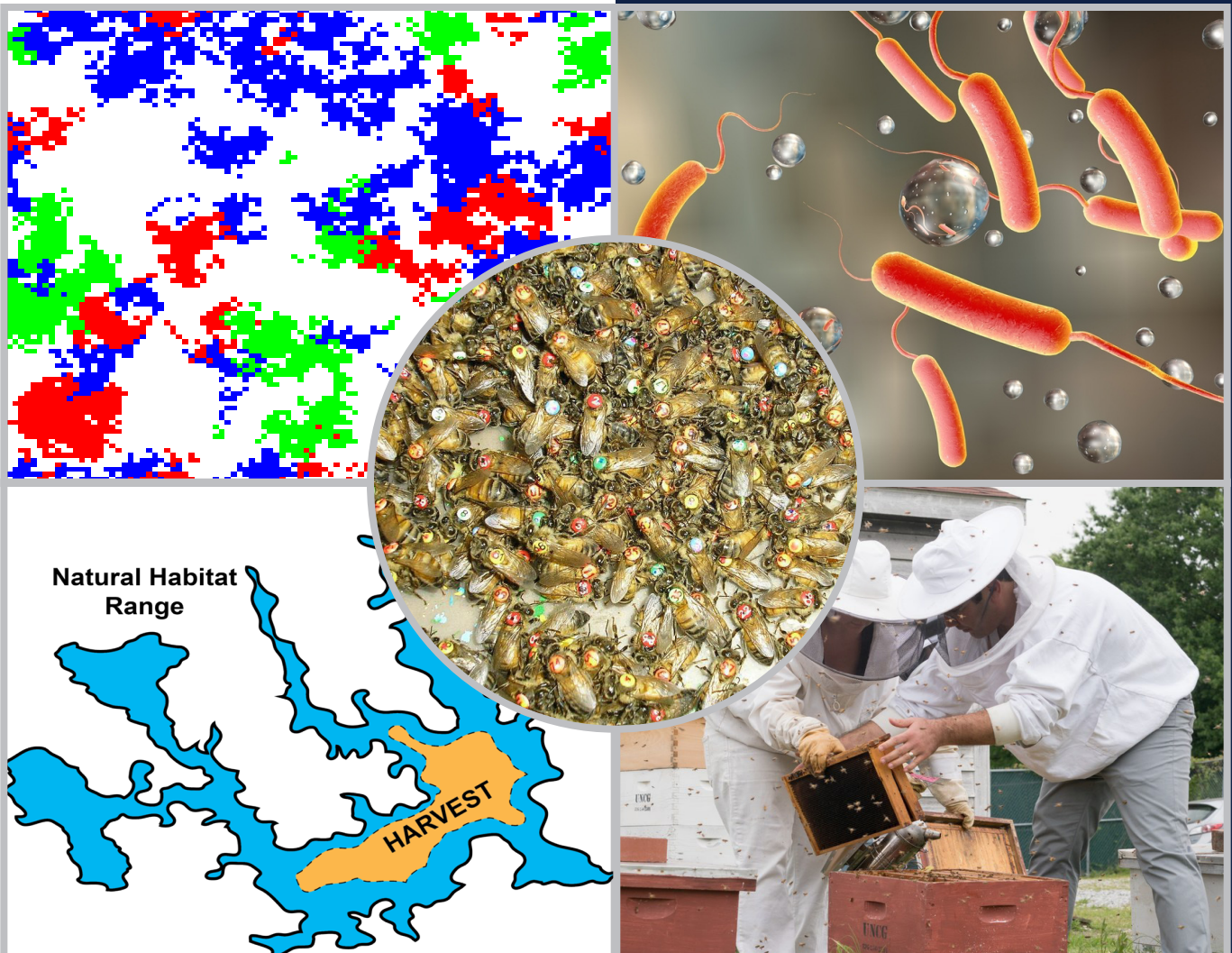




UNC
GREENSBORO

Department of
Mathematics & Statistics

MATHEMATICAL BIOLOGY



Mathematical biology is the application of mathematics to the study of biological systems. It uses a variety of techniques and tools drawn from all areas of mathematics including (linear) algebra, differential equations, game theory, optimization, probability, stochastic processes, and topology.

Mathematical models are utilized in such fields as bioinformatics, biophysics, cancer modeling, complex systems biology, ecology, epidemiology, evolutionary biology, genetics, molecular biology, physiological systems, and many others. These models range from analytical to computational.

MEET THE MATH-BIO FACULTY



Igor Erovenko
Associate Professor
www.uncg.edu/~i_eroven

Dr. Erovenko earned his PhD in mathematics from the University of Virginia in 2002. His research interests include evolutionary game theory, behavioral epidemiology, and evolutionary theoretical ecology. He has been actively involved in supervising student research and conference organization. He has been a PI and co-PI on two NSF-funded grants supporting undergraduate research.



