

## CURRICULUM VITAE QING NIE

University of California, Irvine  
Department of Mathematics  
Center for Mathematical & Computational Biology  
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### EDUCATION

- The Ohio State University, Columbus, Ohio 1995  
**Ph.D. in Mathematics.**
- Wuhan University, P.R. China 1990  
**M.S. in Computational Mathematics**
- Wuhan University, P.R. China 1988  
**B.S. in Computational Mathematics**

### POSITIONS HELD

- University of California, Irvine*  
**Director**, Center for Mathematical and Computational Biology (CMCB) 2005-
- Director**, 2014-, **Acting Director** (2010-2013), **Associate Director** (2008-2013)  
UCI Campus-wide Interdisciplinary Ph.D. Gateway Program on Mathematical and Computational Biology (MCB)
- Associate Director** 2007-  
Center for Complex Biological Systems (one of the 12 National Centers on Systems Biology currently funded by NIH)
- Professor** 2005-  
**Chancellor's Fellow** (2005-2008)  
Department of Mathematics  
Department of Biomedical Engineering (Affiliated faculty)  
Department of Developmental and Cell Biology (Affiliated faculty) 2016-  
Center for Complex Biological Systems  
Institute for Genomics and Bioinformatics 2007-  
Chao Family Comprehensive Cancer Center 2011-
- Associate Professor** 2002-2005  
Department of Mathematics  
Department of Biomedical Engineering  
Center for Complex Biological Systems
- Assistant Professor** – Department of Mathematics 1999-2002
- The University of Chicago*  
**L.E. Dickson Instructor** – Department of Mathematics 1997-1999  
(Mentors: Peter Constantin and Todd Dupont)
- University of Minnesota*  
**Postdoctoral Fellow** – Institute for Mathematics and Its Application 1996-1997  
Annual Program on Mathematics in High-Performance Computing
- The Ohio State University*  
**Postdoctoral Researcher & Lecturer** – Department of Mathematics 1995-1996

## HONOR & DISTINGUISHED LECTURES

- **Fellow, American Association for the Advancement of Science (AAAS)**, elected 2013
- **Fellow, American Physical Society (APS)**, elected 2014
- **Chancellor's Fellow**, University of California, Irvine, 2005-2008  
(<http://www.ap.uci.edu/distinctions/titles.html#chancprof>)
- **Distinguished Lecture**, Information Science and Technology Center, Colorado State University, 11/2008
- **Distinguished Lecture**, Interdisciplinary Mathematics Institute, University of South Carolina, 03/2014
- **University-wide Distinguished Lecture**, Sun Yat-Sen University, China, 05/2014
- **Distinguished Lecture on Frontier of Biology**, Institute of Molecular Biology, Academia Sinica, Taiwan, 12/2015
- **Science at the Edge**, Michigan State University, 04/2016
- **Computational Medicine Lecture**, ICES, University of Texas, Austin, 04/2016
- **LeClerc Lecture**, Dept. of Animal & Avian Sciences, U. of Maryland, 04/2016

## GRANTS

### Current

1. **Stochastic Dynamics and Noise Control in Patterning Systems**  
PI (one of two MPIs, **contact**): NIH-NIGMS (R01GM107264); **\$1.3M** 07/14-06/18
2. **Differentiation and Stratification during Development: A Joint Computational and Experimental Investigation**  
PI: NSF-DMS (DMS-1161621); **\$2M** 09/12-08/17
3. **Early Mammalian Embryo Development: Stochastic Modeling and Experiment**  
PI: NSF-DMS (DMS-1562176); **\$1.2M** 06/16-05/20
4. **Defining an Integrated Signaling Network That Patterns the Craniofacial Skeleton**  
MPI (one of three MPIs): NIH-NIDCR (R01ED023050); **\$3.2M** 07/14-04/19
5. **National Center for Systems Biology – “Spatial Dynamics and Information Flows”**  
PI: Lead PI for Theme on Mathematics and Computations;  
(One of six PIs, NIH-NIGMS (P50GM76516); **\$26M** 08/07-07/17
6. **Spatial Dynamics of Tissue and Organ Size Control**  
MPI (one of three MPIs): NIH-NINDS (R01NS095355); **\$2.1M** 09/15-06/20
7. **Predocutorial training Grant on “Mathematical, Computational and Systems Biology”**  
MPI (one of the two MPIs, co-PD): NIH-NIBIB (T32 EB09418); **\$2.5M** 04/09-03/20
8. **Inhibitory Neuron Circuit Organization and Function in Prefrontal Cortex**  
Co-PI, responsible for the proposed modeling work  
PI: Xiangmin Xu, NIH-NIMH (R01MH105427); **\$2.5M** 07/15-03/19
9. **EMT Regulation in Epidermal Morphogenesis**  
Co-PI, responsible for the proposed modeling work  
PI: Xing Dai, NIH-NIAMS (R56AR064532); **\$339,900** 09/15-08/17
10. **Understanding the Role of Cell Plasticity in Mediating Drug Resistance**  
PI (one of five PIs); Koskinas Ted Giovanis Foundation for Health and Policy  
and the Breast Cancer Research Foundation; **\$455,022** 12/16-11/19

### Past

- **Principle of Robust Developmental Patterning**  
MPI (one of three MPIs): NIH-NIGMS (R01GM67247-12); **\$1.8M** 2010-2015
- **Teaching Systems Biology**  
Co-Director (one of two PIs): HHMI Interfaces Training Innovation Program Supplements  
(HHMI Grant #56007658); **\$30K** 2012-2014
- **Computational Analysis of Morphogenesis** 2009-2013  
PI: NSF DMS (DMS-0917492); **\$250K**
- **Specificity and Spatial Dynamics of Cell Signaling: Theory and Experiment** 2005-2011

