

SHARON M. CROOK
Curriculum Vitae

School of Mathematical and Statistical Sciences
School of Life Sciences
Center for Adaptive Neural Systems
Mathematical, Computational & Modeling Sciences Center
Arizona State University
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EDUCATION

Ph.D. Applied Mathematics, University of Maryland, College Park, MD, 1996
M.A. Applied Mathematics, University of Maryland, College Park, MD, 1991
B.S. Mathematics, University of Southern Mississippi, Hattiesburg, MS, 1987

ACADEMIC EMPLOYMENT

2004- Assistant Professor of Mathematics and Statistics and Life Sciences,
Arizona State University, Tempe, Arizona
2000-2004 Assistant Professor of Mathematics, Department of Mathematics and
Statistics, University of Maine, Orono, Maine
1997-2000 Postdoctoral Researcher, Center for Computational Biology, Montana State
University, Bozeman, Montana
1995-1997 Guest Research Assistant, Mathematical Research Branch, NIDDK,
National Institutes of Health, Bethesda, Maryland
1989-1991 Teaching Assistant, University of Maryland, College Park, Maryland

FELLOWSHIPS AND AWARDS

2002 Mathematical Association of America, Project NEXt Fellow (New
Experiences in Teaching)
1999 AWM Workshop Travel Award
1997-1999 NIH Postdoctoral Individual National Research Service Award
1992-1994 NASA Graduate Student Research Fellowship
1987-1989 University of Maryland Graduate School Fellowship
1987 University of Southern Mississippi Student Hall of Fame
1987 University of Southern Mississippi Mathematics Achievement Award

PUBLICATIONS (*indicates mentored student or postdoc)

Baer, SM, **S Crook**, *M Dur-e-Ahmad and Z Jackiewicz (2009) Numerical solution of calcium-mediated dendritic branch model. *Journal of Computational and Applied Mathematics*. 229:416-424.
Günay, C, TG Smolinski, WW Lytton, TM Morse, P Gleeson, **S Crook**, V Steuber, A Silver, H Voicu, P Andrews, H Bokil, H Maniar, C Loader, S Mehta, D Kleinfeld, D Thomson, PP Mitra, G Aaron and J-M Fellous (2008) Computational intelligence in electrophysiology: Trends and open problems. In Smolinski, Milanova and Hassanién, eds. *Applications of Computational Intelligence in Biology*, Springer,

Berlin/Heidelberg.

- *Dur-e-Ahmad, M, Z Jackiewicz, B Zubik-Kowal and **S Crook** (2007) A variant of pseudospectral method for activity-dependent dendritic branch model. *Journal of Neuroscience Methods*. 165:306-319.
- Crook, S**, *M Dur-e-Ahmad and SM Baer (2007) A model of activity-dependent changes in dendritic spine density and spine structure. *Mathematical Biosciences and Engineering*. 4:617-631.
- Crook, S**, P Gleeson, F Howell, J Svitak and RA Silver (2007) MorphML: Level 1 of the NeuroML standards for neuronal morphology data and model specification. *Neuroinformatics*. 5(2):96-104.
- Crook, S** and F Howell (2007) XML for data representation and model specification. in Crasto, ed. *Methods in Molecular Biology Book Series: Neuroinformatics*, Humana Press.
- Crook, S**, D Beeman, P Gleeson and F Howell (2005) XML for model specification in neuroscience: An introduction and workshop summary. *Brains, Minds, and Media*. 1:bmm228 (urn:nbn:de:0009-3-2282).
- *Qi, W and **S Crook** (2004) Tools for neuroinformatic data exchange: An XML application for neuronal morphology data. *Neurocomputing*. 58-60C:1091-1095.
- *Eaton, CD, **S Crook**, G Cummins and GA Jacobs (2004) Modeling ion channels from the cricket cercal sensory system. *Neurocomputing*. 58-60C:409-415.
- Cummins, GI, **SM Crook**, AG Dimitrov, T Ganje, GA Jacobs and JP Miller (2003) Structural and biophysical mechanisms underlying dynamic sensitivity of primary sensory interneurons in the cricket cercal sensory system. *Neurocomputing*. 52:45-52.
- Crook, S**, J Miller and G Jacobs (2002) Modeling frequency encoding in the cricket cercal sensory system. *Neurocomputing* 44:769-773.
- Crook, SM**, GB Ermentrout and JM Bower. (1998) Spike frequency adaptation affects the synchronization properties of cortical networks. *Neural Computation* 10:837-854.
- Crook, SM**, GB Ermentrout and JM Bower (1998) Dendritic and synaptic effects in systems of coupled cortical oscillators. *Journal of Computational Neuroscience* 5:315-329.
- Jacobs, GA, K Hodge, **S Crook**, J Roddey and S Paydar (1998) Spatio-temporal activity patterns encode direction and dynamics in the cricket cercal system, *Proceedings of the 5th International Congress of Neuroethology*.
- Crook, SM** and GB Ermentrout (1997) An analysis of the adaptive behavior of piriform cortex pyramidal cells. In *Computational Neuroscience Trends in Research 1996*, JM Bower (Ed.), Plenum Publishers, 170-175.
- Crook, SM**, GB Ermentrout, MC Vanier and JM Bower (1997) The role of axonal delay in the synchronization of networks of coupled cortical oscillators. *Journal of Computational Neuroscience* 4:161-172.
- Ermentrout, GB, **S Crook** and JM Bower (1996) Connectivity, axonal delay, and synchrony in cortical oscillators. In *Computational Neuroscience Trends in Research 1995*, JM Bower (Ed.), Academic Press, 167-172.
- Crook, S** and A Cohen (1995) Central pattern generators. In Bower and Beeman, eds. *The Book of GENESIS: A workbook of tutorials for the GEneral NEural Simulation System*, Chapter 6. TELOS Publishers.
- Crompton, RF and **S Crook** (1989) An intelligent user interface for browsing satellite data catalogs. *Telematics and Informatics* 6:299-312.
- Crook, S** (1987) Remarks on the convergence of pi. *Journal of Undergraduate Mathematics*, 19(1):15-22.
- Crook, S** (1986) Algorithms for computer generation of surfaces. *Journal of Undergraduate Mathematics*, 18(2):51-54.