Jonathan Rowell
Assistant Professor
www.uncg.edu/~jtrowell

Dr. Rowell earned his PhD in applied mathematics from Cornell University in 2003. His research includes theoretical ecology, sexual selection, adaptive movement, physiological dynamics, behavioral epidemiology, evolutionary game theory, signaling and social dynamics. He has supervised nearly 40 student researchers and has been a co-PI for UNCG's NSF-funded math-bio REU.



Jan Rychtář
Professor
www.uncg.edu/~j_rychta

Dr. Rychtář earned his PhD in mathematics from the University of Alberta in 2004. His research interests include evolutionary game theory and modeling complex systems. He supervised over 80 student research projects and has been a PI on NSF grants worth over \$1.5 million. He is the founder and organizer of the UNCG Regional Mathematics and Statistics Conference.



Ratnasingham Shivaji
H. Barton Excellence
Professor
www.uncg.edu/~r_shivaj

Dr. Shivaji earned his PhD in mathematics from Heriot-Watt University in 1981. His area of specialization is partial differential equations, and he is interested in spatial ecology applications. His research has been funded by the Simon's Foundation and three NSF grants, including an NSF Math Ecology grant. He has supervised projects of 50+ graduate and undergraduate students.



Clifford Smyth
Associate Professor
www.uncg.edu/~cdsmyth

Dr. Smyth earned his PhD in mathematics from Rutgers University in 2001. He primarily works in discrete mathematics but is involved in theoretical and computational simulations of disease systems and how they affect human populations. These systems include Leishmaniasis in Israel and the Lyme disease in the U.S. His research has been supported by NSA and the Simons Foundation.



Louis-Marie Bobay
Assistant Professor
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Matina Kalcounis-Ruepell
Professor
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David Remington
Associate Professor
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Olav Ruepell
Professor
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Gideon Wasserberg
Associate Professor
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OUR ACTIVITY

Research Areas

adaptive movement
bacterial recombination
behavioral epidemiology
evolutionary game theory
evolutionary graph theory
evolutionary theoretical ecology
individual-based modeling
modeling complex systems
kleptoparasitism
sexual selection
signaling theory
spatial ecology

Conferences

AIMS Conference on Dynamical Systems, Differential Equations, and Applications
AMS Sectional Meetings
International Symposium on Biomathematics and Ecology
Education and Research
Joint Mathematics Meetings
Mathematical Models in Ecology and Evolution
UNCG Regional Mathematics and Statistics Conference

Publication Journals

Americal Naturalist
Biology Letters
Bulletin of Mathematical Biology
Ecology and Evolution
Evolutionary Ecology
Journal of Mathematical Biology
Journal of Theoretical Biology
PLoS ONE
Proceedings of the Royal Society
Royal Society Open Science
Scientific Reports
Theoretical Population Biology

Collaborators



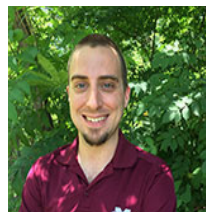
Mark Broom
Professor
City, University of London



James Cronin
Professor
Louisiana State University



Suzanne Lenhart
Professor
University of Tennessee



Garrett Street
Assistant Professor
Mississippi State University



Shan Sun
Associate Professor
Lanzhou University

Math-Bio REU

We have directed an NSF-sponsored Research Experiences for Undergraduates (REU) program in mathematical biology at UNCG since 2014.

46 undergraduate student participants
20 research projects completed
10 peer-reviewed publications
86 student presentations
35 schools represented
8 graduate student assistants
9 faculty mentors

Editorial Work

Communications in Applied Analysis
Computational and Mathematical Methods in Medicine
Dynamic Games and Applications
Electronic Journal of Differential Equations
Games
Journal of Statistical Theory and Practice
Journal of Statistics and Management Systems
North Carolina Journal of Mathematics and Statistics

By the Numbers

282 publications
1 book
1 book chapter
338 conference and invited presentations
136 undergraduate students supervised
21 MA/MS students supervised
13 PhD students supervised
40 conferences organized
37 sessions at conferences
100 years combined teaching experience
\$2.6 million external funding

STUDENT OPPORTUNITIES



Degree Programs

PhD in Computational Mathematics
MA in Mathematics
BA/BS in Mathematics
*Accelerated Degree Program to
earn BS and MA in 5 years*

Graduate Teaching Assistantships
Available

Student Research

Cancer models
Evolution of cooperation
Game theory and vaccination
Gene expression overlap
Hygienic behavior in honey bees
Spatial ecology
Social evolution
Territorial raider games



How To Contact Us

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