SHARON M. CROOK
Curriculum Vitae

School of Mathematical and Statistical Sciences
School of Life Sciences
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

2017-	Professor of Mathematics and Statistics and Life Sciences, Arizona State University, Tempe, Arizona
2010-2017	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
2009	Doctoral Thesis Opponent, Eilen Nordlie, advisor: Hans Ekkehard Plesser, Norwegian University of Life Sciences, Aas, Norway
2009	Doctoral Thesis Opponent, Antti Pettinen, advisor: Marja-Leena Linne, Tampere University of Technology, Finland
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:

*Birgiolas, J, CM Jernigen, B Smith, **S Crook** (2016) SwarmSight: Measuring the temporal progression of animal group activity levels from natural scene and laboratory videos. *Behavior Research Methods*. DOI:10.3758/s13428-016-0732-2

*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) Modulation of inhibitory strength and kinetics facilitates regulation of persistent inward currents and motoneuron excitability following spinal cord injury. *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:

*Samavat, M, *D Luli, **SM Crook** (2016) Neuronal network models for sensory discrimination. *Proceedings of Asilomar Conference on Signals, Systems and Computers*. Asilomar, California.

*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:

Birgiolas, J, CM Jernigan, RC Gerkin, BH Smith, **SM Crook** (2016) SwarmSight: Real-time insect antenna and proboscis tracking. *Society for Neuroscience Abstracts*, 97.05.

Haynes, R, M Samavat, D Luli, **S Crook** (2016) The role of connectivity patterns in a computational model of Drosophila Antennal Lobe. *Society for Neuroscience Abstracts*, 430.13.

Birgiolas, J, R Gerkin, **SM Crook** (2016) Is the model any good? Objective criteria for computational neuroscience model selection. *BMC Neuroscience.*

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:

Birgiolas, J**,** R Gerkin, **SM Crook** (accepted) Software and resources for computational neuroscience. In Cutsuridis, Graham, Cobb, Vida (eds.) Hippocampal Microcircuits: A Computational Modeler's Resource Book, Springer.

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. 2014-2015 (9 articles with over 33,000 Views on Frontiers as of August 2016)

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 (45%)
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 (40%)
09/01/14-08/31/15	NSF CISE-IIS, PI: Smith, *2014 CRCNS PI Conference*, $29,813, Role: Co-I (50%)
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 (5%)
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 (50%)
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 (80%)
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 (5%)

03/01/09-02/28/10	NSF IIS-0912814 (International Travel Award), PI: Crook, *NeuroML Development Workshop: Biophysical Single Cell Modeling,* $10,050 (100%)
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 (8%)
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 (20%)
10/01/06-09/30/09	NSF IIS-0613404 PI: Crook, *CRCNS: Behaviorally Relevant Neuronal Modification during Postembryonic Development*, $457,654 (50%)
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 (8%)
08/15/01-07/31/05	NSF I0S-0091117, PI: Crook, *Collaborative Research: A Dynamic Atlas of the Cricket Cercal Sensory System*, $240,798 (100%)
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:

2016 Rigor and reproducibility in computational neuroscience: Model development, exchange and evaluation, BARCCSYN 2016, Barcelona, Spain

2015 Collaborative development of neural models with NeuroML, 2015 COMBINE (Computational Modeling in Biology 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

Research Workshops and Symposia:

2017 NICT-NSF Collaborative Workshop on Computational Neuroscience, Osaka, Japan (speaker, policy)
2016 Workshop on Data Driven Mode (speaker and moderator), HHMI Janelia Campus
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

Poster and Demo Presentations:

2016 *Birgiolas, J, R Gerkin, SM Crook**,** Is the model any good? Objective criteria for computational neuroscience model selection. 2016 Compuational Neuroscience Meeting, South Korea
2016 Crook, S, R Gerkin, *K Dai, Creating better reduced neuron models. International Conference on Mathematical Neuroscience. Juan-les-Pins, France
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

RECENT EDUCATIONAL ACTIVITIES

Teaching and Curriculum Development:

Arizona State University: Calculus for the Life Sciences (MAT 251), Discrete Mathematical Structures (MAT 243), Introduction to Computational Molecular Biology (BIO/MBB/MAT 355), Mathematical Modeling (MAT 451), Mathematical Cell Physiology (MAT 503 or APM 530), Mathematical Neuroscience II (APM 532)

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 Russell Jarvis, PhD Interdisciplinary Neuroscience, with Rick Gerkin

Current Justas Birgiolas, PhD Interdisciplinary Neuroscience

Current Reuben Haynes, PhD Applied Mathematics

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 Science, 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

PhD Graduate Student Committies:

Current Ruofan Wu, PhD Electrical Engineering
Current Eric Demarco, PhD Applied Mathematics
Current Wendy Caldwell, PhD Applied Mathematics
Current Subash Padmanaban, PhD Biomedical Engineering
2017 Christophe Faucon, PhD Computer Science
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:

2016 Ruofan Wu, MS Electrical Engineering
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:

2016-2017 Sarah Brotman, Honors Thesis Committee
2016-2017 Lidia Csernak, Honors Thesis Advisor
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 Advisor
2010 Miles Manning and April Chiu, CSUMS Summer Project
2010-2011 Sara Selitsky, Biology

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

2016 Reuben Haynes, MBL Summer Course on Computational Neuroscience

2015 Justas Birgiolas, Google Summer of Code
2014 Genevieve Toutain, Baltic-Nordic Summer School on Neuroinformatics
2010 Dori Luli, IMA Workshop on Mathematical Modeling in Industry

Honors Student (Footnote 18) Projects Advised:

2016 Isaac Berger, Emily Herring, Kyle Labban, Andrew Sherrard, Ariel Baber, Luis Hernandez
2015 Cole Helsell
2014 Christopher Bellin, Jaye Espinas, Jose Eusebio, Tyler Ray, Nikil Selvam
2013 Shay Cheeseman, Andrew Couch
2010 Erin Cooper, Karen Sheckel, Ranna Ardipili, Amber Namitz, Paul Billings-Ross

RECENT SERVICE

Editorial Service:

Editorial Board: Neuroinformatics, Journal of Biological Systems
Associate Editor: Mathematical Biosciences and Engineering, 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:

Norway Research Council Ad hoc Reviews 2017
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
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

Other Regional, National, and International Service:

2017 Advisory Role, NICT-NSF Collaborative Workshop on Computational Neuroscience, Osaka, Japan
2016-2017 Program Committee, 2017 International Neuroinformatics Coordinating Facility (INCF) Annual Meeting, Kuala Lumpur
2016-2017 Scientific Advisory Committee, 2017 Society for Mathematical Biology Meeting in Salt Lake City
2016-2019 Vice President, Organization for Computational Neuroscience
2014-2016 Editorial Board (elected), NeuroML Project
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)

Professional Society Membership:

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

Service to the University, College and Units:

Arizona State University:

2017-2018 Graduate Committee, School of Mathematical and Statistical Sciences

2017-2019 Personnel Committee, School of Mathematical and Statistical Sciences

2016-2017 Executive Committee (elected), School of Mathematical and Statistical Sciences

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 (elected), School of Mathematical and Statistical Sciences

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

2006-2017 Executive Committee and Mathematics Liaison, Joint Arizona State University and Barrow Neurological Institute PhD Program in Interdisciplinary Neuroscience

Contributions to Education and Professional Development:

2016 ASU Math Club Speaker, Using Mathematics to Understand the Brain

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