Published Abstracts:

- *Chang, S, SM Baer, **SM Crook**, CL Gardner, C Ringhofer (2009) Computational study of cat retinal cone-horizontal cell interaction, *Society for Neuroscience Abstracts*.
- Venugopal, S, **S Crook**, T Hamm, R Jung (2009) A computational study of the interaction between persistent inward currents and recurrent inhibition in alpha motoneurons before and after spinal cord injury, *Society for Neuroscience Abstracts*.
- Crook, S**, P Gleeson, RA Silver (2009) Describing and exchanging models of neurons and neuronal networks with NeuroML, *BMC Neuroscience*.
- *Herrera-Valdez, MA, *SD Berger, C Duch and **SM Crook** (2009) Predicting changes in neuronal excitability type in response to genetic manipulations of K⁺-channels, *BMC Neuroscience*.
- *Berger, SD, *MA Herrera-Valdez, C Duch and **S Crook** (2009) Passive current transfer in wildtype and genetically modified *Drosophila* motoneuron dendrites, *BMC Neuroscience*.
- Venugopal, S, *M Kurian, **S Crook** and R Jung (2009) Role of inhibition in the suppression of alpha-motoneuron hyper-excitability following chronic spinal cord injury, *BMC Neuroscience*.
- Dacher, M, **SM Crook** and BH Smith (2008) Spatio-temporal activity of neurons in the insect antennal lobe: A data driven computational model, *Chemical Senses*, 33(8):S66
- *Kurian, MP, **S Crook** and R Jung (2008) Modeling changes in motoneuron morphology after spinal cord injury, *Society for Neuroscience Abstracts* (#469.12)
- Gleeson, P, **S Crook**, S Barnes, RA Silver (2008) Interoperable model components for biologically realistic single neuron and network models implemented in NeuroML. *Frontiers in Neuroscience*. Conference abstract: Neuroinformatics 2008. doi: 10.3389/conf.neuro.11.2008.01.135
- *McCamy, M, S Baer and **S Crook** (2008) A stage-structured population approach for modeling activity-dependent plasticity of dendritic spines. *BMC Neuroscience*. 9(1):P104.
- *Chang, S, S Baer, **S Crook**, C Gardner and C Ringhofer (2008) Modeling the GABA and ephaptic feedback mechanisms in cat outer retina, *BMC Neuroscience*. 9(1):P110.
- *Kurian, MP and **SM Crook** (2007) Modeling motoneuron excitability following spinal cord injury, *Society for Neuroscience Abstracts* (#76.6).
- Crook, S**, P Gleeson and RA Silver (2007) NetworkML: Level 3 of the NeuroML standards for multiscale model specification and exchange, *Society for Neuroscience Abstracts* (#102.28)
- *Jennings, AB, **S Crook**, C Duch and S Ryglewski (2007) Mathematical models of octopaminergic dorsal unpaired median neurons, *Society for Neuroscience Abstracts* (#536.20).
- *Dur-e-Ahmad, M, **S Crook** and S Baer (2007) A model of activity-dependent changes in dendritic spine density and spine structure, *BMC Neuroscience*. 8(2):P91.
- Gleeson, P, **S Crook**, V Steuber and RA Silver (2007) Using NeuroML and neuroConstruct to build neuronal network models for multiple simulators, *BMC Neuroscience*. 8(2):P1.
- *Kurian, MP and **S Crook** (2007) Two-compartment models of spasticity in spinal motor neurons following spinal cord injury, *BMC Neuroscience*. 8(2):P101.
- Crook, SM**, *M Dur-e-Ahmad, SM Baer and Z Jackiewicz (2006) A model of activity-dependent changes in dendritic spine density and spine structure, *Society for Neuroscience Abstracts* (#135.8).
- Mahaffy, MD, **SM Crook**, GA Jacobs and JP Miller (2000) Frequency tuning properties of primary sensory interneurons in the cricket cercal sensory system, *Society for Neuroscience Abstracts* (#55.5).