- PI; NIGMS/NIH (R01GM75309); \$1.2M
- *Principle of Robust Developmental Patterning*  
Co-PI; NIGMS/NIH (R01GM67247-5); \$1.6M 2007-2010
- *Role of Oval Genes in Epidermal Development – Supplement*  
PI; NIH (R01AR47320-08S1); 150K 2008-2010
- Developing a New Interdisciplinary Ph.D. Program on Mathematical,  
*Computational and Systems Biology*  
Co-PI; Howard Hughes Medical Institute (HHMI-56005680); \$1.0M 2006-2009
- *Morphological Evolution in Materials*  
PI; DMS/NSF Program on Computational Mathematics (DMS0511169) 2005-2009
- *Morphogen Systems: A Joint Mathematical and Experimental Investigation*  
Co-PI; NIGMS/NIH Mathematical Biology Initiative (R01GM67247-1); \$1.4M 2002-2006
- *Transport and Complexity in Biological Systems*  
Co-PI; NIGMS/NIH (P20GM66051); \$0.7M 2002-2006
- *Computational of Interface Dynamics in Fluids and Materials*  
PI; DMS/NSF Program on Computational Mathematics (DMS0074414) 2000-2003
- *Scientific Computing Research Environments*  
Co-PI; NSF (DMS0112416) 2001-2003

### SYNERGETIC ACTIVITIES

- Member, Scientific Advisory Committee for Mathematical Biosciences Institute (MBI),  
The Ohio State University 2013-2016
- Member, Board of Trustee, Beijing Center for Scientific and Engineering Computing, 2014-
- One of two division chair nominations, Division of Biophysics (DBIO),  
American Physical Society 2010
- NSF Review Panels – MPS/DMS (2006-2009,2011,2013,2015) and BIO/MCB (2010)
- NIH Special Emphasis Panels, Study Sections  
NIGMS (Math. Bio Initiative; COBRE 2006-2015), NICHD (Training Program Health  
Sciences T32, 2011-2013), NCI (Physical Science Oncology Center, 2009), NIBIB  
(Multi-scale Modeling, 2012-2016, co-chair, 2015); Single Cell Analysis (2014); BST  
(2014); BD2K Biomedical Data Science Training (2015). Molecular and Cellular  
Hematology Study Section (2016), NIH-AREA (2016), NIGMS-P41 site visiting and  
review panel (2016).
- Howard Hugh Medical Institute and NIH Annual Meetings on Interface Programs, 2006-2009
- Reviewer for other agencies: Army Office of Research (2014); Canada MITACS (2007);  
Minister of Education of China (2009); Netherlands Organization for Scientific  
Research (2009, 2011); Gerber Foundation (2010); European Research Council  
(ERC, 2011); China NSF Life Science Division (2012); French National Alliance for  
Life and Health Sciences (2014); Wellcome Truést (2015); UK-MRC (Medical  
Research Council, 2016),

### SOCIETY MEMBERSHIP

- American Association for the Advancement of Science, 1999-
- Society for Industrial and Applied Mathematics (SIAM), 1999-
- American Physical Society (APS) 2005-
- Phi Tau Phi Scholastic Honor Society of America (elected) 2011-

### EDITORIAL BOARD

- *Mathematical Biosciences and Engineering* 2006-
- *Discrete and Continuous Dynamical System-B* 2010-
- *Journal of Bioengineering and Biomedical Science* 2011-
- *Current Synthetic and Systems Biology* 2013-
- *AIMS Biophysics* 2014-
- *PeerJ* 2015-
- *Annals of Mathematical Sciences and Applications* 2015-
- *Mathematical Biosciences* 2016-
- *PLoS Computational Biology (regular guest editor since 2013)* 2016-

### VISITING POSITIONS

- **Distinguished Visiting Professor**  
Beijing International Center for Mathematical Research, Peking University 04/16-

- Distinguished Visiting Professor**  
School of Computer Engineering and Sciences, Shanghai University 11/13-10/16
- Distinguished Visiting Professor**  
College of Arts and Sciences and Mathematical Biosciences Institute,  
The Ohio State University 04/11
- Core Participant**  
Institute for Pure and Applied Mathematics, UCLA 03/06-06/06  
“*Cell and Materials: At the Interface between Mathematics, Biology and Engineering*”
- Long-Term Visitor**  
Mathematical Biosciences Institute, The Ohio State University 11/03  
“*Mathematical Modeling of Cell Process*”
- Short-Term Visitor**  
Institute for Pure and Applied Mathematics, UCLA 02/03  
“*Workshop on Cell & Materials: at the Tissue Engineering Interface*”

## UNIVERSITY & DEPARTMENTAL SERVICES

- Member, Interdisciplinary Research and Training Working Committee 2016-  
UC Irvine
- Member, Academic Review Board, UC Irvine 2015-2016
- Member, Graduate Council, UC Irvine 2013-2016
- Member, International Education Committee, UC Irvine 2014-2016
- Chair, Recruitment Committee for campus-wide Faculty Search 2007-2013  
on Systems Biology (seven positions that could be in four different colleges),  
UC Irvine
- Member, Dean Search Committee, School of Physical Sciences, UC Irvine 2011
- Chair, Steering Committee, School of Physical Sciences, UC Irvine 2009-2011
- Member, U. of California Divisional Senate Assembly, UC Irvine 2009-2011
- Chair, Distinguished Lecture Selection Committee; 2007-2008  
Department of Mathematics, UC Irvine
- Chair, Visiting Assistant Professor Recruiting Committee; 2005-2006  
Department of Mathematics, UC Irvine
- Member, Chairperson Selection Committee; Dept. of Mathematics, UC Irvine 2004
- Undergraduate Advisor and founding faculty member for Specialization 2001-2004  
in Applied and Computational Mathematics; UC Irvine
- Member, University Council for Research, Computing and 2002-2005  
Library Resources, UC Irvine

