

# Christine E. Heitsch

## Contact Information

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## Research Interests

Discrete mathematical biology, combinatorics on words, and string algorithms. Design, analysis, and prediction of RNA secondary structures and DNA code words. Sequence/structure/function relationships for RNA viral genomes.

## Education

University of California at Berkeley, Ph.D. in Mathematics, December 2000. Advisor: John Rhodes. Thesis: *Computational Complexity of Generalized Pattern Matching*.

University of Illinois at Urbana-Champaign, B.S. with Highest Distinction in Mathematics, Magna Cum Laude, May 1994.

## Professional Experience

Assistant Professor, School of Mathematics, Georgia Institute of Technology, August 2006 – present.

- Courtesy Appointment: School of Biology.
- Affiliated Faculty: Ph.D. Program in Algorithms, Combinatorics, and Optimization (ACO).
- Affiliated Faculty: Center for Bioinformatics and Computational Genomics.
- Affiliated Faculty: Integrative BioSystems Institute (IBSI).

General Member, Program on Mathematics of Molecular and Cellular Biology, Institute for Mathematics and its Applications, September – November, 2007.

BWF CASI Postdoctoral Fellow, Genome Center of Wisconsin/Biotechnology Center, University of Wisconsin-Madison, January 2005 – August 2006.

Honorary Fellow, Mathematics Department, University of Wisconsin-Madison, January 2005 – August 2006, 2002 – 2004.

Visiting Assistant Professor, Department of Mathematics, Duke University, Aug 23 – Sept 24, 2004.

Associate Director, BACTER Institute, Mathematics Department and Department of Biochemistry, University of Wisconsin-Madison, August 2004 – December 2004.

Postdoctoral Fellow, Computation and Informatics in Biology and Medicine (CIBM), NIH National Library of Medicine Training Program, University of Wisconsin-Madison, 2002 – 2004.

Postdoctoral Fellow, Department of Computer Science, University of British Columbia, 2000 – 2002.

Graduate Student Instructor, Department of Mathematics, University of California at Berkeley, 1994 – 2000.

Calculus Course Materials Development, Department of Mathematics, University of California at Berkeley, Summer 1996, Summer 1997.

**Refereed Publications**

- J. Cooper and C. E. Heitsch, *The Discrepancy of the Lex-Least De Bruijn Sequence*, *Discrete Math.*, 310(6-7): 1152-1159, 2010.
- A. Apostolico, G. Ciriello, C. Guerra, C. E. Heitsch, C. Hsiao, and L. D. Williams, *Finding 3D Motifs in Ribosomal RNA Structures*, *Nucleic Acids Res.*, 37(4):e29, 2009.
- A. Mathuriya, D. A. Bader, C. E. Heitsch, and S. C. Harvey, *GTfold: A Scalable Multicore Code for RNA Secondary Structure Prediction*, in *Proceedings of the 24th Annual ACM Symposium on Applied Computing (SAC)*, Computational Sciences Track, Honolulu, HI, March 9-12, 2009.
- A. Apostolico, G. Ciriello, C. Guerra, and C. E. Heitsch, *Discovering 3D motifs in RNA*, in J. Chen and S. Lonardi, editors, *Biological Data Mining*, Chapman & Hall/CRC Press, Chapter 3, pp. 49 - 68, 2009.
- Y. Bakhtin and C. E. Heitsch, *Large Deviations for Random Trees and the Branching of RNA Secondary Structures*, *Bull Math Biol.*, 71(1):84-106, 2009.
- Y. Bakhtin and C. E. Heitsch, *Large Deviations for Random Trees*, *J Stat Phys*, 132(3):551-560, 2008.
- C. E. Heitsch, *Insufficiency of Four Known Necessary Conditions on String Unavoidability*, *J Algorithms*, 56(2):96-123, 2005.
- C. E. Heitsch, A. E. Condon, and H. H. Hoos, *From RNA Secondary Structure to Coding Theory: A Combinatorial Approach*, in *Proceedings of the Eighth International Meeting on DNA Based Computers (DNA8)*, Lecture Notes in Computer Science, Springer-Verlag, Sapporo, Japan, June 2002.
- C. E. Heitsch, *Exact Distribution of Deletion Sizes for Unavoidable Strings*, in *Proceedings of the 8th International Symposium on String Processing and Information Retrieval (SPIRE'01)*, IEEE Computer Society Press, Laguna de San Rafael, Chile, November 2001.
- C. E. Heitsch, *Generalized Pattern Matching and the Computational Complexity of Unavoidability Testing*, in *Proceedings of the 12th Annual Symposium on Combinatorial Pattern Matching (CPM 2001)*, Lecture Notes in Computer Science, Springer-Verlag, Jerusalem, Israel, July 2001.