SPONSORED RESEARCH

- 09/01/09-08/30/12 NIH R01, PI: Crook *NeuroML: Standards and Tools for Multiscale Model Specification and Exchange*, \$894,282
- 01/01/10-12/31/12 NSF CISE, PI: Dietrich, *Collaborative Research: Databases for Many Majors: A Student-Centered Approach*, \$119,994, Role: Senior Personnel
- 03/01/09-02/28/10 NSF CISE (International Travel Award), PI: Crook, *NeuroML Development Workshop: Biophysical Single Cell Modeling*, \$10,050
- 2/01/09 International Neuroinformatics Coordinating Facility Workshop Proposal, Organizers: Silver, Gleeson, and Crook, *NeuroML Development Workshop: Biophysical Single Cell Modeling*, ~\$9,000
- 09/03/07-09/03/12 NSF DMS, PI: Kostelich, *CSUMS: Undergraduate Research Experience for Computational Math Science Majors at ASU*, \$1,029,404 Role: Co-PI
- 09/01/07-08/31/10 NSF DMS, PI: Baer, *Multiscale Modeling of the Neural Subcircuits in the Outer-Plexiform Layer of the Retina*, \$642,671 Role: Co-PI
- 10/01/06-09/30/09 NSF CISE, PI: Crook, *CRCNS: Behaviorally Relevant Neuronal Modification during Postembryonic Development*, \$457,654
- 08/15/05-07/31/08 NSF SBE, PI: Jung, *CATALYST Center of Excellence in Adaptive Neuro-Biomechatronic Systems (CEANS)*, \$110,944 Role: core faculty
- 08/15/01-07/31/05 NSF IBN, PI: Crook, *Collaborative Research: A Dynamic Atlas of the Cricket Cercal Sensory System*, \$240,798
- 12/15/02-11/30/07 NSF IGERT, PI: Knowles, *Predocutorial Training in Functional Genomics of Model Organisms*, Role: core faculty
- 09/01/97-08/30/99 NIH Individual National Research Service Award, Postdoctoral Research Grant, *A Mechanistic Basis for Neural Encoding*, \$49,712

PRESENTATIONS (*indicates mentored student or postdoc)

Invited Conference Presentations:

- 2009 Models of self-sustained motoneuron firing following spinal cord injury, Conference on Neural Dynamics and Computation in honor of John Rinzel, Courant Institute, New York, New York
- 2008 Modeling activity-dependent changes in dendritic spine structure, *Frontiers in Applied and Computational Mathematics*, New Jersey Institute of Technology, Newark, New Jersey
- 2006 Modeling activity-dependent structural plasticity, First Annual ASU-BNI Neuroscience Symposium, Phoenix, Arizona
- 2005 Modeling cortical oscillations with networks of coupled phase oscillators, 2005 Arizona Days Meeting, Tucson, Arizona
- 2004 Heterogeneous spiking neurons connected by both inhibitory and electrical coupling, Society for Mathematical Biology Meeting, Ann Arbor, Michigan
- 2003 Spike timing, mechanisms, and cell response, Neural Coding Workshop, Mathematical Biosciences Institute, Ohio State University, Columbus, Ohio
- 2002 Modeling frequency encoding in a sensory system, 4th International Conference