## OUTREACH

Stimulated and supervised local high school students on various research projects (11), resulting in several award-winning presentations including **two Intel-STS semi-finalists**. (<http://cmcb.math.uci.edu/outreach.html>)

## PUBLICATIONS

### Manuscripts submitted

111. Qixuan, Wang, Ji Won Oh, Anukriti Dhar, Jonathan Le, Shelby C. Jocoy, Antoni R. Rossi, Hoang T. Ha, Melisa A. Fuentes, Manda P. Nguyen, Julien Legrand, Eve Kandyba, Jung Chul Kim, Moonkyu Kim, Krzysztof Kobiela, Kiarash Khosrotehrani, Qing Nie\*, Maksim V. Plikus\*, \*: co-corresponding author, A multi-scale model for the hair follicle reveals a pacemaker mechanism driving rapid hair growth patterning, Under revision, 2016.

110. C. Li\*\*, T. Hong\*\*, Y. Tung, Y. Yen, H. Hsu<sup>2</sup>, Y. Lu, M. Chang, Q. Nie<sup>3,\*</sup>, J. Chen\*. MicroRNA Filters Hox Temporal Transcription Noise to Confer Boundary Formation in the Spinal Cord  
\*\*: equal-contribution, \*:co-corresponding authors. Final review in *Nature Communication*, 2016

## **Published Journal Articles**

109. W. R. Holmes, Nabora Soledad Reyes de Mochel, Qixian Wang, Huijing Du, Michael Chiang, Olivier Cinquin, Ken W.Y. Cho, Qing Nie, Gene expression noise enhances robust organization of the early mammalian blastocyst. Accepted for publication, *PLoS Comp. Bio*, 2016.
108. A. Li, S. Figueroa, T. Jiang, P. Wu, R. Widelitz, Q. Nie, C. Chuong. Diverse feather shape evolution enabled by coupling anisotropic signaling modules with self-organizing branching programme. *Nature Communication*, Accepted for publication, 2016
107. Q. Wang, W. R. Holmes, J. Julian, T. Schilling, Q. Nie. Cell sorting and noise-induced cell plasticity coordinate to sharpen boundaries between gene expression domains, *PLoS Computational Biology*, accepted for publication. 2016
106. C. Rackauacks, Q. Nie, Adaptive Methods for Stochastic Differential Equations via Natural Embeddings and Rejection Sampling with Memory, accepted for publication, *Discrete and Continuous Dynamic systems – B*, 2016
105. J. Xie, J. Xu, C. Nie, Q. Nie. Machine Learning of Swimming Data via Wisdom of Crowd and Regression Analysis. *Mathematical Biosciences and Engineering*. 14(2), 511-527, doi:10.3934/mbe.2017031, 2017.
104. J. Lo, L. Zheng, Q. Nie. A Hybrid Continuous-Discrete Method for Stochastic Reaction-Diffusion Processes. *Royal Society Open Science*, 3:160485, 2016.
103. C. Li, T. Hong, C. Webb, H. Karner, S. Sun, Q. Nie. A Self-Enhanced Transport Mechanism through Long Non-Coding RNAs for X Chromosome Inactivation. 6-31517, doi:10.1038/srep31517 *Scientific Report*, 2016.
102. W. Chen, Q. Nie, T. Yi, and C. Chou, Modeling of Yeast Mating Reveals Robustness Strategies for Cell-Cell Interactions. *PLoS Computational Biology*, 12 (7):e1004988, 2016.
101. Chunhe Li, Hong Tian, and Qing Nie. Quantifying the Landscape and Kinetic Paths for Epithelial-Mesenchymal Transition from a Core Circuit. *Physical Chemistry Chemical Physics* 18, 17949-17956, DOI: 10.1039/c6cp03174a, 2016.
100. Jiajun Zhang, Qing Nie, and Tianshou Zhou, A Moment-Convergence Method for Stochastic Analysis of Biochemical Reaction Networks. *The Journal of Chemical Physics*, 144, 194109 (2016); <http://dx.doi.org/10.1063/1.4950767>, 2016.
99. Catherine Ta, Qing Nie\*, Hong Tian\*. Controlling Stochasticity in Epithelial-Mesenchymal Transition through Multiple Intermediate Cellular States. *Discrete and Continuous Dynamical Systems-B*, 21(7), page 2275-2291, 2016. \*Co-corresponding author
98. Jinzhi. Lei, Wing-Cheong Lo, and Qing Nie. Mathematical Models of Morphogen Dynamics and Growth Control. Vol 1(2), P 427-471, *Annals of Mathematical Sciences and Applications*. 2016.
97. J. Julian, L. Zheng, C. Rackaukas, M. Digman, E. Gratton, Q. Nie, T. Schilling. Noise Modulation in Retinoic acid Signaling Sharpens Segmental Boundaries of Gene Expression in the Zebrafish Hindbrain, *eLife*, e14034, 2016.
96. X. Xu, N. Olivas, T. Ikrar, T. Peng, T. C Holmes, Q. Nie, and Y. Shi, Primary Visual Cortex Shows Laminar Specific and Balanced Circuit Organization of Excitatory and Inhibitory Synaptic Connectivity. *J. of Physiology*, Vol 594 (7), pp 1891, DOI: 10.1113/JP271891, 2016.
95. A. Cinquin, L. Zheng, P. Taytor, L. Zhang, M. Chiang, J. Snow, Q. Nie, and O. Cinquin. Semi-Permeable Diffusion Barriers Enhance Patterning Robustness in *C. elegans* Germ Line. *Developmental Cell*, 35, pp405-417, 2015.
94. Tian Hong, Kazuhide Watanabe, Catherine Ha Ta, Alvaro Villarreal-Ponce, Qing Nie\* and Xing Dai\*. An Ovol2-Zeb1 Mutual Inhibitory Circuit Governs Bidirectional and Multi-step Transition between Epithelial and Mesenchymal States, \*co-corresponding author, *PLoS Computational Biology*, 11(11): e1004569. doi:10.1371/journal.pcbi.1004569, 2015.
93. H. Du, Q. Nie\*, W. Holmes\*. The Interplay between Wnt Mediated Expansion and Negative Regulation of Growth Promotes Robust Intestinal Crypt Structure and Homeostasis. \*co-corresponding author, *PLoS Computational Biology*, 11(8): e1004285. doi:10.1371/journal.pcbi.1004285, 2015.
92. J. Xie, C. Xiang, J. Ma, J. Tan, T. Wen, J. Lei, and Q. Nie. An Adaptive Hybrid Algorithm for Global Network Alignment, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 13(3) P483-493,. doi:10.1109/TCBB.2015.2465957, 2016.