**Accepted Publications**

- V. Hower and C. E. Heitsch, *Parametric Analysis of RNA Folding*, to appear in *Bull Math Biol*.
- D. A. Bader, C. E. Heitsch, and K. Madduri, *Large-scale Network Analysis*, book chapter to appear in J. Kepner and J. Gilbert, editors, *Graph Algorithms in the Language of Linear Algebra*, SIAM Press.

**Submitted Publications**

- J. Cooper and C. E. Heitsch, *Generalized Fibonacci Recurrences and the Lex-Least De Bruijn Sequence*, submitted.
- C. E. Heitsch, *Counting Orbits Under Kreweras Complementation*, submitted.
- D. A. Bader, C. E. Heitsch, and K. Madduri, *Betweenness Centrality on an Integer Torus*, submitted.
- C. E. Heitsch and P. Tetali, *Meander Graphs*, submitted.
- A. Mathuriya, D. A. Bader, S. C. Harvey, C. E. Heitsch, *A New Parallel Approach for RNA Secondary Structure Prediction*, submitted.
- C. E. Heitsch, *Intractability of the Reductive Decision Procedure for Unavoidability Testing, a Special Case of Generalized Pattern Matching*, in revision.
- C. E. Heitsch, *Combinatorics on Plane Trees Motivated by RNA Secondary Structure Configurations*, in revision.

## Publications in Progress

C. E. Heitsch, *Combinatorial Insights Into RNA Secondary Structure*, in progress.

Y. Zeng, E. Speir, C. E. Heitsch, S. C. Harvey, *The origins of secondary structure in the HIV-1 RNA genome*, in progress.

K. Arora, M. B. Boz, A. S. Petrov, C. E. Heitsch, S. C. Harvey, *Dependence of radius of gyration on the length and secondary structure of RNA molecules*, in progress.

## Software

GTfold

- A scalable multicore code for RNA secondary structure prediction.
- Freely available via <http://gtfold.sourceforge.net/index.html>.
- Currently maintained by S. Mallidi, MS student supervised by David Bader (CSE, Georgia Tech).

## Fellowships & Grants

Principal Investigator, R01 GM083621, NIH NIGMS Division of Cell Biology and Biophysics.

- Title: *Combinatorial and Computational Methods for the Analysis, Prediction, and Design of Viral RNA Structures*.
- Award of \$1.3M for the period of September 1, 2007 – August 31, 2012.
- Co-PIs: Stephen C. Harvey (School of Biology, Georgia Institute of Technology) and David A. Bader (School of Computational Science and Engineering, Georgia Institute of Technology).

Principal Investigator, Burroughs Wellcome Fund (BWF) Career Award at the Scientific Interface (CASI).

- Research proposal: *A Combinatorial and Computational Approach to Deciphering the Biological Information Encoded by Single-Stranded Nucleotide Sequences*.
- Award of \$500,000 for the period January 1, 2005 – December 31, 2011.

Collaborative Graduate Student Award, Georgia Tech Integrative BioSystems Institute, 2008 – 2009.

- 50% support for Yingying Zeng, Biology PhD student in the Harvey laboratory.
- Research project: *Design of RNA Structures*.

## Honors & Awards

UNL Research Council Visiting Scholar, Department of Mathematics, University of Nebraska – Lincoln, Sept. 20 – 23, 2006

Incredible Instructor Honorable Mention, Department of Computer Science, University of British Columbia, February 2002.

Nikki Kose Memorial Teaching Prize, University of California at Berkeley, May 2000.

Outstanding Graduate Student Instructor, University of California at Berkeley, May 1996.

H. R. Brahana Prize in Mathematics, University of Illinois at Urbana-Champaign, May 1994.

Bronze Tablet, University of Illinois at Urbana-Champaign, May 1994. *Top 3% of graduating class.*

Phi Beta Kappa Award, University of Illinois at Urbana-Champaign, May 1994. *Four awards made.*

Phi Beta Kappa, May 1994.

## Professional Service

Visiting Lecturer Program, Mathematical Biosciences Institute (MBI), Oct 2009 – present.

