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Dept. of Mathematics
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Elizabeth D. Copene

Education

- Expected 2008 **Ph.D. Mathematics**, *University of Utah*, Salt Lake City, UT.
Spring 2003 **M.S. Mathematics**, *University of Utah*, Salt Lake City, UT.
Spring 2001 **B.S. Mathematics**, *Westminster College*, Salt Lake City, UT.
Graduated cum laude
Minor in physics

Ph.D. Thesis

- Title *Electrical Coupling of Cardiac Cells in the Absence of Gap Junctions*
Advisor James P. Keener
Description My research is focused on the electrical coupling of cardiac cells. Because the extracellular junctional space between neighboring cells is so narrow and tortuous, ionic concentrations and the electric potential in this region might vary in such a way as to conduct an electrical signal from one cell to the next. I have developed and analyzed mathematical models that provide insight about these proposed coupling mechanisms.

Relevant Experience

- 2007 **Facilitator of Graduate Student Teaching Workshop**, *University of Utah*.
Facilitated the annual teaching workshop for incoming mathematics graduate students
- 2007 **REU Assistant**, *University of Utah*.
Assisted in an undergraduate research experience focused on fractals
- 2006–2007 **Chair of the Graduate Student Advisory Sub-Committee for Retention, Promotion and Tenure**, *University of Utah*.
Reviewed candidates for retention, promotion, or tenure in the dept. of mathematics
- 2005–2006 **Computational Lab Instructor**, *University of Utah*.
Designed and instructed the Maple based computational lab sections for Math 1170–1180, *Calculus for Life Scientists*
- 2004–2005 **Mathematics Supplemental Instruction Supervisor**, *University of Utah*.
Hired, trained and supervised the undergraduate Supplemental Instruction leaders
- 2003–2004 **Teaching Assistant and Course Development**, *University of Utah*.
Assisted in design and instruction of MST 500, *Mathematics Refresher Course*, a refresher course for students entering the MST Master degree program
- 2004 & present **Instructor**, *Westminster College*.
 - Math 105, Intermediate Algebra
 - Math 95, Elementary Algebra

- 2001–present **Instructor**, *University of Utah*.
- Math 1010, Intermediate Algebra
 - Math 1030, Introduction to Quantitative Thinking
 - Math 1050, College Algebra
 - Math 1050, Trigonometry
 - Math 1090, Business Algebra

Scholarships

- 2005–2007 **Research Training Group (RTG)**, *University of Utah*.
An NSF program intended to stimulate interdisciplinary research in Math Biology
- 2004–2005 **Research Assistant**, *University of Utah*.
- 2001–2004 **Teaching Assistant**, *University of Utah*.

Conferences and Workshops

- Sept. 2007 **MBI Workshop for Young Researchers in Math Biology**, Columbus, OH.
Poster: *Electrical Coupling of Cardiac Cells via Junctional K^+*
- July 2006 **Joint SIAM-SMB Conference on the Life Sciences**, Raleigh, NC.
Poster: *Propagation Without Gap Junctions?*
- June 2005 **IAS/PCMI Graduate Summer School**, Park City, UT.
Research Project Presentation: *Resetting Reentrant Excitation Oscillations*
Teaching Assistantship: assisted in graduate module on mathematical neuroscience
- May 2005 **Utah/Arizona IGERT Biomathematics Summit**, Salt Lake City, UT.
Talk: *Spatial Organization of Cellular Connections and Propagation*
- March 2005 **3rd Symposium on Computational Cell Biology**, Lenox, MA.
Poster: *Cardiac Action Potential Propagation on a Lattice*

Selected Talks

Graduate Student Colloquium

- 2007 *K^+ Coupled Oscillators*
- 2006 *Dynamics of the Electric Field Mechanism*
- 2005 *Consequences of Spatial Organization of Cellular Connections on Propagation*
- 2004 *Dynamics of Multiple Metastatic Tumors*

Organization Memberships

- AWM**, *Association for Women in Mathematics*.
- SIAM**, *Society for Industrial and Applied Mathematics*.
- AMS**, *American Mathematical Society*.

Publications

- Accepted Elizabeth D. Copene and James P. Keener. Ephaptic Coupling of Cardiac Cells Through the Junctional Electric Potential, *Journal of Mathematical Biology*