SHARON M. CROOK
Curriculum Vitae

School of Mathematical and Statistical Sciences
School of Life Sciences
Arizona State University
Tempe, Arizona 85287-1804

phone: (480) 965-0403
fax: (480) 965-5569
sharon.crook@asu.edu
http://math.la.asu.edu/~crook

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

PROFESSIONAL INTERESTS

Mathematical and Computational Neuroscience, Neuroinformatics, Mathematical Physiology, Computational Biology, Differential Equations and Dynamical Systems

ACADEMIC EMPLOYMENT

2010-	Associate Professor of Mathematics and Statistics and Life Sciences, Arizona State University, Tempe, Arizona
2004-2010	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

2011	Scottish Informatics and Computer Science Alliance (SICSA) Distinguished Visiting Fellowship
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

OTHER TRAINING AND AFFILIATIONS

2011	SICSA Distinguished Visiting Fellow, School of Informatics, University of Edinburgh
2011	Long-term Visitor, Computational Neurosciences Group, Norwegian University of Life Sciences
2008-	Member, Mathematical, Computational and Modeling Sciences Center, Arizona State University
2004-	Member, Center for Adaptive Neural Systems, Arizona State University
2003	Long-term Visitor, Mathematical Biosciences Institute, Ohio State University, Columbus, Ohio
1998	Visitor and Participant in Computational Neuroscience Workshop, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, Minnesota
1992	Student, Methods in Computational Neuroscience Course, Marine Biological Laboratory, Woods Hole, Massachusetts
1988-1991	Research and Development for Intelligent Data Management, NASA Goddard Space Flight Center, National Space Science Data Center, Greenbelt, Maryland
1987	Summer Intern, Laboratory for Atmospheres, NASA Goddard Space Flight Center, Greenbelt, Maryland
1985-1986	Summer Research Assistant and Computer Graphics Programmer, Medical University of South Carolina, Department of Anatomy, Charleston, South Carolina

PUBLICATIONS (*indicates mentored student or postdoc)

Peer-reviewed Journal Articles:

*Berger, S, **S Crook** (2015) Modeling the influence of ion channels on neuron dynamics in Drosophila. Frontiers in Computational Neuroscience. 9:139. DOI:10.3389/fncom/2015.00139.

Gardner, C, *JR Jones, SM Baer, **SM Crook** (2014) Drift-diffusion simulation of the ephaptic effect in the triad synapse of the retina. *Journal of Computational Neuroscience*. 38:129-142. DOI:10.1007/s10827-014-0531-7.

Cannon, RC, P Gleeson, **S Crook**, G Gnapathy, B Marin, E Piasini, RA Silver (2014) LEMS: A language for expressing complex biological models in concise and hierarchical form and its use in underpinning NeuroML 2. *Frontiers in Neuroinformatics*. 8:79. DOI:10.3389/fninf.2014.00079.

*Costela, FM, J Otero-Millan, MB McCamy, S Macknik, XG Troncoso, AN Jazi, **SM Crook**, S Martinez-Conde (2014) Fixational eye movement correction of blink-induced gaze position errors. *PLoS One*. 9(10): e110889.

Vella, M, RC Cannon, **S Crook**, AP Davison, G Ganapathy, HPC Robinson, RA Silver, P Gleeson (2014) libNeuroML and PyLEMS: using Python to combine procedural and declarative modeling approaches in computational neuroscience. *Frontiers in Neuroinformatics*. 8:38. DOI:10.3389/fninf.2014.00038

*Herrera-Valdez, M, EC McKiernan, *SD Berger, S Ryglewski, C Duch, **S Crook** (2013) Relating ion channel expression, bifurcation structure, and diverse firing patterns in a model of an identified motor neuron. *Journal of Computational Neuroscience*.

34(2):211-229. DOI:10.1007/s10827-012-0416-6

Crook, SM, JA Bednar, *SD Berger, RC Cannon, AP Davison, M Djurfeldt, J Eppler, B Kreiner, S Furber, B Graham, M Hull, HE Plesser, L Schwabe, L Smith, V Steuber, S van Albada (2012) Creating, documenting and sharing network models. *Network: Computation in Neural Systems.* 23(4):131-149.