Inaugural Board of Advisors, National Institute for Mathematical and Biological Synthesis (NIMBioS), University of Tennessee, Knoxville, 2008 – present.

Organizing committee, Program on Algebraic Methods in Systems Biology and Statistics, Statistical and Applied Mathematical Sciences Institute (SAMSI), 2008 – 2009.

Grant reviews.

- National Science Foundation, External review, Summer 2009.
- National Science Foundation, Panelist, Fall 2008.
- National Science Foundation, Panelist, Fall 2007.

Journal and conference reviewer.

- SIAM Discrete Mathematics.
- Theoretical Computer Science.
- Bulletin of Mathematical Biology.
- The Seventh IEEE International Workshop on High-Performance Computational Biology (HiCOMB'08).
- 2007 Conference on Analysis of Algorithms (AofA'07).

## Invited Conference Talks

*\*indicates funded speaker*

*Strings, Trees, and RNA Folding.* Presented at:

Minisymposium on Discrete Mathematical Biology, SIAM Conference on Discrete Mathematics	June 2010
Frontiers in Mathematical Biology: NSF-NIH PIs Meeting, University of Maryland	April 2010
SIAM Minisymposium on New Trends in Mathematical Biology, Joint Mathematics Meetings	Jan 2010
International Summer School on Bioinformatics and Computational Biology, Lipari, Italy*	June 2009

*Meanders and RNA Folding.* Presented at:

Mathematical Developments Arising from Biology, MBI Current Topic Workshop*	Nov 2009
Special Session on Applications of... Combinatorics, AMS Spring Southeastern Sec Mtg	April 2009

*Analysis, Prediction, and Design of Viral RNA Secondary Structures.* Presented at:

Algorithms in MacroMolecular Modeling Conference (AM <sup>3</sup> ), University of Texas at Austin*	Nov 2009
Opening Workshop, SAMSI Program on Algebraic Methods in Systems Biology and Statistics*	Sept 2008
The Biology-Combinatorics Interface, BIRS 5-Day Workshop	July 2008
RNA in Biology, Bioengineering and Nanotechnology, IMA Annual Program Year Workshop*	Oct 2007

*Combinatorics of RNA Secondary Structures.* Presented at:

23rd Mini-Conference on Discrete Mathematics and Algorithms, Clemson University*	Oct 2008
Minisymposium on Graph Theoretic Methods... , SIAM Conference on Discrete Mathematics	June 2008
Special Session on Mathematical Modeling in Biology, AMS Spring Southeastern Sec Mtg	March 2008
Special Session on Applicable Algebra, AMS Spring Southeastern Section Meeting	March 2007

*Combinatorics on Biological Words.* Presented at:

20th Cumberland Conference on Discrete Mathematics, Emory University	May 2007
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<i>Random De Bruijn Sequences and the Design of DNA Codewords.</i> Presented at:	
Special Session on Discrete Models in Biology, AMS Fall Southeastern Section Meeting	Oct 2005
Franco-Canadian Workshop on Combinatorial Algorithms, McMaster University	Aug 2005
<i>Deciphering the Information Encoded in RNA Viral Genomes.</i> Presented at:	
Algebraic Statistics and Computational Biology, Clay Mathematics Institute Workshop*	Nov 2005
<i>A Combinatorial Approach to Single-Stranded Nucleotide Sequences.</i> Presented at:	
Combinatorial Biology Minisymposium, Society for Mathematical Biology Annual Meeting	July 2004
<i>Combinatorial Results Motivated by Computational Biology.</i> Presented at:	
Association for Women in Mathematics Workshop, Joint Mathematics Meetings*	Jan 2004
<i>Combinatorial Insights in RNA Secondary Structures.</i> Presented at:	
Special Session on Mathematical Molecular Biology, AMS Fall Southeastern Section Meeting	Oct 2003
<i>Biochemical Properties of Random De Bruijn Sequences.</i> Presented at:	
Annual Training Program Meeting, NIH National Library of Medicine*	July 2003
<i>The Unavoidability of Generalized Zimin Word Constructions.</i> Presented at:	
International Workshop on Semigroups, Automata, and Formal Languages, Crema, Italy	June 2002
<i>An Application of Combinatorics on Words to RNA Secondary Structure Design.</i> Presented at:	
Semigroups. . . Special Session, First Joint AMS-UMI International Meeting, Pisa, Italy	June 2002
<i>Computational Complexity of Generalized Pattern Matching.</i> Presented at:	
Association for Women in Mathematics Workshop, Joint Mathematics Meetings*	Jan 2001
International Conference on. . . Semigroup Theory, University of Nebraska – Lincoln*	May 2000

