

CARRIE DIAZ EATON

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EDUCATION

University of Tennessee, Knoxville, TN

Ph.D. in Mathematics

Expected May 2010

- Concentration: Mathematical Biology
- Dissertation: "Modeling the genetic effects of mutualistic interactions"
- Advisor: Dr. Sergey Gavrillets

University of Maine, Orono, ME

M.A. in Mathematics

2004

- Concentration: Interdisciplinary Mathematics
- Thesis: "Ion channel dynamics in interneuron models of the cricket cercal sensory system."
- Advisor: Dr. Sharon Crook

University of Maine, Orono, ME

B.A. in Mathematics with Honors

2002

- Minor: Zoology
- Honors Thesis: "The mathematical properties and underlying structure of fast-spiking cell and networked cell models."
- Advisor: Dr. Sharon Crook
- Magna Cum Laude

HONORS AND AWARDS

Graduate Student Teaching Award, Department of Mathematics, University of Tennessee, 2009

University of Tennessee Graduate Student Teaching Chancellor's Award, 2008

Southern Regional Education Board Doctoral Scholars Program Award, 2005 – 2008

Science Alliance Associateship, University of Tennessee, 2004 – 2006

Full Tuition Scholarship, University of Maine, 1998 to 2002

Professor Warren S. Lucas Scholarship for the top Putnam scorer at the University of Maine scored top 20% in nation in 2000), 2001

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PROFESSIONAL SOCIETIES

American Mathematical Society
Association of Women Mathematicians
Society for the Study of Evolution
Society of Applied and Industrial Mathematicians
Society of Mathematical Biology

PUBLICATIONS

Eaton, CD. 2009. (*In preparation*) The genetics of mutualism: explaining co-evolutionary patterns.
Eaton, CD. 2008. Co-evolution. In *Encyclopedia of Ecology*, ed. Sven Erik Jorgensen & Brian D. Fath, 1st Edition, Elsevier B.V., Oxford, pg 659-663.
Eaton, CD, S Crook, G Cummins and GA Jacobs. 2004. Modeling ion channels from the cricket cercal sensory system. *Neurocomputing* 58-60:409-415.

GRANTS

Mathematical Biosciences Institute Workshop Travel Grant, February 2006, All expenses
GTA@itc! Grant 2006, Innovative Technology Center, "Delivering Mathematics: Reaching Out to 21st Century Students," University of Tennessee, Fall 2005, \$500
The Nancy Morse Dysart '60 Academic Travel Award, University of Maine, Fall 2002
Undergraduate Student Senate Grant to create the Pi Mu Epsilon Student Mathematics Lounge, University of Maine, Fall 2002
Honors Research and Travel Fund Grant, University of Maine, Summer 2002, All expenses
Work Merit Undergraduate Student Research Grant, University of Maine, Fall 2001, \$1000
Undergraduate Student Travel Fund Grant, University of Maine, Fall 2001

RESEARCH EXPERIENCE

Mathematical Evolutionary Theory

Graduate Research Assistant, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, TN, Fall 2005 – present

- Study mathematical evolutionary and population genetics models, with emphasis on the effect of ecological tactics and animal behavior in maintaining genetic variability, speciation and co-evolution. Currently developing models of coevolution in reciprocal mutualisms, using the fig/fig-wasp system as a model for investigating the role of interspecific mutualism in creating co-evolutionary phylogenetic network patterns.
- Work supervised by Dr. Sergey Gavrillets of the Department of Ecology and Evolutionary Biology and the Department of Mathematics and supported by NIH GM 56693 PI: Sergey Gavrillets and an associated NIH Supplemental Grant.

RESEARCH EXPERIENCE, cont.

Computational Neurobiology

Research Assistant, Department of Mathematics, University of Maine, Orono, Maine, May 2002 – July 2004

- Created models for the ion channels of interneurons important in the sensory processing of the cricket cercal system. Mathematically analyzed models and investigated the effects of various parameter choices to explore experimentally observed phenomena important in information processing. Also incorporated experimentally obtained realistic sensory input into the model to see its effect on our mathematical results.
- Work supervised by Dr. Sharon Crook and supported by NSF IBN-0091117 PI: Sharon Crook.

Computational Neurobiology

Mathematics Research Student, Department of Mathematics, University of Maine, Orono, Maine, May 2001 – May 2002

- Extended models of interneurons important in the sensory processing in the rat barrel cortex to investigate regions of stable synchronous and asynchronous spiking in chemically and electrically networked models.
- Work supervised by Dr. Sharon Crook and supported by NSF-0091117 PI: Sharon Crook and Work Merit Award.

