

# Glenn S. Young

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## Education

- August 2016      Ph.D. Mathematics, **University of Pittsburgh**  
Advisors: Jonathan E. Rubin and G. Bard Ermentrout  
Thesis title: Pathogen dynamics: Modeling and analysis of competition, organization, and vaccination
- December 2012    M.A Mathematics, **University of Pittsburgh**
- May 2010          B.S. Mathematics, **James Madison University**  
Cum Laude

## Academic Employment

- 2019–Present    Assistant Professor, Kennesaw State University  
Department of Mathematics
- 2016–2019       Postdoc, The Pennsylvania State University  
Mentor: Andrew Belmonte
- 2010–2013       Graduate student research, University of Pittsburgh
- 2013–2016       Teaching assistant, University of Pittsburgh

## Research Interests

Mathematical ecology; evolutionary game theory; public goods and cooperation; competition  
Applied dynamical systems, PDEs, and stochastic modeling

## Publications and Presentations

### Papers

- Mysliwiec, J.\* and **Young, G.** “Analysis of a two-population chemotaxis model with competitive dynamics.” *In preparation.*
- Young, G.** and Belmonte, A. “Explicit formula for fixation probability among mutual competitors in a stochastic population model under competitive trade-offs.” *In preparation.* (Preprint available)
- Young, G.** and Murray, R. “Wright-Fisher dynamics with periodic fitness fluctuations.” *In preparation.*
- Young, G.** and Belmonte, A. “Modeling the Chemical Kinetics of Nitric Oxide: Implications for Cell Donors and Processes.” *In preparation.*
- Young, G.**, Demir, M., Salman, H., Ermentrout, G.B., Rubin, J.E. Interactions of Solitary Pulses of *E. coli* in a One-Dimensional Nutrient Gradient. *Physica D: Nonlinear Phenomena.* In press.
- Young, G.** and Belmonte, A., 2018. Fast cheater migration stabilizes coexistence in a public goods dilemma on networks. *Theoretical Population Biology*, 121:12-25 (doi: 10.1016/j.tpb.2018.03.007).
- Young, G.**, Ermentrout, B. and Rubin, J.E., 2015. A Boundary Value Approach to Optimization with an Application to Salmonella Competition. *Bulletin of mathematical biology*, 77(7), pp.1327-1348. (doi: 10.1007/s11538-015-0087-3).
- Young, G.**, Shim, E. and Ermentrout, G.B., 2015. Qualitative Effects of Monovalent Vaccination Against Rotavirus: A Comparison of North America and South America. *Bulletin of mathematical biology*, 77(10), pp.1854-1885. (doi: 10.1007/s11538-015-0107-3).

\* Indicates undergraduate

## Oral Presentations

Explicit probability of fixation formula for mutual competitors in a stochastic population model under competitive trade-offs

JMM 2019, Baltimore, MD, January 19, 2019

Probability of fixation for mutual competitors in a stochastic ecological model under competitive trade-offs

Theoretical Biology Seminar, Penn State University, January 8, 2019

Fast Cheater Migration Stabilizes Coexistence in a Public Goods Dilemma on Networks

SIAM Conference on the Life Sciences, Minneapolis, MN, August 6, 2018

Evolutionary game theory: the mathematics of cooperation

Bucknell University Mathematics Department Student Colloquium Series, Lewisburg, PA, February 8, 2018 (Invited talk)

Fast cheater migration stabilizes coexistence in a public goods dilemma on networks

Dynamics Days 2018, Denver, CA, January 5, 2018

Interactions of Solitary Modes in Models of Bacterial Chemotaxis

Dynamics Days 2017, Silver Springs, MD, January 4-6, 2017

Temple University Applied Mathematics and Scientific Computing Seminar, October 12, 2016

University of Pittsburgh Department of Mathematics Complex Biological Systems Seminar, April 2, 2015

Modeling Extinction Events with a Galton-Watson Process

Carnegie Mellon University Department of Mathematical Sciences SIAM Seminar, February 3, 2015 (Invited talk)

University of Pittsburgh Department of Mathematics Undergraduate Mathematics Seminar, January 21, 2015