**Colloquia***\*indicates funded speaker*

School of Mathematics, Georgia Institute of Technology	Nov 2009
Center for Computational Molecular Biology, Brown University*	Nov 2008
Discovery Science for Quantitative Biology, IASI-CNR, Rome, Italy*	March 2007
Department of Mathematics, Florida State University*	Jan 2007
Theory of Computation, College of Computing, Georgia Institute of Technology	Oct 2006
Department of Mathematics, University of Nebraska – Lincoln*	Sept 2006
School of Biological Sciences, University of Nebraska – Lincoln*	Sept 2006
School of Mathematics, Georgia Institute of Technology*	Feb 2006
Department of Mathematics, Dartmouth College*	Feb 2006
Département de mathématiques et de statistique, Université de Montréal*	Feb 2006
Department of Biomedical Informatics, Ohio State University*	Nov 2005
Computational Biosciences Group, Pacific Northwest National Laboratory*	June 2004
Center for Bioinformatics & Computational Biology, Duke University*	Sept 2004
Computer Science Department, City College, City University of New York*	May 2004
Bioinformatics COALESCE Program, Purdue University*	April 2004

Computer Science Department, University of Western Ontario*	April 2004
School of Informatics, Indiana University*	April 2004
Department of Computer Science, University of Chicago*	April 2004
Department of Biomedical Informatics, Ohio State University*	April 2004
Computer Science and Engineering Department, Penn State University*	April 2004
Mathematics Department, University of Rhode Island*	March 2004
Department of Computer Science, University of Iowa*	Dec 2003
Computer Science Department, Duke University*	April 2003

### Research Seminars since 2002

*\* indicates funded speaker*

Algebra and Combinatorics, Department of Mathematics, Texas A&M University*	April 2010
Algebraic and Combinatorics, Department of Mathematics, North Carolina State University	Sept 2009
Mathematical Biology, Department of Mathematics, University of Georgia*	Sept 2008
Combinatorics, School of Mathematics, Georgia Institute of Technology	April 2008
Computational Biology, Department of Computer Science, University of Illinois at Chicago*	April 2008
Mathematical Biology & Ecology, School of Mathematics, Georgia Institute of Technology	April 2008
Molecular Biophysics, School of Chemistry & Biochemistry, Georgia Institute of Technology	Jan 2008
Mathematics of Molecular and Cellular Biology, IMA, University of Minnesota*	Oct 2007
Combinatorics and Probability, Department of Mathematics, University of Pennsylvania*	Sept 2007
Combinatorics, School of Mathematics, University of Minnesota*	Sept 2007
Research Horizons, School of Mathematics, Georgia Institute of Technology	Feb 2007
Bioinformatics and Computational Biology, Georgia Institute of Technology	Jan 2007
Combinatorics, Mathematics Department, University of California at Berkeley*	Oct 2005
Computational Biology, Mathematics Department, University of California at Berkeley*	Oct 2005
Combinatorics, Mathematics Department, University of Wisconsin-Madison	March 2005
Applied/Interdisciplinary Mathematics, Department of Mathematics, UIUC*	Nov 2004
Pritchard Lab, Department of Mathematics, Penn State University*	Oct 2004
Theoretical Computer Science, Depts of Math and EECS, University of Michigan*	Oct 2004
Mathematical Biology, Department of Mathematics, University of Michigan*	Oct 2004
Geometry/Topology, Mathematics Department, Duke University*	Sept 2004
Bioinformatics/Algorithmics, Department of Computer Science, University of British Columbia	June 2004
Problems in Discrete Maths, Mathematics Department, University of British Columbia	June 2004
Bioinformatics Group, New York University	May 2004
Combinatorics, Mathematics Department, University of Wisconsin-Madison	April 2004
Computation and Informatics in Biology and Medicine, University of Wisconsin-Madison	Jan 2004
Program for Women in Mathematics, Institute for Advanced Study*	May 2003
Computation and Informatics in Biology and Medicine, University of Wisconsin-Madison	April 2003
Combinatorics, Mathematics Department, University of Wisconsin-Madison	Jan 2003
Computation and Informatics in Biology and Medicine, University of Wisconsin-Madison	Oct 2002