- on Differential Equations and Dynamical Systems, University of North Carolina at Wilmington, North Carolina
- 1998 The role of axonal delay in oscillatory network models of olfactory cortex, Interdisciplinary Conference on Waves, University of Pittsburgh, Pennsylvania
- 1998 Spike frequency adaptation in networks of cortical oscillators, Computational Neuroscience Workshop, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, Minnesota

Invited Seminar Presentations:

- 2008 Modeling activity-dependent changes in dendritic spine structure, Applied Mathematics Seminar, University of Arizona, Tucson, Arizona
- 2008 Modeling activity-dependent changes in dendritic spine structure, Mathematical Biology Seminar, Department of Mathematics, University of Utah, Salt Lake City, Utah
- 2006 Modeling structural plasticity in dendrites, Biological Physics Seminar Series, Department of Physics, Arizona State University, Tempe, Arizona
- 2005 Modeling cortical oscillations with networks of coupled phase oscillators, Mathematical Biology Seminar, Arizona State University, Tempe, Arizona
- 2005 Modeling cortical oscillations with networks of coupled phase oscillators, Mathematical Biology Seminar, Department of Mathematics, University of California at Davis, Davis, California
- 2004 Modeling structure and function in a sensory system, Department of Bioengineering Seminar, Arizona State University, Tempe, Arizona
- 2004 Heterogeneous spiking neurons connected by both inhibitory and electrical coupling, Computational Biology Seminar, Montana State University, Bozeman, Montana
- 2004 Modeling cortical oscillations with networks of coupled phase oscillators, Department of Mathematics Seminar, Old Dominion University, Norfolk, Virginia
- 2003 Modeling structure and function in the cricket cercal sensory system, Postdoctoral Seminar Series, Mathematical Biosciences Institute, Ohio State University, Columbus, Ohio
- 2002 Modeling structure and function in a sensory system, Psychology Seminar, University of Maine, Orono, Maine
- 2001 Coupled oscillator models of cortical dynamics, Physics Seminar, University of Maine, Orono, Maine
- 2001 Modeling structure and function in a sensory system, Biology Seminar, University of Maine, Orono, Maine
- 2001 Modeling structure and function in a sensory system, Bioinformatics Seminar, The Jackson Laboratory, Bar Harbor, Maine
- 2000 Modeling structure and function in a sensory system, Institute of Theoretical Dynamics, University of California, Davis, California
- 1999 Modeling dynamic patterns of activation in a neural map, Applied Mathematics Seminar, Montana State University, Bozeman, Montana
- 1998 Stochastic systems analysis as a tool in computational neuroscience research, Applied Mathematics Seminar, Montana State University, Bozeman, Montana
- 1997 Modeling cortical oscillations with networks of coupled phase oscillators, Applied Mathematics Seminar, Montana State University, Bozeman, Montana

Contributed Conference Presentations:

- 2009 Describing and exchanging models of neurons and neuronal networks with NeuroML, (with R. Angus Silver and Padriag Gleeson), Featured Presentation, Computational Neuroscience Meeting, Berlin Germany
- 2008 A stage population model for dendritic spines, SIAM Life Sciences Meeting,

- Montreal, Canada
- 2007 Modeling behaviorally relevant structural plasticity in a motoneuron, Society for Mathematical Biology Meeting, San Jose, California
- 2000 Modeling function in a sensory system, Gordon Research Conference on Theoretical Biology and Biomathematics, Tilton, New Hampshire
- 1999 Dynamic patterns of activation in a neural map in the cricket cercal sensory system, 8th Annual Computational Neuroscience Meeting, Pittsburgh, Pennsylvania
- 1999 Modeling dynamic patterns of activation in a neural map, Conference on Theory and Mathematics in Biology and Medicine, Amsterdam, The Netherlands
- 1998 Modeling cortical oscillations with networks of coupled phase oscillators, AWM Mathematical Biology Mini-symposium, SIAM Meeting, Toronto, Canada
- 1997 Spike frequency adaptation affects the synchronization properties of cortical oscillators, 6th Annual Computational Neuroscience Meeting, Big Sky, Montana