McCamy*, MB, J Otero-Millan, SL Macknik, Y Yang, XG Troncoso, SM Baer, **SM Crook**, S Martinez-Conde (2012) Microsaccadic efficacy and contribution to foveal and peripheral vision. *Journal of Neuroscience*. 32(27):9194-9204. DOI:10.1523/JNEUROSCI.0515-12.2012.

Venugopal, S, TM Hamm, **SM Crook,** R Jung (2011) Recurrent inhibitory control of alpha motoneuron excitability after spinal cord injury—insights from a computational model. *Journal of Neurophysiology*. 106(5):2167-2179.

*Kurian, M, **SM Crook** and R Jung (2011) Motoneuron models of self-sustained firing after spinal cord injury*. Journal of Computational Neuroscience.* 31(3):625-645.

Gleeson, P, **S Crook**, R Cannon, M Hines, G Billings, M Farinella, TM Morse, A Davison, S Ray, U Bhalla, SR Barnes, YD Dimitrova and RA Silver (2010) NeuroML: a simulator-independent language for describing data-driven models of neurons and networks with a high degree of biological realism. *PLoS Computational Biology*. 6(6): e1000815. DOI:10.1371/journal.pcbi.1000815.

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.

*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.

*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.

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.

Peer-reviewed Conference Proceedings:

*Birgiolas, J, S Dietrich, **S Crook**, A Rajadesingan, C Zhang, S Velugoti Penchala, V Addepalli (2015) Ontology-assisted keyword search for NeuroML models. In Amarnath Gupta and Susan Rathbun, Eds, *Proceedings of the 27th International Conference on Scientific and Statistical Database Management*, ACM, New York, NY. Article 37. DOI:10.1145/2791347.2791360.

Dietrich, SW, D Goelman, CM Borror, **SM Crook** (2015) An animated introduction to relational databases for many majors. *IEEE Transactions on Education*. 58(2):81-89. DOI:10.1109/TE.2014.2326834.

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).

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.

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.

Cromp, RF and SM Crook (1991) Automated extraction of metadata from remotely sensed satellite imagery. *ACSM-ASPRS Annual Convention* 3:111-120.

Cromp, RF and **S Crook** (1989) An intelligent user interface for browsing satellite data catalogs. *Telematics and Informatics* 6:299-312.

Published Abstracts:

Crook, SM, S Dietrich (2014) Model exchange with the NeuroML model database. *BMC Neuroscience* 15(Suppl 1): P171.

Cannon, R, P Gleeson, **S Crook**, A Silver (2013) Reducing duplication and redundancy in declarative model specifications. *Frontiers in Neuroinformatics. Conference Abstract: 5th INCF Congress of Neuroinformatics.* DOI: 10.3389/conf.fninf.2013.08.00008

*Berger, SD, SM Baer, **SM Crook** (2013) A continuum approach to model neurites/dendrites with emerging subtrees. *BMC Neuroscience*. 14(Suppl 1):P73.

*Berger, S, S Baer, **S Crook** (2012) Estimation of electrical properties of dendrites with branches using a continuum modeling formulation. *Society for Neuroscience Abstracts,* 340.01.

Gleeson P, E Piasini, **S Crook**, R Cannon, V Steuber, D Jaeger, S Solinas, E D'Angelo, RA Silver (2012) The Open Source Brain Initiative: enabling collaborative modelling in computational neuroscience. *BMC Neuroscience*. 13(Suppl 1):O7.

Cannon, R, P Gleeson, **S Crook**, RA Silver (2012) A declarative model specification system allowing NeuroML to be extended with user-defined component types. *BMC Neuroscience.* 13(Suppl 1): P42.

Smith A, M Cruz-Aponte, EC McKiernan, **S Crook**, M Herrera-Valdez (2011) Differential contribution of A-type potassium currents in shaping neuronal responses to synaptic input. *BMC Neuroscience*.12:P147.

Gleeson P, **S Crook**, A Silver, R Cannon (2011) Development of NeuroML version 2.0: Greater extensibility, support for abstract neuronal models and interaction with Systems Biology languages. *BMC Neuroscience*. 12:P29.

*Herrera-Valdez MA, *SD Berger, C Duch, **S Crook** (2010) Differential contribution of voltage-dependent potassium currents to neuronal excitability, *BMC Neuroscience*,

11:P159.