Laboratoire d'informatique, Institut d'électronique et d'informatique Gaspard-Monge June 2002  
 Logic and Category Theory, Philosophy, Math & CS Depts, University of Calgary\* March 2002

### Poster Presentations

\*indicates funded speaker

*Analysis, prediction, and design of RNA viral secondary structures.* Presented at:  
 Frontiers in Mathematical Biology: NSF-NIH Pls Meeting, University of Maryland April 2010  
 Viral Paradigms Workshop, Georgia Institute of Technology Jan 2008  
 Burroughs Wellcome Fund Career Awardees' Conference, Dana Point, CA\* July 2007

*Deciphering the biological information encoded in RNA viral genomes.* Presented at:  
 Integrated BioSystems Institute Poster Session, Georgia Institute of Technology March 2007  
 Burroughs Wellcome Fund New Awardees' Meeting, Research Triangle Park, NC\* July 2006

*Analyzing the branching degree of RNA viral genomes: a Hepatitis C case study.* Presented at:  
 9th Annual Int'l Conf on Research in Computational Molecular Biology, Cambridge, MA May 2005

*Encoding biological information in nucleotide sequences.* Presented at:  
 First Young Researchers Workshop, Mathematical Biosciences Institute\* March 2005

*Biochemical properties of random De Bruijn sequences, with M. Li and R. Corn.* Presented at:  
 Digital Biology: The Emerging Paradigm, BISTI Symposium, National Institutes of Health Nov 2003

*Towards the design of RNA molecules, with A. E. Condon and H. H. Hoos.* Presented at:  
 Mathematics and Molecular Biology VII Conference, Santa Fe, NM\* Jan 2002

### Outreach Presentations

\*indicates funded speaker

Advisory Board Meeting, College of Sciences, Georgia Institute of Technology April 2009  
 Senior Seminar, School of Mathematics, Georgia Institute of Technology Nov 2008  
 Freshman Seminar, School of Mathematics, Georgia Institute of Technology Nov 2007  
 RUTE Talk, Department of Mathematics, University of Nebraska – Lincoln\* Sept 2006  
 Vigre Seminar, Department of Mathematics, University of Wisconsin-Madison Nov 2002

### Postdoctoral Fellow Supervision

Svetlana Poznanovikj, beginning August 2010.

- PhD in Mathematics, Texas A&M University, expected August 2010. Advisor: Catherine Yan. Thesis: *Research on Combinatorial Statistics – Crossings and Nestings in Discrete Structures.*
- Funding: BWF CASI and School of Mathematics.

Valerie Hower, August 2008 – May 2009.

- 2009 NSF Postdoctoral Research Fellowship.
  - \* Proposed sponsoring scientist: Christine E. Heitsch, Georgia Institute of Technology.
  - \* Current sponsoring scientist: Lior Pachter, University of California at Berkeley.
- Research: *Geometric Combinatorics of RNA Folding.*
- Funding: NIH R01 and School of Mathematics.
- Currently: Department of Mathematics, University of California at Berkeley.

## Graduate Student Supervision

Emily Rogers, Spring 2009 – present.

- Incoming PhD student, Computational Science and Engineering, Georgia Institute of Technology.
- Bioinformatics MS, School of Biology, Georgia Institute of Technology, December 2009.
- Research project: *New Metrics on RNA Configurations*.
- Funding: Bioinformatics GRA spring 2009, NIH R01 summer 2009 – present.

Tianjun Ye, Summer 2009, Fall 2009.

- PhD student, School of Mathematics, Georgia Institute of Technology.
- Funding: School of Mathematics.

Amrita Mathuriya, Fall 2007 – Spring 2009.

- Computer Science MS, College of Computing, Georgia Institute of Technology, January 2009.
- Masters Thesis: *Prediction of Secondary Structures for Large RNA Molecules*.
- Co-advised with David Bader (CSE, Georgia Tech).
- Funding: NIH R01, January 2007 – January 2009.
- Postgraduate employment: Software engineer at Intel.

Andrew Huang, Spring 2007.

- Bioinformatics PhD student, School of Biology, Georgia Institute of Technology.
- Research project: *Graph Theoretic Approaches to the Prediction of RNA Secondary Structure*.
- Co-supervised with Steve Harvey (Biology, Georgia Tech).
- Funding: partial (50%) support from the ABC Math Program, Georgia Tech.