Research Workshops and Symposia:

- 2009 NeuroML development workshop (Co-organizer with P Gleeson, A Silver and R Cannon), London, United Kingdom
- 2008 Interoperability of software for computational and experimental neuroscience (Co-organizer with P Gleeson), Computational Neuroscience Meeting Workshops, Portland, Oregon
- 2008 Neural plasticity session (Organizer), Second Annual Arizona State University and Barrow Neurological Institute Neuroscience Symposium, Phoenix, Arizona
- 2007 Neuro-machine interfaces: Integrating biology and technology to develop functionally relevant devices (Co-organizer with *M Kurian, J Graham and R Jung), Computational Neuroscience Meeting Workshops, Toronto, Canada
- 2006 Workshop on XML standards for neural model specification (Moderator, Speaker), WAM Biologically Accurate Modeling Meeting, San Antonio, Texas
- 2005 XML for model specification: An introduction and workshop, (Organizer, Moderator, Speaker), WAM Biologically Accurate Modeling Meeting, San Antonio, Texas

Poster and Demo Presentations:

- 2008 *M Kurian, S Crook and R Jung, Modeling changes in motoneuron morphology following spinal cord injury, Society for Neuroscience, Washington DC
- 2008 P Gleeson, S Crook, S Barnes, RA Silver, Interoperable model components for biologically realistic single neuron and network models implemented in NeuroML, Neuroinformatics 2008, Stockholm, Sweden
- 2008 *M McCamy, S Baer and S Crook, A stage-structured population approach for modeling activity-dependent plasticity of dendritic spines, Computational Neuroscience Meeting, Portland, Oregon
- 2008 *S Chang, S Baer, S Crook, C Gardner and C Ringhofer, Modeling the GABA and ephaptic feedback mechanisms in cat outer retina, Computational Neuroscience Meeting, Portland Oregon
- 2008 M Dacher, SM Crook and BH Smith, Spatiotemporal activity of neurons in the insect antennal lobe: A data driven computational model, Annual PI Meeting for the CRCNS Program, Los Angeles, California
- 2008 S Crook, C Duch, *A Jennings and JF Evers, Behaviorally relevant neuronal modification during postembryonic development, Annual PI Meeting for the CRCNS Program, Los Angeles, California
- 2007 *MP Kurian and SM Crook, Modeling motoneuron excitability following spinal cord injury, Society for Neuroscience Annual Meeting, San Diego, California
- 2007 S Crook, P Gleeson and RA Silver, NetworkML: Level 3 of the NeuroML standards

- for multiscale model specification and exchange, Society for Neuroscience Annual Meeting, San Diego, California
- 2007 *AB Jennings, S Crook, C Duch and S Ryglewski, Mathematical models of octopaminergic dorsal unpaired median neurons, Society for Neuroscience Annual Meeting, San Diego, California
- 2007 P Gleeson, S Crook, V Steuber and RA Silver, Using NeuroML and neuroConstruct to build neuronal network models for multiple simulators, Computational Neuroscience Meeting, Toronto, Canada
- 2007 *M Dur-e-Ahmad, S Crook and S Baer, A model of activity-dependent changes in dendritic spine density and spine structure, Computational Neuroscience Meeting, Toronto, Canada
- 2007 *M Kurian and S Crook, Two-compartment models of spasticity in spinal motor neurons following spinal cord injury. Computational Neuroscience Meeting, Toronto, Canada
- 2007 S Crook, C Duch and *A Jennings, Behaviorally relevant neuronal modifications during postembryonic development, Annual PI Meeting for the CRCNS Program, College Park, Maryland
- 2007 *N Tatonetti, S Crook and W Vermaas, MetabolODE: optimization software for determining kinetic rate coefficients for biochemical pathways of metabolic isotopomers, Frontiers in Applied and Computational Mathematics, New Jersey Institute of Technology, Newark, New Jersey
- 2006 *M Dur-e-Ahmad, S Crook and S Baer, A model of activity-dependent changes in dendritic spine density and spine structure, 1st Annual ASU-BNI Neuroscience Symposium, Phoenix, Arizona
- 2006 S Crook, and P Gleeson, Facilitating software interoperability and model exchange: XML standards for model specification, Computational Neuroscience Meeting, Edinburgh, Scotland
- 2005 S Crook, *CD Eaton, T Ganje, G Jacobs, Frequency sensitivity in the cricket cercal sensory system: the role of synaptic and biophysical mechanisms, Computational Neuroscience Meeting, Madison, Wisconsin
- 2003 S Crook, *CD Eaton, G Cummins, GA Jacobs, and JP Miller, Modeling ion channel kinetics in the cricket cercal sensory system, International Conference on Mathematical Biology, Annual Meeting of the Society for Mathematical Biology, University of Dundee, Dundee, United Kingdom
- 2003 *CD Eaton, SM Crook, G Cummins, and GA Jacobs, Modeling ion channels from the cricket cercal sensory system, Computational Neuroscience Meeting, Alicante, Spain
- 2003 *W Qi and SM Crook, Tools for neuroinformatic exchange: An XML application for neuronal morphology data, Computational Neuroscience Meeting, Alicante, Spain
- 2002 T Lewis, SM Crook and *CD Eaton, Heterogeneous spiking neurons connected by both inhibitory and electrical coupling, Computational Neuroscience Meeting, Chicago, Illinois
- 2001 SM Crook, JP Miller and GA Jacobs, Modeling frequency encoding in the cricket cercal sensory system, Computational Neuroscience Meeting, Pacific Grove, California
- 2001 SM Crook, JP Miller and GA Jacobs, Modeling frequency encoding in a sensory system, International Conference on Cognitive and Neural Systems, Boston, Massachusetts
- 2000 MD Mahaffy, SM Crook, GA Jacobs and JP Miller, Frequency tuning properties of primary sensory interneurons in the cricket cercal sensory system, Society for Neuroscience Meeting, New Orleans, Louisiana
- 1998 SM Crook and JP Miller, The mechanistic basis of neural encoding, Computational Neuroscience Meeting, Santa Barbara, California

