, Rachel Lee, senior thesis (2016)
- *Creating an Adaptive ODE solver for an oscillatory system using phase sensitivity*, Kalyan Parajuli (2016)
- *Statistical Analysis of the Trinity College Math Placement Exam*, Yaoqui Guo (2016)
- *Modeling an Influenza Outbreak at a Residential College*, Subekshya Bidari (2015)
  - Poster Presentation: Student Paper Sessions, Mathfest
- *Numerical Accuracy of the Lotka-Volterra Predator-Prey Model Using Different ODE solvers*, Pranav Bhandari (2015)

2015–Present   **Independent Studies Led**.
- Dynamical Systems in Population Ecology
- Statistical Analysis II with R (Multiple Regression, ANOVA, and Chi-Square Distributions)
- Introduction to Machine Learning
- Convolutional Neural Networks for Visual Recognition

University of California, Davis

2012–2014   **Course Instructor**.
- Calculus III; Business Calculus I,III; Calculus for the Life Sciences I,II,III
- Linear Algebra
- Introduction to Abstract Math

Summers 2012-14   **Instructor**, *COSMOS*.
- Organized and Instructed high achieving high school students in a month long program focusing on mathematical modeling of biological systems (with three other UC Davis faculty)

2005-2006   **Associate Instructor**.
- Pre-Calculus

2003-2008   **Teaching Assistant**.
- Dynamical Systems, Differential Equations, Calculus I, II, and III

Additional Research Experience

Summer 2016   **Participant**, *Mathematical Problems in Industy (MPI)*.
"Hybrid Programmatic TV Markets,Clypd

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

Service

Fall 2016	**Program Committee**, Fall Meeting: Northeastern Section of the MAA.
2016-2017	**Statistics Committee**, Redesigning the Syllabus for *Statistical Data Analysis* Class to Make it More Appropriate as an Upper Level Math Class.
Summer 2015	**Calculus Committee**, Redesigned the Syllabus For Calculus I and Added Appied "Interludes".
Summer 2013	**Content Review Expert for the 2014 Mathematics Primary Adoption**, California Dept. of Education.
	Evaluated instructional material for grades 6-8 for mathematical accuracy and content standards

Publications

in prep	Bidari, S. and Goldwyn, E.E.; *"Modeling an Influenza Outbreak on a Residential College Campus"*
in prep	Goldwyn, E.E. and Dwyer, G.; *"Data–Driven Models of the North American Gypsy Moth and Its Two Pathogens"*
in review	Kyle, C, Goldwyn, E.E. and Dwyer, G.; *"Disentangling the Effects of Weather and Density on the Dynamics of a Fugal Pathogen"*, PNAS
2014	Goldwyn, E.E.; *"Instructor's Manual: Calculus for the Biosciences"*, Wiley
2013	Goldwyn, E.E. and Rohani, P..; *"Bias in Pertussis Incidence Data and its Implications for Public Health Epidemiology"*, Journal of Public Health Management and Practice
2011	Goldwyn, E.E. and Hastings, A..; *"The Roles of the Moran Effect and Dispersal in Synchronizing Oscillating Populations"*, Journal of Theoretical Biology
2009	Goldwyn, E.E. and Hastings, A..; *"Small Heterogeneity Has a Large Effect on Predator-Prey Oscillators"*,Bulletin of Mathematical Biology
2008	Goldwyn, E.E. and Hastings, A..; *"When Can Dispersal Synchronize Populations?"*, Theoretical Population Biology

Reviewer

National Science Foundation Proposal

Nature Communications

Journal of Mathematical Biology

Journal of Theoretical Ecology

Journal of Theoretical Biology

Journal of Biological Dynamics

Journal of Public Health Management and Practice

Nature Communications

Computer skills

Matlab, HTML, LaTeX, C, R, XPP

References

Tim Lewis, *Mathematics Department, UC Davis*, Professor, tjlewis@ucdavis.edu.

Alan Hastings, *Department of Environmental Science and Policy, UC Davis*, Distinguished Professor, amhastings@ucdavis.edu.

David Mauro, *Mathematics Department*, Professor, david.mauro@trincoll.edu.

Greg Dwyer, *Department of Ecology and Evolution, University of Chicago*, Professor, gdwyer@uchicago.edu.