*Chang, S, SM Baer, **SM Crook**, CL Gardner, C Ringhofer (2009) Computational study of cat retinal cone-horizontal cell interaction, *Society for Neuroscience Abstracts*, 557.13.

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*, 657.10.

Crook, S, P Gleeson, RA Silver (2009) Describing and exchanging models of neurons and neuronal networks with NeuroML, *BMC Neuroscience*, 10:L1.

*Berger, SD, *MA Herrera-Valdez, C Duch and **S Crook** (2009) Passive current transfer in wildtype and genetically modified *Drosophila* motoneuron dendrites, *BMC Neuroscience*, 10:P346.

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*, 10:P343.

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-structred 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: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: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:P1.

*Kurian, MP and **S Crook** (2007) Two-compartment models of spasticity in spinal motor neurons following spinal cord injury, *BMC Neuroscience.* 8: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).

Book Chapters:

Crook, SM, HE Plesser, AP Davison (2013) Learning from the past: approaches for reproducibility in computational neuroscience. In JM Bower, ed. *20 Years of Computational Neuroscience*, Springer.

Gleeson, P, V Steuber, RA Silver and **S Crook** (2012) NeuroML. In Le Novere, ed. *Computational Systems Biology*, Springer.

Venugopal, S, **S Crook**, M Srivatsan and R Jung (2011) Principles of computational neuroscience. In Jung, ed. *Biomimetic and Biohybrid Living-Hardware Systems*, Wiley.

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 Hassanien, eds. *Applications of Computational Intelligence in Biology*, Springer, Berlin/Heidelberg.

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 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.

Encyclopedia Articles:

Crook, S (2015) NeuroML. In Jaeger D, Jung R (Eds.) Encyclopedia of Computational Neuroscience, Vol. 1. Springer New York Heidelberg Dordrecht London

Crook, S (2015) Model Reproducibility: Overview. In Jaeger D, Jung R (Eds.) Encyclopedia of Computational Neuroscience, Vol. 1. Springer New York Heidelberg Dordrecht London

Gerkin, R, SJ Tripathy, **S Crook**, J Kotaleski (2015) Databases and Data Repositories in Computational Neuroscience: Overview. In Jaeger D, Jung R (Eds.) Encyclopedia of Computational Neuroscience, Vol. 1. Springer New York Heidelberg Dordrecht London

Edited Special Editions:

Producing and Analyzing Macro-Connectomes: Current State and Challenges, *Frontiers in Neuroinformatics*, Topic Editors: M Bota, **S Crook**, M Kaiser, Submission Deadline: November 2014

Websites:

NeuroML Website: http://www.neuroml.org, design and maintain website for international, collaborative project

NeuroML Multiscale Model Database and Web Interface: http://neuroml-db.org, populate and maintain database created in my group

Database Educational Resources: http://databasesmanymajors.faculty.asu.edu, see Introduction to Databases and Introduction to Querying for customized animations for bioinformatics students

Other:

Crook, Sharon Marie (1996) The role of delay in oscillatory models of olfactory cortex. *PhD Dissertation*, University of Maryland, College Park, Maryland.

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.

SPONSORED RESEARCH

Funded Grants:

09/05/15-06/30/19	NIH R01MH106674, PI: Crook, Tools for Model Discovery, Validation and Selection in Neuroscience with NeuroML, $1,505,557
09/30/15-07/31/18	NIH R01EB021711, PI: Gerkin, CRCNS Data Sharing: Exchange and Evaluation of Reduced Neuron Models, $393,020, Role: Co-I
09/01/14-08/31/15	NSF CISE-IIS, PI: Smith, *2014 CRCNS PI Conference*, $29,813, Role: Co-I
09/01/14-08/31/17	NSF DUE 1431848, PI: Dietrich, *Collaborative Research: Databases for Many Majors: Customized Visualizations to Improve STEM Learning*, $222,982, Role: Senior Personnel
09/01/11-08/31/15	NIH R01 EB014640, National Institute of Biomedical Imaging and Bioengineering, PI: Crook, *CRCNS Data Sharing: NeuroML Database for Multiscale Models in Neuroscience*, $315,064
06/01/11-08/31/11	Norway Research Council Travel Grant, 119,000 NOK (~$21,444) through Norwegian University of Life Sciences
07/01/09-06/30/15	NIH R01 MH081905, National Institute of Mental Health, PI: Crook *NeuroML: Standards and Tools for Multiscale Model Specification and Exchange*, $894,282
01/01/10-12/31/12	NSF DUE-0941584, PI: Dietrich, *Collaborative Research: Databases for Many Majors: A Student-Centered Approach,* $49,884, Role: Senior Personnel
03/01/09-02/28/10	NSF IIS-0912814 (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 (Through UCL)
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 0718308, 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 IIS-0613404 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 I0S-0091117, 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, *Predoctoral Training in Functional Genomics of Model Organisms*, Role: core faculty