Grégory Nou, Spring 2007.

- Computer Science MS, College of Computing, Georgia Institute of Technology, May 2007.
- Research project: *HPC RNA Folding*.
- Co-supervised with David Bader (CSE, Georgia Tech).
- Postgraduate employment: Engineer - analyst at BNP Paribas.

## Undergraduate Student Supervision

Joshua Anderson, Summer 2009 – present.

- Discrete Mathematics and Computer Science double major, Georgia Institute of Technology.
- Research project: *Discrete Mathematics Applied to RNA Folding*.
- Funding: Math REU program summer 2009, unfunded Senior Project 2009 – 2010.

Nicole Larsen, Spring 2007 – Spring 2009.

- Currently: PhD graduate student, Department of Physics, Yale University.
- Previously: Applied Mathematics and Physics double major, Georgia Institute of Technology.
- 2009 NSF Graduate Fellowship.
- Honorable Mention for the 2009 AWM Schafer Prize.
- Research project: *Enumerating Pseudoknotted RNA Secondary Structures*.
- Funding: informal REU summer 2007, paid (NIH R01) research assistant 2007 – 2008, Math REU program summer 2008, unpaid research assistant 2008 – 2009.



Sonny Hernandez, Summer 2007.

- Currently: PhD graduate student, EECS Department, University of California at Berkeley.
- Previously: Computer Engineering and Computer Science major, University of Southern California.
- Research project: *High-Performance Algorithms for RNA Secondary Structure Prediction*.
- Co-supervised research project with David Bader (CSE, Georgia Tech).
- Funding: GT 2007 Summer Undergraduate Research in Engineering/Science (SURE) Program.

### **Courses Taught at Georgia Tech**

Math 2406 – Abstract Vector Spaces, Fall 2009, 24 undergraduates.

Math 3012 – Applied Combinatorics.

- Spring 2007, 21 undergraduates.
- Fall 2006, 10 undergraduates.

Math 4107 AU/AG – Abstract Algebra I, Fall 2008, 21 undergraduates, 3 graduate students.

Math 4108 – Abstract Algebra II, Spring 2009, 11 undergraduates. *Offered at students' request.*

Math 4803/8803 HEH – Special Topics: Discrete Mathematical Biology, Spring 2008, 2 undergraduates, 10 graduate students.

### **Georgia Tech Service & Committee Appointments**

Mathematical Biology & Ecology Seminar co-organizer, School of Mathematics, Georgia Institute of Technology, 2006 – present.

Elections committee, School of Mathematics, Georgia Institute of Technology, 2007 – present.

Georgia Tech CIMBS proposal team, 2007 – 2008.

- One of three finalists in the NSF CIMBS (Center for Research at the Interface of the Mathematical and Biological Sciences) competition.
- Georgia Tech-Emory-UGA consortium proposal with Bruce Levin (Biology, Emory) as Director/PI and Howie Weiss (Math, GT) as Deputy Director.

Georgia Tech Graduate School committee membership.

- Xiaonan Zhao, Biology PhD student.
- Minmin Pan, Biology PhD student. Advisor: Steve Harvey (Bio). Qualifying exam Spring 2009.
- Yingying Zeng, Biology PhD student. Advisor: Steve Harvey (Bio). Qualifying exam Spring 2009.
- Sam Greenberg, ACO PhD student. Advisor: Dana Randall (CS). Thesis defense Summer 2008.
- Teena Carroll, Math PhD student. Advisor: Prasad Tetali (Math). Thesis defense Spring 2008.

Committee on graduate students, Integrative BioSystems Institute, Georgia Institute of Technology, Spring 2007 – Spring 2008.

External member, Bio subcommittee, Faculty recruitment committee, Computational Science and Engineering Division, College of Computing, 2007 – 2008.

2008 Stelson Lecture Series (Simon Levin, Princeton University) organizer, Fall 2007, Spring 2008.

Joint Tech-CDC Biomathematics Internship Program development committee, Fall 2007.

Biomath website development committee, Summer 2007, Fall 2007.

Undergraduate mathematical biology certificate option development committee, Summer 2007.

Colloquium committee, School of Mathematics, Georgia Institute of Technology, 2006 – 2007.

## **Professional Societies**

American Mathematical Society (AMS)

Association for Women in Mathematics (AWM)

Society for Industrial and Applied Mathematics (SIAM)

Society for Mathematical Biology (SMB)