EDUCATIONAL ACTIVITIES

Teaching and Curriculum Development:

Arizona State University: Calculus for the Life Sciences (MAT 251), Introduction to Computational Molecular Biology (BIO/MBB/MAT 355), Mathematical Cell Physiology (MAT 503/APM 530), Mathematical Neuroscience II (MAT 598/APM 532)

University of Maine: Calculus, Differential Equations, Dynamical Systems, Computational Methods in Genomics, Capstone Experience in Applied Mathematics, Complex Biological Systems

Postdoctoral Fellows Advised:

Marco Herrera, Computational Neuroscience, (current), with Carlos Castillo-Chavez and Carsten Duch, Arizona State University

Graduate Students Advised or Co-advised:

Sandra Berger, PhD Interdisciplinary Neuroscience, (current), with Carsten Duch, Arizona State University

Mini Kurian, PhD Mathematics, (current), Arizona State University

Dori Luli, PhD Applied Mathematics for Life and Social Sciences, (current), with Carlos Castillo-Chavez, Arizona State University

David Tello, PhD Applied Mathematics for the Life and Social Sciences, (current), with Priscilla Greenwood, Arizona State University

Pradeep Thiyagura, MS Computational Biosciences, (current), Arizona State University

Muhammad Dur-e-Ahmad, PhD Mathematics, 2007, with Zdzislaw Jackiewicz, Arizona State University, *Structural Plasticity of Dendritic Spines: A Computational Study*, Currently: Assistant Professor, Dept. of Mathematical Science, University of New Brunswick, Saint John, Canada

Todd Huffman, MS Computational Biosciences, 2007, Arizona State University, *Knife Edge Scanning Microscope: Development and Designs*

Carrie Diaz Eaton, MA Mathematics, 2004, University of Maine, *The Mathematical Properties and Underlying Structure of Fast Spiking Cell and Networked Cell Models*, Currently: PhD Student Mathematics, University of Tennessee

Weihong Qi, MS in Computer Science, 2003, University of Maine, *Tools for Neuroinformatic Data Exchange and Neuronal Simulation: An XML Application for Neuronal Morphology Data*, Currently: Researcher, Swiss Tropical Institute of the World Health Organization

Graduate Student Committies:

Michael McCamy, PhD Mathematics, (current), Arizona State University

Terry Der, PhD Biology, (current), Arizona State University

Fernando Vonhoff, PhD Neuroscience, (current), Arizona State University

Andrew Jennings, PhD Mathematics, (current), Arizona State University

Matthew Wienke, PhD Mathematics, (current), Arizona State University

Shaojie Wang, PhD Mathematics, (current), Arizona State University

Sarah Hewes, PhD Mathematics 2009, Arizona State University

Yi-Wen Sun, MS Computational Biosciences, 2008, Arizona State University

Joe Graham, PhD Bioengineering, 2008, Arizona State University

Genevieve Toutain, MA Mathematics, 2008, Arizona State University

Danielle Robbins, MA Mathematics, 2007, Arizona State University

Tufail Malik, PhD Mathematics, 2007, Arizona State University

Hao Wang, PhD Mathematics, 2007, Arizona State University

Undergraduate Student Research Advised:

Nicholas Tatonetti, 2006-2008, UBM and SOLUR Program, Mathematics and Molecular Biosciences and Biotechnology, Arizona State University
Pamela Reitsma, Odalys Colon and Irina Kareva, 2007, MTBI Summer Research Program (with Genevieve Toutain, MA Student, Mathematics), Arizona State University
Adriana Kuiper, 2006-2007, UBM Program, Biology and Society, Arizona State University
Gina Ngo, 2005-2006, UBM Program (with Ron Rutowski), Biology, Arizona State University
Jason Sewell, 2003-2004, Honors Thesis, Department of Mathematics, University of Maine
Carrie Diaz Eaton, 2002-2003, Honors Thesis, Department of Mathematics, University of Maine

Honors Student Course Projects Advised:

2008 Kristen Landry, Kristina Woodbury, Will Meeks, Taylor Cushman, Fabian Seidel
2007 Amanda Rosen

Awards Presented to Advised Students (Based in Part on Research):

Dori Luli, Selected Ottawa Summer School in Computational Neuroscience 2009
Sandra Berger, Selected Advanced Course in Computational Neuroscience 2009
Nicholas Tatonetti, 2007 Beckman Scholar, 2007 Goldwater Scholar Honorable Mention, 2006 SOLUR Research Award, 2006 Molecular Biosciences and Biotechnology Outstanding Student Award
Genevieve Toutain, Best Mathematical Oral Presentation, SACNAS Annual Meeting 2007
Muhammad Dur-e-Ahmad, ASU Department of Mathematics and Statistics Outstanding Graduate Student Research Award 2007
Mini Kurian, Selected Okinawa Computational Neuroscience Course 2006 & MBL Methods in Computational Neuroscience Course 2006

SERVICE

Editorial Service:

Associate Editor: MBE: Mathematical Biosciences and Engineering
Journal Reviews: Journal of Computational Neuroscience, Journal of Neuroscience, Network, Neurocomputing, Journal of Theoretical Biology, Journal of Neurophysiology, BioSystems, Cognitive Neurodynamics, IEEE Transactions on Biomedical Engineering, Neuroinformatics
2004-2006 Reviewer, Mathematical Reviews

Grant Reviews:

NIH Study Sections (Ad hoc Member): Sensorimotor Integration 2005, 2006; Neurotechnology and Neuroinformatics 2007, 2008
NIH Challenge Grant Reviewer 2009
Review Panel for Joint NSF/NIH Initiative to Support Collaborative Research in Computational Neuroscience 2002, 2004, 2008, 2009
Ad Hoc Reviewer for NSF in the following program areas: Computational Neuroscience, Applied Mathematics, Computational Mathematics, Bioengineering, Mathematical Biology
Ad Hoc Reviewer Research Corporation Grants

Professional Societies:

Society for Neuroscience, Society for Mathematical Biology, Society for Industrial and Applied Mathematics, Association for Women in Mathematics, American Mathematical

Society

Other National and International Service:

- 2008- Member, Oversight Committee for Description Standards in Neural Network Modeling, Large-scale Modeling Program, International Neuroinformatics Coordinating Facility, Attended 1st Meeting in London
- March 2007 NSF and Santa Fe Institute Workshop, Brain Science at the Interface of Biological, Physical and Mathematical Sciences, Computer Science and Engineering: Analysis of New Opportunities
- 2005-2008 Program Committee for the Annual Computational Neuroscience International Meeting, Computational Neuroscience Organization
- 2003-2005 Board of Directors, Computational Neuroscience Organization

Service to the University, College, Centers and Units:

Arizona State University:

- 2009 Organizing Committee, Symposium on Co-adaptive Learning: Adaptive Technology for the Aging, Center for Adaptive Neural Systems
- 2008 Organizing Committee, Symposium on Promoting Neural Plasticity, Center for Adaptive Neural Systems
- 2007-2009 Informatics Certificate Committee
- 2007 Organizing Committee, Symposium on Adaptation and Learning in Neuro-Biomechatronic Systems, Center for Adaptive Neural Systems
- 2006-2009 School of Life Sciences Information Technology Resources Committee
- 2006-2009 Executive Committee and Mathematics Liaison, Joint Arizona State University and Barrow Neurological Institute PhD Program in Interdisciplinary Neuroscience
- 2006-2007 Department of Mathematics and Statistics, Co-organizer Mathematical Biology Seminar
- 2005-2006 Department of Mathematics and Statistics, Graduate Mentoring Committee
- 2005-2006 Department of Mathematics and Statistics, Search Committee for Computational Biomathematics Position
- 2004-2005 Department of Mathematics and Statistics, Search Committee for Computational Biomathematics Position

Host for Visiting Seminar and Colloquium Speakers:

Kevin Lin 2008, Jean-Marc Fellous 2008, Bard Ermentrout 2007, Nancy Kopell 2007, Alla Borisyuk 2006, David Terman 2005, Tomas Gedeon 2004

University of Maine:

- 2003-2004 IGERT Functional Genomics PhD Program Curriculum Committee Chair
- 2003-2004 Neuroscience Initiative Steering Committee
- 2002-2003 Search Committee for Dean of College of Liberal Arts and Sciences
- 2002-2003 Peer Committee for Interdisciplinary Studies
- 2001-2003 Unified Fee Grant Proposal Review Committee
- 2001-2002 Search Committee for Assistant Professor of Mathematics
- 2000-2001 Search Committee for Chair of Department of Physics and Astronomy
- 2000-2004 Department of Mathematics and Statistics Policy Advisory Committee
- 2000-2002 Department of Mathematics and Statistics Mathematics Major Outcomes Assessment Committee Chair
- 2000-2001 Department of Mathematics and Statistics Technology Committee
- 2000-2003 Department of Mathematics and Statistics Graduate Committee

Contributions to Education and Professional Development:

- 2009 Doctoral thesis opponent, Norwegian University of Life Sciences, Norway
- 2009 Doctoral thesis pre-examination, Tampere University of Technology, Finland
- 2008 Computational Training for Undergraduates in the Mathematical Sciences (CSUMS), ASU Department of Mathematics and Statistics, Presentation: Advice, Gender Issues, and Work-Life Balance
- 2008 Co-organizer (with Glenn Hurlbert), Southwestern Undergraduate Mathematics Research Conference, Tempe, Arizona
- 2007 Society for Graduate Women in Mathematics, Arizona State University Department of Mathematics and Statistics, Discussion on Gender in Academia: My Experiences
- 2007 Preparing Future Mathematics Faculty, Arizona State University Department of Mathematics and Statistics, Panel Discussion, An Introduction to Grant Writing
- 2007 Student Research Advisor, Mathematical and Theoretical Biology Institute Summer Program, ASU, Tempe, Arizona
- 2006 Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) Meeting, Invited Speaker and Mentor, Tampa, Florida
- 2006 Preparing Future Mathematics Faculty, ASU Department of Mathematics and Statistics, Invited Seminar
- 2005 Faculty Orientation Panel Discussion: What I wish I had known during my first year, Organizer: Marjorie Zatz, Vice Provost, Arizona State University
- 2005 Curriculum Development for NIH Minority Access to Research Careers (MARC) Program in School of Life Sciences, Arizona State University
- 2005 Preparing Future Faculty and Professionals Program, Arizona State University Department of Mathematics and Statistics, Panel Discussion Member: Hiring and the Interview Process
- 2005 Attended Arizona 5th Annual Faculty Doctoral Mentoring Institute sponsored by MGE@MSA
- 2004 Preparing Future Faculty and Professionals Program, Arizona State University Department of Mathematics and Statistics, Panel Discussion Member: Hiring and the Interview Process
- 2002 MAA Mathfest, Workshop Panelist, Capstone Courses for Mathematics Majors
- 2002 Joint Meeting of the AMS and MAA, Session Organizer, Supervising Undergraduate Research
- 2001 University of Maine Women in the Curriculum and Women Studies Program, Spring Lunch Series, Panel Discussion: Calculating Women
- 1996 GENESIS (General Neural Simulation System), Developed educational GENESIS software and accompanying book chapter