09/01/97-08/30/99 NIH NS010545, Individual National Research Service Award F32, Postdoctoral Research Grant, *A Mechanistic Basis for Neural Encoding*, $49,712

RECENT PRESENTATIONS (*indicates mentored student or postdoc)

Invited Conference Presentations:

2015 *Collaborative development of neural models with NeuroML,* 2015 COMBINE (Computational Modeling in Biolgy Network) Meeting, Salt Lake City, Utah

2014 *A continuum approach for exploring the role of neuronal structure*, Nonlinear Dynamics and Stochastic Methods: From Neuroscience to Other Biological Applications, Conference in Honor of Bard Ermentrout's 60th Birthday, Pittsburgh, Pennsylvania

2012 *Approaches for model reproducibility in computational science,* Conference on Multiscale Modelling in Medicine and Biology, University of Nottingham, Nottingham, UK

Invited Seminar Presentations:

2015 Predicting network behavior based on the behavior of individual elements, Faculty Panel: Organismal, Integrative and Systems Biology, School of Life Sciences, Life Sciences Cafe

2015 How I use mathematics to understand the brain, Virginia Commonwealth University, Department of Mathematics Colloquium Series

2015 How I use mathematics to understand the brain, University of Southern Mississippi, Department of Mathematical Sciences Colloquium Series

2011 Describing and exchanging models of neurons and neuronal networks with NeuroML, SICSA Distinguished Visitor Seminar, University of the West of Scotland, Paisley, UK

2011 Approaches for reproducibility in computational neuroscience, SICSA Distinguished Visitor Seminar, University of Stirling, Stirling, UK

2011 Approaches for reproducibility in computational neuroscience, Neuroinformatics and Computational Neuroscience Doctoral Training Center Day, School of Informatics, University of Edinburgh, Edinburgh, UK

2011 A continuum model for structural plasticity of dendritic spines, SICSA Distinguished Visitor Seminar, University of Edinburgh, Edinburgh, UK

2011 Cell physiology models: the role of calcium in excitability and cell signaling, Mini-workshop, Norwegian University of Life Sciences, Aas, Norway

2011 Challenges in multi-scale modeling: Connecting biophysical mechanisms to behavior, Computational Neuroscience Seminar, Norwegian University of Life Sciences, Aas, Norway

Research Workshops and Symposia:

2015 Joint NeuroML and Open Source Brain Workshop (moderator), Alghero, Sardinia, Italy

2014 Joint NeuroML and Open Source Brain Workshop (moderator and speaker), Alghero, Sardinia, Italy

2014 Collaborative Research in Computational Neuroscience PI Meeting, Workshop on Open Science and Resources for Computational Neuroscience, ASU

(organizer, speaker, moderator), Tempe, Arizona

2013 Joint NeuroML and Open Source Brain Workshop (organizing committee and speaker), Alghero, Sardinia, Italy

2013 Diverse Mathematical Approaches for Understanding Information Processing in Neuronal Networks (organizer and moderator), Minisympoium, Society for Mathematical Biology Meeting 2013, Tempe, Arizona

2012 4th Annual NeuroML Development Meeting (organizer and moderator), University of Edinburgh, Edinburgh, UK

2011 Creating, Documenting, and Sharing Network Models (organizer and speaker), University of Edinburgh, Edinburgh, UK

2011 INCF sponsored neuroinformatics workshop on Emerging standards for network models (speaker), NeuroML: Status and Future Directions, CNS 2011, Stockholm, Sweden

Poster and Demo Presentations:

2014 Crook, S, S Dietrich, NeuroML: Model Exchange for Computational Neuroscience, 2014 Collaborative Research in Computational Neuroscience (CRCNS) PI Meeting, Tempe, Arizona