Applied Topology

Mathematics Research Student, Department of Mathematics, University of Maine, Orono, Maine, January 2000 – May 2001

- Explored a topological approach to alternative methods of representing spatial data of relationships objects in the context of applications in Geographic Information Systems.
- Work supervised by Dr. Robert Franzosa and supported by the National Center for Geographic Information and Analysis.

TEACHING EXPERIENCE

****special note**** The 590/598 courses are a result of a proposal I completed to create a GTA training program and College Mathematics Teaching Program. I developed, implemented, and lead or co-facilitated these courses with the invaluable help of colleagues. This also resulted in a presentation "Creating and nurturing a mathematical education community" at the March 2007 Southeast Regional MAA conference in Statesboro, GA, and "Mentoring as a vital component to a graduate teaching assistant teaching development program" presented at the Southeast Regional MAA Meeting in Charleston, SC, March 2008

Math 590/598 – GTA Teacher Training Seminar

Department of Mathematics, University of Tennessee, Knoxville, TN, Fall 2006 - Fall 2008

- The final fall 2006 course design is the product of this collaborative work and uses the MAA text *Learning to Teach and Teaching to Learn Mathematics*, DeLong and Winter, as a resource.
- Co – facilitated seminar with an instructor

TEACHING EXPERIENCE, cont.

Math 590/598 – Mentoring in Mathematics

Department of Mathematics, University of Tennessee, Knoxville, TN, Fall 2007 & Fall 2008

- Required course in the College Mathematics Teaching Certificate Program
- Lead and organized a discussion group on issues important to graduate students in mathematics that are mentoring first-year GTAs.
- Lead discussions on developing CVs, teaching philosophies and teaching portfolios, and lead workshops on observing classrooms and giving constructive feedback.

Math 152 – Mathematics for the Life Sciences II

Department of Mathematics, University of Tennessee, Knoxville, TN, Fall 2006 & Fall 2008

- Full responsibility for teaching, course development, skill assessment and grading.
- Involved students in exploring current active areas of research at the interface of life science and mathematics by requiring presentations of current peer reviewed journal articles that use models of continuous change to explore biological phenomena.

Math 590/598 – Advanced Topics in Mathematics Education

Department of Mathematics, University of Tennessee, Knoxville, TN, Spring 2007 & Spring 2008

- Co-facilitated with the Associate Head of Undergraduate Education, Dr. Charles Collins
- Addressed issues and topics such as teaching a diverse classroom, teaching as service, and inquiry-based learning methods.
- Organized trip to the regional MAA meeting in Statesboro, Georgia to involve graduate students in the mathematics teaching and research community.

Math 113 – Mathematical Reasoning (Formerly Math 110)

Department of Mathematics, University of Tennessee, Knoxville, TN Fall 2004 - Spring 2005, Spring 2006

- Full responsibility for teaching, course development, skill assessment and grading.
- The Spring 2006 course design is the product of collaborative work with the Instructional Technology Center, thanks to GTA@ITC! grant funding. Several components including the grade book, quizzes, and discussion were integrated into Blackboard as well as into the syllabus and curriculum. Online JAVA manipulatives available on the textbook website were also used in class to demonstrate concepts presented.

Introduction to Mathematics for the Laboratory at Jackson Laboratories, Bar Harbor, ME

Eastern Maine Community College, Bangor, ME, Fall 2003, Spring 2004

- Invited to teach a mathematics workshop at Jackson Labs as part of the employee training curriculum
- Continued to work with training program organizers to modify the workshop materials to best present the materials and suit the technicians' learning styles and needs for work at Jackson Labs.

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TEACHING EXPERIENCE, cont.

Math 111 – College Algebra

Department of Mathematics, University of Maine, Orono, Maine, Fall 2002

- Full responsibility for teaching and assessment grading
- I took an active and collaborative role with the course coordinator and other instructors in developing the curriculum, tests projects, and other skill assessments.