91. A. Li, Y. Lai, S. Figueroa, T. Yan, R. Widelitz, K. Kobiela, Q. Nie, and C. Chuong. Deciphering Principles of Morphogenesis from Temporal and Spatial Patterns on the Integument. *Developmental Dynamics*, doi: 10.1002/dvdy.24281, 2015.
90. C. Ta, D. Wang, and Q. Nie. An Integration Factor Method for Stochastic and Stiff Reaction-diffusion Systems. *J. of Computational Physics*, 295:505-522, 2015.
89. T. Hong, E. Fung, L. Zhang, G. Huynh, E. Monuki, and Q. Nie. Semi-adaptive Response and Noise Attenuation in BMP Signaling. *Journal of the Royal Society Interface*, 12(107) 2015.
88. J. Xie, Z. Zhou, J. Ma, C. Xiang, Q. Nie, and W. Zhang. Graphics Processing Unit-based Alignment of Protein Interaction Networks. *IET Systems Biology*, 10.1049/iet-syb.2014.0052 2015.
87. D. Wang, W. Chen, Q. Nie. Semi-implicit Integration Factor Methods on Sparse Grids for High-dimensional Systems. *Journal of Computational Physics*, 292, 43-55, 2015.
86. W. Lo, S. Zhou, F. Wan, A. Lander, Q. Nie. Robust and Precise Morphogen-Mediated Patterning: Tradeoffs, Constraints, and Mechanisms. *Journal of the Royal Society Interface*, 12, 2015.
85. C. Chou, T. Moore, Q. Nie, and T. Yi. Alternative Cell Polarity Behaviors Arise from Changes in G-Protein Spatial Dynamics. *IET Systems Biology*, 9(2), pp52-63, 2015.
84. A. Gord, W. Holmes, X. Dai, Q. Nie. Computational Modeling of Epidermal Stratification Highlights the Importance of Asymmetric Cell Division for Predictable and Robust Layer Formation. *Journal of the Royal Society Interface*, 11:99, 2014.
83. B. Lee, A. Villarreal-Ponce, M. Fallahi, J. Ovadia, P. Sun, Q. Yu, S. Ito, S. Sinha, Q. Nie, and X. Dai. Transcriptional Mechanisms Link Epithelial Plasticity to Adhesion and Differentiation of Epidermal Progenitor Cells. *Developmental Cell*, 29(1), p47-58, 2014. -- **Highlighted in preview article, 29(1), pp1-2, Developmental Cell.**
82. J. Lei, S. Levin and Q. Nie. A Mathematical Model of Adult Stem Cells Regeneration with Crosstalk between Genetic and Epigenetic Regulation. *Proceeding of National Academy of Sciences, USA*, E880-E887, doi: 10.1073/pnas.1324267111, 2014. – **Highlight in PNAS Early Edition; Commentary article: PNAS 111 (10) pp. 3653-3654.**
81. W. Holmes and Q. Nie. Interactions and Tradeoffs between Cell Recruitment, Proliferation, and Differentiation Affect CNS Regeneration. *Biophysical Journal*, 106:1528-1536, 2014.
80. Z. Zheng, S. Christley, W. Chiu, I. Blitz, X. Xie, K. Cho, Q. Nie. Inference of the *Xenopus tropicalis* Embryonic Regulatory Network and Spatial Gene Expression Patterns. *BMC Systems Biology*, 8:3, doi:10.1186/1752-0509-8-3, 2014.
79. D. Wang, L. Zhang, and Q. Nie. Array-representation Integration Factor Method for High-dimensional Systems. *Journal of Computational Physics*, 258, pp585-600, 2014.
78. G. Ye, M. Tang, J. Cai, Q. Nie, X. Xie. Low-Rank Regularization for Learning Gene Expression Programs. *PLoS One*, 9(1), doi:10.1371, 2014.
77. X. Liu, S. Johnson, S. Liu, D. Kanojia, W. Yue, U. Singn, Qian Wang, Qi, Wang, Q. Nie and H. Chen. Non-linear Growth Kinetics of Breast Cancer Stem Cells: Implications for Cancer Stem Cell Targeted Therapy. *Scientific Reports*, 3:2473, DOI: 10.1038/srep02473, , 2013.
76. M. Chen, L. Wang, C. Liu, and Q. Nie. Noise Attenuation in the ON and OFF States of Biological Switches. **Featured and cover page article**, *ACS Synthetic Biology*, 2, pp587-593, 2013,
75. J. Ovadia and Q. Nie. Numerical methods for two-dimensional stem cell tissue growth. *Journal of Scientific Computing*. 58:149-175, 2014.
74. A. Li, M. Chen, T. Jiang, P. Wu, Q. Nie, R. Widelitz, C. Chuong. Shaping Organs by a Wnt/Notch/non-muscle Myosin Module Which Orients Feather Bud Elongation. *Proceeding of the National Academy of Sciences, USA*, E1452-E1461, 2013.
73. J. Zhang, Q. Nie, M. He, and T. Zhou. An Effective Method for Computing the Noise in Biochemical Networks. *Journal of Chemical Physics*, 138, 084106-1, 2013
72. J. Ovadia and Q. Nie. Stem Cell Niche As an Inherent Cause of Undulating Epithelial Morphologies. *Biophysical Journal*, 104 (1): 237-46, 2013.
71. J. Lei, D. Wang, Y. Song, Q. Nie and Y. Wan. Robustness of Morphogen Gradients with