2014 Crook, S, NeuroML: Model Exchange in Computational Neuroscience, 2014 COMBINE Meeting, UCLA, California

2014 Crook, S, S Dietrich, NeuroML Model Database, 2014 Computational Neuroscience Meeting, Quebec City, Canada

2013 Crook, S, NeuroML 2.0 and Open Source Brain, 2013 Society for Neuroscience Annual Meeting, San Diego, California

2013 *Luli, D, S Crook, A neuronal network model of Drosophila antennal lobe, Southeast Biomedical Engineering Conference 2013, Miami, Florida

2013 *Berger, S, S Baer, S Crook, A continuum approach to model neurites/dendrites with emerging subtrees, 2013 Computational Neuroscience Meeting, Paris, France

2012 *Berger, S, S Baer, S Crook, Estimation of electrical properties of dendrites with branches using a continuum modeling formulation, 2012 Society for Neuroscience Meeting, New Orleans, Louisiana

2012 Crook, S, S Dietrich, *C Zhang, CRCNS DataSharing: NeuroML database for multiscale models in neuroscience, 2012 CRCNS PI Meeting, St. Louis, Missouri

2012 Cannon, R, P Gleeson, S Crook, A Silver, Reducing duplication and redundancy in declarative model specifications, 2012 Neuroinformatics Congress, Munich, Germany

2012 Gleeson P, E Piasini, S Crook, R Cannon, V Steuber, D Jaeger, S Solinas, E D'Angelo, RA Silver, The Open Source Brain Initiative: enabling collaborative modelling in computational neuroscience, Computational Neuroscience 2012, Atlanta, Georgia

2012 Cannon, R, P Gleeson, S Crook, RA Silver, A declarative model specification system allowing NeuroML to be extended with user-defined component types, Computational Neuroscience 2012, Atlanta, Georgia

2011 Gleeson P, S Crook, A Silver, R Cannon, Development of NeuroML version 2.0: Greater extensibility, support for abstract neuronal models and interaction with Systems Biology languages, Computational Neuroscience 2011, Stockholm, Sweden

2011 *Smith A, M Cruz-Aponte, EC McKiernan, S Crook, *M Herrera-Valdez, Differential contribution of A-type potassium currents in shaping neuronal responses to synaptic input, Computational Neuroscience 2011, Stockholm,

Sweden

EDUCATIONAL ACTIVITIES

Teaching and Curriculum Development:
Calculus for the Life Sciences (MAT 251), Discrete Mathematical Structures (MAT 243), Introduction to Computational Molecular Biology (BIO/MBB/MAT 355), Mathematical Cell Physiology (MAT 503 or APM 530), Mathematical Neuroscience II (APM 532), Differential Equations, Dynamical Systems, Computational Methods in Genomics, Capstone Experience in Applied Mathematics, Complex Biological Systems

Postdoctoral Fellow Mentoring:
2014-2015 Sungwoo Ahn, Currently: Asst. Professor, East Carolina University
2013-2014 Richard Gerkin (with Brian Smith), Currently: Asst. Research Professor, Arizona State University
2008-2010 Marco Herrera-Valdez (with Carlos Castillo-Chavez), Currently: Professor, School of Science, National Autonomous University of Mexico

PhD Students Advised:
Current Justas Birgiolas, PhD Interdisciplinary Neuroscience (current), with Brian Smith
Current Mohammad Samavat, PhD Electrical Engineering (current), with Jennie Si
Current Genevieve Toutain, PhD Applied Mathematics (current)
2014 Francisco Costela, PhD Interdisciplinary Neuroscience, with Susana Martinez-Conde at Barrow Neurological Institute, *The Significance of Microsaccades for Perception and Oculomotor Control,* Currently: Postdoctoral Fellow, Schepens Eye Research Institute, Harvard Medical School
2014 Sandra Berger, PhD Interdiscipinary Neuroscience, *Analysis of Signal Processing and Excitability in Computational Models of an Identified Drosophila Motoneuron,* Currently: not seeking employment
2013 Dori Luli, PhD Applied Mathematics for Life and Social Sciences, *A Neuronal Network Model of Drosophila Antennal Lobe,* Currently: Senior Associate - Modeling, Discover Financial Services
2012 David Tello, PhD Applied Mathematics for the Life and Social Sciences, *Modeling the Turnover Process for Dopaminergic Neurons,* Currently: Assistant Professor, Grand Canyon University
2010 Mini Kurian, PhD Mathematics, *Mathematical Models of Motoneurons after Spinal Cord Injury,* Currently: not seeking employment
2007 Muhammad Dur-e-Ahmad, PhD Mathematics, with Zdzislaw Jackiewicz, *Structural Plasticity of Dendritic Spines: A Computational Study,* Currently: Visiting Professor, University of Waterloo