Optimal Self-Sacrifice Facilitates Pathogen Invasion of the Gut

The Society for Mathematical Biology Annual Meeting and Conference, June 10, 2013 (Invited talk)

SIAM Conference on Applications of Dynamical Systems, May 22, 2013 (Invited talk)

University of Pittsburgh Department of Mathematics Complex Biological Systems Seminar, October 16, 2012

Modeling Self-Sacrificing Bacteria

University of Pittsburgh Department of Mathematics Complex Biological Systems Seminar  
November 15, 2011

University of Pittsburgh Department of Mathematics Graduate Student Seminar  
November 10, 2011

Mathematical Modeling of Tail Movement

MAA-AMS Joint Mathematics Meeting 2010, San Francisco, CA January 16, 2010

Mathematical Modeling of the Nociceptive Withdrawal Response of the Tail in Spinalized Rats

Shenandoah Undergraduate Mathematics and Statistics Conference, James Madison University  
October 3, 2009

## Poster Presentations

Fast cheaters stabilize coexistence in a public goods game model of a queenless any colony

Penn State Postdoc Research Exhibition, September 22, 2017

Dynamics Days 2018, January 5, 2018

Interactions of Solitary Pulses of *E. Coli* in a One-Dimensional Nutrient Gradient

SIAM Conference on Applications of Dynamical Systems, May 23, 2017

Interactions of Solitary Modes in Models of Bacterial Chemotaxis

SIAM Conference on Applications of Dynamical Systems, May 19, 2015

*Winner of the Red Sock Award for best poster presentation*

Phenotypic Modulation Facilitates Pathogen Invasion of the Gut

SIAM Conference on the Life Sciences, Charlotte, NC August 5, 2014

Optimal Self Sacrifice Facilitates Pathogen Invasion of the Gut

Workshop for young researchers in mathematical biology, Mathematical Biosciences Institute, Ohio State University, Columbus, OH August 26, 2013.

SIAM Conference on the Life Sciences, San Diego, CA August 9, 2012

## Undergraduate Researchers Advised

Jeremy Mysliwicz Penn State University class of 2020  
 Funded for Summer 2018 by an Erickson Discovery Grant  
 Project title: *Analysis of a two-population chemotaxis model with competitive dynamics*

Cole Stine Penn State University class of 2021

## Teaching Experience

2016–Present **Penn State University**  
*Lecturer*  
 Advanced Calculus for Engineers and Scientists II  
 Calculus II  
 Techniques of Calculus I (online)

2010–2016 **University of Pittsburgh**  
*Lecturer*  
 Calculus I  
 Calculus III  
 Applied Differential Equations  
 Business Calculus

*Teaching Assistant*  
 Calculus I  
 Calculus II  
 Ordinary Differential Equations I  
 Theoretical One-Variable Calculus  
 Numerical Analysis

## Professional Activities and Service

### Activities

Secretary, University of Pittsburgh SIAM Student Chapter: 2012–2014.

Member, Society for Mathematical Biology: 2013-2014.

Member, Society for Industrial and Applied Mathematics: 2012-present.

### **Outreach**

Co-organizer, XPPAUT workshop, University of Pittsburgh Spring 2013.

Co-organizer, L<sup>A</sup>T<sub>E</sub>Xworkshop, University of Pittsburgh Spring 2013.

Co-organizer, Matlab ODE solver workshop, University of Pittsburgh Fall 2012.

Assistant, University of Pittsburgh College Integration Bee 2012-2014.

### **Reviewer**

Mathematical Biosciences, 2013.

BIOMATH, 2016.

### **Honors and Awards**

Dynamics Days travel award 2017 and 2018

Red Sock Award for best poster presentation at the SIAM Conference on the Applications of Dynamical Systems, May 2015 (poster title: “Interactions of Solitary Modes in Models of Bacterial Chemotaxis”).

SIAM Student Travel Award, August 2014, May 2015.

Applied Mathematics Award, James Madison University Department of Mathematics 2009-2010.

Undergraduate Research in Biology and Mathematics Scholarship, James Madison University  
August 2008-December 2009.

### **Technical skills**

Matlab, Java, XPPAUT, L<sup>A</sup>T<sub>E</sub>X