- “Bucket Brigade” Transport through membrane-associated Non-receptor. *Discrete and Continuous Dynamical Systems-B*, 18(3), 2013.
70. T. Schilling, Q. Nie, A. Lander. Dynamics and Precision in Retinoic Acid Morphogen Gradients. *Current Opinion in Genetics & Development*, 22 (6), 2012 .
69. C. Chou, T. Moore, S. Chang, Q. Nie and T. Yi. Signaling Regulated Endocytosis and Exocytosis Lead to Mating Pheromone Concentration Dependent Morphologies in Yeast. *FEBS Letters*, 586 (23), Page 4208-4214, 2012.
68. L. Zheng, M. Chen, Q. Nie. External Noise Control in Inherently Stochastic Biological Systems. *Journal of Mathematical Physics*, 53, 115616, 2012.
67. L. Zhang, K. Radtke, L. Zheng, T. Schilling, Q. Nie. Noise Drives Sharpening of Gene Expression Boundaries in Zebrafish Hindbrain. *Nature Molecular Systems Biology*, 8:613, 2012.
66. L. Zhang, A. Lander, Q. Nie. A Reaction-Diffusion Mechanism Influences Cell Lineage Progression as a Basis for Formation, Regeneration, and Stability of Intestinal Crypts. *BMC Systems Biology*, 6:93, 2012.
65. Q. Nie, Challenges for Training at the Interface, *Journal of Bioengineering & Biomedical Science*, 2:3, 1000e105, 2012.
64. C. Chan, X. Liu, L. Wang, L. Bardwell, Q. Nie\*, and G. Enciso\*. Protein Scaffolds Can Enhance the Bistability of Multisite Phosphorylation Systems. \*Co-corresponding authors, *PLoS Computational Biology*, 8(6) e1002551, 2012.
63. A. Cai, K. Radtke, A. Linville, A. Lander, Q. Nie\*, T. Schilling\*. Cellular Retinoic Acid-Binding Proteins Are Essential For Hindbrain patterning and Signal Robustness in Zebrafish, \*Co-corresponding authors, *Development*, 139, 2150-2155. 2012.
62. W. Lo, L. Chen, M. Wang, and Q. Nie. Efficient and Robust Methods for Steady State Patterns in Reaction-Diffusion Systems. *J. of Computational Physics*, 231, 5062-5077, 2012.
61. S. Zhou, W. Lo, J. Suhaim, M. Digman, E. Gratton, Q. Nie, and A. Lander. Free Extracellular Diffusion Creates the Dpp Morphogen Gradient of the Drosophila Wing Disc. *Current Biology*, 22, 668-675, 2012.
60. C. Chou, L. Bardwell, Q. Nie\*, T. Yi\*. Noise Filtering Tradeoffs in Spatial Gradient Sensing and Cell Polarization Response. \*Co-corresponding authors, *BMC Systems Biology*, 5:196 2011.
59. S. Zhao, J. Ovadia, X. Liu, Y.T. Zhang. Q. Nie. Operator Splitting Implicit Integration Factor Methods for Stiff Reaction-diffusion-Advection Systems. *J. of Computational Physics*, 230(15), pp 5996-6009, 2011.
58. Z. Zheng, C. Chou, T. M. Yi, Q. Nie. Mathematical Analysis of Steady-State Solutions in Compartment and Continuum models of Cell Polarization. *Mathematical Biosciences and Engineering*. 8(4), 2011.
57. J. Lei, F.Y.M. Wan, A. Lander, Q. Nie. Robustness of Signaling Gradient in Drosophila Wing Imaginal Disc. *Discrete and Continuous Dynamical Systems-B*, 16(3), 2011. – **Best paper award of the Journal for the year of 2011.**
56. C. Chou, W. Lo, K. Gokoffski, Y. Zhang, F. Wan, A. Lander, A. Calof, and Q. Nie. Spatial Dynamics of Multi-stage Cell Lineages in Tissue Stratification. *Biophysical Journal*, 99(10), 2010.
55. L. Wang, Q. Nie, G. Enciso. Non-Essential Sites Improve Phosphorylation Switch. *Biophysical Journal*, 99(6), 2010.
54. S. Haney, L. Bardwell, Q. Nie. Ultrasensitive Responses and Specificity in Cell Signaling. *BMC Systems Biology*, 4 (119), 2010.
53. S. Christley, B. Lee, X. Dai and Q. Nie. Integrative Multicellular Biological Modeling: a Case Study of 3D Epidermal Development Using GPU Algorithms. *BMC Systems Biology*, 4(107), 2010.
52. L. Wang, J. Xin, and Q. Nie. A Critical Quantity for Noise Attenuation in Feedback Systems. *PLoS Computational Biology*, 6(4): e1000764, 2010.
51. X. Liu and Q. Nie. A Compact Integration Factor Method for Complex Domains and Adaptive Mesh Refinement. *Journal of Computational Physics*. 229, pp 5692-5706, 2010.