Master's Students Advised:
2009 Pradeep Thiyyagura, MS Computational Biosciences, *Network Models of Insect Olfaction*, Currently: Computer Systems Specialist, Banner Good Samaritan PET Center, Banner Alzheimer's Institute
2007 Todd Huffman, MS Computational Biosciences, *Knife Edge Scanning Microscope: Development and Designs,* Currently: CEO 3Scan
2004 Carrie Diaz Eaton, MA Mathematics, University of Maine, *The Mathematical*

Properties and Underlying Structure of Fast Spiking Cell and Networked Cell Models, Currently: Associate Pofessor of Mathematics, Center for Biodiversity, Unity College

2003 Weihong Qi, MS in Computer ScienceUniversity 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

PhD Graduate Student Committies:

2015 Rebecca Everett, PhD Applied Mathematics
2014 Thomas Holeva, PhD Mathematics
2013 Jerimiah Jones, PhD Applied Mathematics
2012 Lydia Bilinsky, PhD Mathematics
2012 Fernando Vonhoff, PhD Interdisciplinary Neuroscience
2012 Shaojie Wang, PhD Mathematics
2010 Michael McCamy, PhD Mathematics
2009 Sarah Hewes, PhD Mathematics
2008 Joe Graham, PhD Bioengineering
2007 Tufail Malik, PhD Mathematics
2007 Hao Wang, PhD Mathematics

Master's Graduate Student Committies:

Current Huy Dinh, MA Mathematics
2015 Aashish Masih, MS Biomedical Engineering
2010 Eric Nabity, MS Computational Biosciences
2008 Yi-Wen Sun, MS Computational Biosciences
2008 Genevieve Toutain, MA Mathematics
2007 Danielle Robbins, MA Mathematics

Undergraduate Student Research Advised:

2015-2016 James Kyeh, Honors Thesis Committee
2014-2015 Catalina Flores, Honors Thesis Committee
2014-2015 Kara Schaffer, Honors Thesis Committee
2013-2014 Giresse Tchegho, Chemical Engineering
2012-2014 Jason Young, Mathematics
2010-2011 April Chiu, Honors Thesis
2010 Miles Manning and April Chiu, CSUMS Project
2010-2011 Sara Selitsky, Biology
2006-2008 Nicholas Tatonetti, UBM and SOLUR Programs
2007 Pamela Reitsma, Odalys Colon, Irina Kareva, MTBI Summer Program
2006-2007 Adriana Kuiper, UBM Program
2005-2006 Gina Ngo, UBM Program (with Ron Rutowski), Biology
2003-2004 Jason Sewell, Honors Thesis, University of Maine
2002-2003 Carrie Diaz Eaton, Honors Thesis, University of Maine

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

2014 Genevieve Toutain, Baltic-Nordic Summer School on Neuroinformatics
2010 Dori Luli, IMA Workshop on Mathematical Modeling in Industry
2009 Dori Luli, Ottawa Summer School in Computational Neuroscience
2009 Sandra Berger, Advanced Course in Computational Neuroscience
2007 Nicholas Tatonetti, Beckman Scholar

2007 Nicholas Tatonetti, Goldwater Scholar Honorable Mention
2007 Genevieve Toutaine, Best Math Presentation, SACNAS Annual Meeting
2007 Muhammad Dur-e-Ahmad, Outstanding Graduate Student Research Award
2006 Nicholas Tatonetti, SOLUR Research Award
2006 Nicholas Tatonetti, MBB Outstanding Student Award
2006 Mini Kurian, Okinawa Computational Neuroscience Course
2006 Mini Kurian, MBL Methods in Computational Neuroscience Course