CONFERENCE AND SYMPOSIUM PRESENTATIONS

Southeastern Ecology and Evolution Conference, "Understanding the genetic effects of mutualism." Gainesville, FL, March 2009

MAA Southeast Regional Meeting, "Mentoring as a vital component to a graduate teaching assistant teaching development program." Charleston, SC, March 2008

MAA Southeast Regional Meeting, "Creating and Nurturing a Mathematics Education Community: A bottom-up and top-down approach." Statesboro, GA, March 2007

MAA/AMS Joint Meeting, Mathfest 2002, "Fast-spiking Cell and Networked Cell Models." Pi Mu Epsilon student presenter, Burlington, VT, August 2002

College of Liberal Arts and Sciences Research Symposium, "Fast-spiking Cell and Networked Cell Models." University of Maine, Department of Mathematics nominated representative and student presenter, May 2002

University of Maine Honors Research Symposium, "The mathematical properties and underlying structure of fast-spiking cell and networked cell models." University of Maine, May 2002

UNIVERSITY AND MATHEMATICS COMMUNITY SERVICE

Invited Panelist, "New GTA Orientation," Graduate School, University of Tennessee, August 2008

Co-organizer and Facilitator, Mathematics Graduate Student Teaching Development Program, University of Tennessee, Fall 2006 – present

Organizer for the Graduate Student Seminar Series, Graduate Student Executive Council, Department of Mathematics, University of Tennessee, Spring 2007 – 2008

Invited Panelist, "Best Practices in Teaching Program," Graduate School, University of Tennessee, February 2008

Invited Panelist, "Graduate Student Panel," The Institute for Mathematical Biology Education and Resources, Boone, NC, November 2007

Invited Panelist, "New GTA Orientation," Graduate School, University of Tennessee, August 2007

Graduate Student Representative, Evolutionary Theory Search Committee, Department of Ecology and Evolutionary Biology, University of Tennessee, Fall 2006

Invited Panelist, "Best Practices in Teaching Program," Graduate School, University of Tennessee, November 2006

Invited Panelist, "New GTA Orientation," Graduate School, University of Tennessee, August 2006

Co-president and Secretary, Pi Mu Epsilon, National Mathematics Honor Society, Maine Alpha Chapter, University of Maine, 2002 – 2004 and 2000-2001, respectively

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UNIVERSITY AND MATHEMATICS COMMUNITY SERVICE, cont.

Workshop Presenter, Expanding Your Horizons, Women's Resource Center, University of Maine, March 2003, respectively

Workshop Presenter, Math4ME, Women's Resource Center, University of Maine, July 2002, respectively

Panelist, Dialogues in Diversity Program, Office of Multicultural Affairs, University of Maine, 1998-2000

TRAINING WORKSHOPS AND CONFERENCES

Southeastern Ecology and Evolution Conference, Gainesville, FL, March 2009

Mathematical Association of America Southeast Regional Meeting, Charleston, SC, March 2008

The Institute for Mathematical Biology Education and Resources, Boone, NC, November 2007

Institute on Teaching and Mentoring, Arlington, VA, October 2007

"Teaching for Understanding in Science," Department of Ecology and Evolutionary Biology, University of Tennessee, October 2007

Mathematical Association of America Southeast Regional Meeting, Statesboro, GA, March 2007

Annual Meeting of the Society for Mathematical Biology, Raleigh, NC, July 2006

Annual Meeting of the Society for the Study of Evolution, Stony Brook, NY, June 2006

Best Practices in Teaching Certificate Program, University of Tennessee, Fall 2005 – Spring 2006

Workshop in "Spatial Heterogeneity in Biotic and Abiotic Environment," Mathematical Biosciences Institute, Columbus, OH, February 2006

Institute on Teaching and Mentoring, Arlington, VA, October 2005

South-East Ecology, Population Genetics and Evolution Meeting, Hendersonville, NC, September 2005

Leadership Training & Development Certificate Program, University of Maine, Orono, ME, 2002-2004

Mathematical Association of America Northeastern Regional Meeting, Wellesley, MA, November 2003

12th Annual Computational Neuroscience Meeting, Alicante, Spain, July 2003

Mathematical Association of America Northeastern Regional Meeting, Framingham, MA, November 2002

Black Bear Student Leadership Conference, Orono, ME, October 2002

Integrating Science and Mathematics Education Research into Teaching, Orono, ME June 2002

Mathematical Association of America, Mathfest 2002, Burlington, VT, August 2002

Peer Tutoring Advanced Tutor Certification from the College Reading and Learning Association, University of Maine, Orono, ME 1999 - 2001

Mathematical Association of America Northeastern Regional Meeting, Providence, RI, November 2000