50. A.D. Lander, Q. Nie, B. Vargas, and F. Y. M. Wan. Sized-Normalized Robustness of Dpp Gradient in Drosophila Wing Imaginal Disc. *J. of Mechanics of Materials and Structures (JoMMS)*. 6:1, pp321-350, 2011.
49. X. Liu, L. Bardwell, and Q. Nie. A Combination of Multisite Phosphorylation and Substrate Sequestration Produces Switch-Like Responses. *Biophysical Journal*, 98(8), pp1396-1407, 2010.
48. J. Lei, G. He, H. Liu, and Q. Nie. A Delay Model for Noise-Induced Bi-directional Switching. *Nonlinearity*, 22, pp2845-2859, 2009.
47. S. Christley, Q. Nie, and X. Xie. Incorporating Existing Network Information into Gene Network Inference. *PLoS ONE* 4(8): e6799, 2009.
46. J. Wells, B. Lee, A. Cai, A. Karapetyan, W. Lee, E. Rugg, S. Sinha, Q. Nie, and X. Dai. Ovol2 Suppresses Cell Cycling and Terminal Differentiation of Keratinocytes by Directly Repressing C-Myc And Notch1. *J. of Biological Chemistry*, 284, pp 29125-29135, 2009.
45. A. Cai, Y. Peng, J. Wells, X. Dai, and Q. Nie. Multi-scale Modeling for Threshold Dependent Differentiation. *Math. Model of Nat. Phenom.* 4(4), pp 103-117. 2009.
44. X. Li and Q. Nie. A High-order Boundary Integral Method for Surface Diffusions on Elastically Stressed Axi-symmetric Rods. *J. of Computational Physics*, 228(12), pp 4625-4637, 2009.
43. A.D. Lander, W. Lo, Q. Nie, and F.Y.M. Wan. The Measure of Success: Constraints, Objectives, and Tradeoffs in Morphogen-Mediated Patterning. *Cold Spring Harb Perspect Biol* 1:a002022, 2009.
42. A.D. Lander, K. Gokoffski, F.Y.M. Wan, Q. Nie, and A. Calof. Cell Lineages and the Logic of Proliferative Control. *PLoS Biology*, 7(1): e1000015, 2009.
41. W. Lo, C. Chou, K. Gokoffski, F.Y.M. Wan, A.D. Lander, A. Calof, and Q. Nie. Feedback Regulation in Multistage Cell Lineages. *Mathematical Biosciences and Engineering*, 6(1), pp59-82, 2009.
40. Y. Zhou, J. He, and Q. Nie. A Comparative Runtime Analysis of Heuristic Algorithms for Satisfiability Problems. *Artificial Intelligence*, doi, 1016, 173(2), 2009.
39. A.D. Lander, Q. Nie, F.Y.M. Wan, and Y. Zhang. Localized Ectopic Expression of Dpp Receptors in a Drosophila Embryo. *Studies in Applied Mathematics*, 123, pp 175-214, 2009.
38. T. Moore, C.S. Chou, Q. Nie, N.L. Jeon, and T. M. Yi. Robust Spatial Sensing of Mating Pheromone Gradients by Yeast Cells. *PLoS ONE*, 3(12): e3865, 2008.
37. S. Chou, S. Zhao, Y. Song, H. Liu, and Q. Nie. Fus3-triggered Tec1 Degradation Modulates Mating Transcriptional Output during the Pheromone Response. *Nature Molecular Systems Biology*, 4:212, 2008.
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35. Q. Nie, F.Y.M. Wan, Y-T Zhang, and X-F Liu. Compact Integration Factor Methods in High Spatial Dimensions. *Journal of Computational Physics*, 227(10) pp 5238-5255, 2008.
34. D. Iron, A. Syed, H. Theisen, T. Lukacsovich, M. Naghibi, L.J. Marsh, F.Y.M. Wan, and Q. Nie. The Role of Feedback in the Formation of Morphogen Territories. *Mathematical Biosciences and Engineering*, 5(2) pp277-298, 2008.
33. R. White, Q. Nie, A.D. Lander, and T. Schilling. Complex Regulation of cyp26a1 Creates a Robust Retinoic acid Gradient in the Zebrafish Embryo. *PLoS Biology*, 5(11), e304, 2007.
32. Y. Zhang, A.D. Lander, and Q. Nie. Computational Analysis of BMP Gradients in Dorsal-ventral Patterning of the Zebrafish Embryo. *Journal of Theoretical Biology*, 248, pp 579-589, 2007.
31. L. Bardwell, X. Zou, Q. Nie, and N. Kamorova. Mathematical Models of Specificity in Cell Signaling. *Biophysical Journal*, 92, pp 3425-3441, 2007.
30. T. Yi, S. Chen, C. Chou, and Q. Nie. Modeling Yeast Cell Polarization Induced by Pheromone Gradients. *J. of Statistical Physics*, 128(1), pp193-207, 2007.
29. C. Chou, Y. Zhang, R. Zhao, and Q. Nie. Numerical Methods for Stiff Reaction-Diffusion Systems. *Discrete and Continuous Dynamical System-B*, 7(3), pp 515-525, 2007.