SERVICE

Editorial Service:
Editorial Board: Neuroinformatics, Journal of Biological Systems
Associate Editor: Mathematical Biosciences and Engineering
Review Editor: Frontiers in Neuroinformatics
Section Editor, Springer Encyclopedia of Computational Neuroscience
Ad hoc 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, Physical Review E, Neural Computation, Biophysical Journal, SIAM Applied Dynamical Systems, PLoS Computational Biology, Mathematical Medicine and Biology

Grant Reviews:
NIH Study Section Member: Neuro-, Opthalmic and Imaging Technology July 1, 2012-June 30, 2016
NIH Study Sections (Ad hoc Member): Sensorimotor Integration 2005, 2006; Neurotechnology 2007, 2008, 2010
NIH Challenge Grants 2009
Joint NSF/NIH Review Panel for Collaborative Research in Computational Neuroscience (CRCNS) 2002, 2004, 2008, 2009
NSF Panel and Ad Hoc Reviewer: Computational Neuroscience, Applied Mathematics, Computational Mathematics, Bioengineering, Mathematical Biology, Joint DMS/NIGMS
UK Medical Research Council (MRC) Ad Hoc Reviewer
AWM-NSF Mentoring Travel Grants 2011-2013
Research Corporation Grants Ad Hoc Reviewer

Other Regional, National, and International Service:
2016-2017 Scientific Advisory Committee, 2017 Society for Mathematical Biology Meeting in Salt Lake City
2016-2018 Vice President, Organization for Computational Neuroscience
2013-2015 Board of Directors, Organization for Computational Neuroscience
2015 Organizer (with Brian Smith), Large-scale Modeling of the Olfactory System, NIMBioS Funded Workshop, University of Tennessee, Knoxville, Tennessee
2014 Organizer (with Brian Smith), 2014 Collaborative Research in Computational Neuroscience PI Meeting, Tempe, Arizona
2013 Program Committee Member, 29th Annual Southern Biomedical Engineering Conference, Miami, Florida
2011-2013 Association for Women in Mathematics Mentoring Grant Review

Committee (2013 Chair)

2008-2011 Member, Oversight Committee for Description Standards in Neural Network Modeling, International Neuroinformatics Coordinating Facility

2007 Invited Participant, 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, Organization for Computational Neuroscience (Annual Computational Neuroscience International Meeting)

2003-2005 Board of Directors, Organization for Computational Neuroscience

Professional Societies:

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

Recent Service to the University, College and Units:

2015-2016 Statistics Hiring Committee, School of Mathematical and Statistical Sciences

2015-2016 Colloquium Committee, School of Mathematical and Statistical Sciences

2014-2016 Research Advisory Committee, College of Liberal Arts and Sciences

2014-2015 Ad hoc Committee on Biocomputing, Office of Knowledge Enterprise and Development

2012-2013 Applied and Computational Mathematics Hiring Committee Chair, School of Mathematical and Statistical Sciences

2012-2014 Personnel and Budget Committee, School of Mathematical and Statistical Sciences

2012 Organizer, Session on Computational Neuroscience and Neuroinformatics, 4th Annual ASU and BNI Neuroscience Research Symposium

2006-2015 Executive Committee and Mathematics Liaison, Joint Arizona State University and Barrow Neurological Institute PhD Program in Interdisciplinary Neuroscience

Host for visiting seminar and colloquium speakers:

Carmen Canavier 2016, Wonryull Koh 2016, Christiane Linster 2014, Maxim Bazhenov 2013, Cengiz Gunay 2010, Kevin Lin 2008, Jean-Marc Fellous 2008, Bard Ermentrout 2007, Nancy Kopell 2007, Alla Borisyuk 2006, David Terman 2005, Tomas Gedeon 2004

Recent Contributions to Education and Professional Development:

2016 Panelist on STEM Career Paths in Mathematics, Association for Women in Science, JumpStarting STEM Careers Symposium (also poster judge)

2015 Panelist on Teaching for New Faculty, Arizona State University

2014 Mathematics Awareness Day Event: Math, Magic and Mystery, High School Student Workshop on Pattern Formation in Nature, School of Mathematical and Statistical Sciences, Arizona State University

2011 Arizona Women in Science Girls Tour Interview, Arizona State University

2011 Science Fair Judge, Desert Garden Montessori School, Tempe, Arizona

2010 Preparing Future Mathematics Faculty, Arizona State University School of Mathematical and Statistical Sciences, Panel Discussion on Work-Life Balance