28. X. Li, V. Cristini, Q. Nie, and J. Lowengrub. Nonlinear Three-dimensional Simulation of Solid Tumor Growth. *Discrete and Continuous Dynamical System-B*, 7(3), pp 581-604, 2007.
27. A.D. Lander, Q. Nie, and F.Y.M. Wan. Membrane Associated Non-receptors and Morphogen Gradients. *Bulletin of Mathematical Biology*, 69, pp 33-54, 2007.
26. H. Theisen, A. Syed, B. Nguyen, T. Lukasovich, J. Purcell, G. Srivastava, D. Irons, K. Gaudenz, Q. Nie, F.Y.M. Wan, M. Waterman, and J. Marsh. Wingless Directly Represses DPP Morphogen Expression via an Armadillo/TCF/Brinker Complex. *PLoS ONE*, 2(1): e142. 2007.
25. X. Li and Q. Nie. Surface Diffusion on Stressed Solid Surface. *Communications in Computational Physics*, 2(1), pp 73-86, 2007.
24. Q. Nie, Y. Zhang, and R. Zhao. Efficient Semi-implicit Schemes for Stiff Systems. *Journal of Computational Physics*, 214, pp 521-537, 2006.
23. A.D. Lander, Q. Nie, and F.Y.M. Wan. Internalization and End Flux in Morphogen Gradient Formation. *Journal of Computational and Applied Mathematics*, 190(1-2), pp 232-251, 2006.
22. N. Komarova, X. Zou, Q. Nie, and L. Bardwell. A Theoretical Framework for Specificity in Cell Signaling. *Nature Molecular Systems Biology*, 1:2005.0023, 2005.
21. C. Mizutani, Q. Nie, F.Y.M. Wan, Y. Zhang, P. Vilmos, E. Bier, L. Marsh, and A.D. Lander. Formation of the BMP Activity Gradient in the Drosophila Embryo. *Developmental Cell*, 8(6), pp 915-924, 2005.
20. Y. Lou, Q. Nie, and F.Y.M. Wan. Effects of Sog on Dpp-Receptor Binding. *SIAM J. on Applied Math.*, 66(5), pp 1748-1771, 2005.
19. A.D. Lander, Q. Nie, and F.Y.M. Wan. Spatially Distributed Morphogen Production and Morphogen Gradient Formation. *Mathematical Biosciences and Engineering*, 2(2), pp 239-262, 2005.
18. A.D. Lander, Q. Nie, B. Vargas, and F.Y.M. Wan. Aggregation of a Distributed Source in Morphogen Gradient Formation. *Studies in Applied Mathematics*, 114(4), pp 343-374, 2005.
17. X. Li, K. Thornton, Q. Nie, P. Voorhees, and J. Lowengrub. Two- and Three-dimensional Equilibrium Morphology of a Misfitting Particle and the Gibbs-Thomson Effect. *Acta Materialia*, Vol 52/20, pp 5829-5843, 2004.
16. Y. Lou, Q. Nie, and F.Y.M. Wan. Nonlinear Eigenvalue Problems in the Stability Analysis of Morphogen Gradients. *Studies in Applied Mathematics*, Vol 113, pp 183-215, 2004.
15. X. Li, J. Lowengrub, Q. Nie, V. Cristini, and P. Leo. Microstructural Evolution in Three-Dimensional Inhomogeneous Elastic Media. *Metall. Mater. Tran. A*, 34A(7), pp 1421-1431, 2003.
14. V. Cristini, J. Lowengrub, and Q. Nie. Nonlinear Simulation of Tumor Growth. *J. of Mathematical Biology*, 46(3), pp 191-224, 2003.
13. A.D. Lander, Q. Nie, and F.Y.M. Wan. Do Morphogen Gradients Arise by Diffusion? *Developmental Cell*, Vol. 2, no. 6, pp 785-796, 2002.
12. Q. Nie. The Nonlinear Evolution of Vortex Sheets with Surface Tension in Axisymmetric Flows. *J. of Computational Physics*, 174, pp 438-459, 2001.
11. Q. Nie and F. Tian. Singularities in Hele-Shaw Flows Driven by a Multipole. *SIAM J. on Applied Mathematics*, 62(2), pp 385-406, 2001.
10. P. Leo, J. Lowengrub, and Q. Nie. On an Elastically Induced Splitting Instability. *Acta Mater.* 49, pp. 2761-2772, 2001.
9. P. Leo, J. Lowengrub, and Q. Nie. Microstructural Evolution in Inhomogeneous and Anisotropic Elastic Media. *J. of Computational Physics*, 157, pp 44-88, 2000.
8. P. Constantin, Q. Nie, and N. Schorghofer. Front Formation in an Active Scalar Equations. *Physical Review E*, 60(3), pp. 2858-2863, 1999.
7. P. Constantin, Q. Nie, and S. Tanveer. Bounds for Second Order Structure Functions and Energy Spectrum in Turbulence. *Physics of Fluids*, 11(8), pp. 2251-2256, 1999.

6. Q. Nie and S. Tanveer. A Note on Third Order Structure Functions in Turbulence. *Proc. Royal Soc. London A*, 455, pp 1615-1636, 1999.
5. P. Constantin, Q. Nie, and N. Schorghofer. Nonsingular Surface Quasi-Geostrophic flows. *Physics Letters A* 241, pp 168-172, 1998.
4. Q. Nie and G. Baker. Application of Adaptive Quadrature to Axi-symmetric Vortex Sheet Motion. *J. of Computational Physics* 143, pp. 49-69, 1998.
3. G. Baker and Q. Nie. The Asymptotic Motion of an Accelerating, Thick Layer of Inviscid Liquid. *Physics of Fluids* 10(1), pp. 101-112, 1998.
2. Q. Nie and F. Tian. Singularities in Hele-Shaw Flows. *SIAM J. on Applied Mathematics* 58(1), pp. 34-54, 1998.
1. Q. Nie and S. Tanveer. The Stability of a Two-Dimensional Rising Bubble. *Physics of Fluids* 7 (6), pp. 1292-1306, 1995.

**Published Refereed Proceeding Articles, Book Chapters, Editor for special issues**

11. Y. Sun, S. Jin, T. Shuman, D. Aharoni, P. Golshani, Q. Nie, and X. Xu. "Circuit connections and function of CA1-projecting subicular neurons". Society for Neuroscience annual meeting, San Diego, 2016
10. Jiang Xie, Junfu Xu, Celine Nie, and Qing Nie. "Prediction on Performance of Age Group Swimming Using Machine Learning", The Third International Conference of High Performance Computing and Applications, Lecture Notes in Computer Science (LNCS), Springer, Switzerland, 2016.
- 9 Xiaoying Han and Qing Nie, Editor, Special Issue on "Analysis of noise and stochastic dynamics in biological systems". *Discrete and Continuous Dynamical Systems -B*, 21(7), 2016
8. Schilling TF, Sosnik J and Nie Q). Visualizing retinoic acid morphogen gradients. *Methods in Cell Biology* 133, 139-163. In *The Zebrafish: Cellular and Molecular Biology, Part A, Cellular Biology* (eds. HW Detrich III, M Westerfield, LI Zon). Elsevier, Academic Press. 2016
7. Qing Nie. *Systems Biology. The Princeton Companion to Applied Mathematics*, editors: N. Higham, M. Dennis, P. Glendinning, P. Martin, F. Santosa. Princeton University Press, Princeton, NJ. 2014.
6. Youfang Cao, Claire Liang, Hammad Naveed, Yingzi Li, Meng Chen and Qing Nie, Modeling spatial population dynamics of stem cell lineage in tissue growth, Proc. 34th Annual International Conference of the IEEE EMBS San Diego, California USA, 5502-5505, 2012
5. Q. Nie and Y.-T. Zhang. *Cell Biology Modeling Development*, Encyclopedia of Applied and Computational Mathematics, Springer, 2011.
4. X. F. Liu and Q. Nie. Spatially-localized scaffold proteins may facilitate to transmit long-range signals. *Acta Mathematica, Scientia*, 29B (6), pp 1657-1669, 2009
3. Qing Nie and Ka Kit Tung, Special volume in honor of Fred Wan. *Discrete and Continuous Dynamical Systems -B*. doi:10.3934/dcdsb.2007.7.3i, Vol 7, Issue 3, 2007
2. J. Kao, Q. Nie, A. Teng, F.Y.M. Wan, A.D. Lander, and J. Marsh. Can Morphogen Activity be Enhanced by its Inhibitors? *Proceedings of the 2nd MIT Conference on Computational Fluid and Solid Mechanics*, pp1729-1733, 2003.
1. Q. Nie, S. Tanveer, T. Dupont, and X. Li. Singularity Formation in Free-Surface Stokes Flows. *Contemporary Mathematics*, Vol. 306, pp 147-165, 2002.

**STUDENTS AND POSTDOCS**

**Supervised Postdoctoral Fellows (20)**

- **Huijing Du**, Ph.D. Applied Math. University of Notre Dame 2013-2016  
Current position: Tenure-track Assistant Professor, Department of Mathematics, University of Nebraska, Lincoln, Nebraska
- **Tian Hong**, Ph.D., Biology, Virginia Tech. 2013-2016  
Starting Jan. 1, 2017: Tenure-track Assistant Professor, Department of Biochemistry & Cellular and Molecular Biology, U. of Tennessee, Knoxville, Tennessee
- **Chunhe Li**, Ph.D., Chemistry, Chinese Academy of Sciences 2015-2016

- Current position, Tenure-track Assistant Professor, Center for Mathematical Science, Fudan University, Shanghai, China
- **William Holmes**, Ph.D., Indiana University 2012-2014  
Current position: Tenure-track Assistant Professor, Department of Physics, Vanderbilt University, Nashville, TN.
  - **Likun Zheng**, Ph.D., Mathematics, University of Minnesota 2011-2015  
Current position: Data Scientist, Samsung Austin Research Center, Austin,
  - **Jiajun Zhang**, Ph.D. Sun Yat-sen University 2012-2013  
Current position: Associate Professor, School of Mathematics, Sun Yat-sen U.
  - **Lei Zhang**, Ph.D., Penn. State University 2009-2012  
Assistant Professor, Dept. of Mathematics City University of Hong Kong (2012-2013).  
Current position: Associate Professor, Young 1000 Talent Scholar, Center for Mathematics, Beijing University, China
  - **Zhenzhen Zheng**, Ph.D., Ph.D. Chinese Academy of Sciences 2009-2012  
Researcher, Dept. of Mathematics, City University of Hong Kong (2012-2013).  
Current position: managing editor, Science China Mathematics, Science China, Press
  - **Jiang Xie**, Ph.D., Shanghai University 2011-2012  
Current position: tenured Associate Professor, School of Computer Engineering and Science, Shanghai University
  - **Anna Cai**, Ph.D., University of Melbourne 2007-2011  
Current position: Tenure-track Assistant Professor, U. of New South Wales, Sydney, Australia
  - **Liming Wang**, Ph.D., Rutgers University 2008-2011  
Position after postdoctoral training: Tenure-track Assistant Professor at California State University, Los Angeles, CA from 2011-2015.
  - **Hsiao-Mei Lu**, Ph.D., Bioengineering, University of Illinois at Chicago 2010-2011  
Current position: Director of bioinformatics, Ambry Genetics, Aliso Viejo, CA
  - **Scott Christley**, Ph.D., Computer Science, Notre Dame University 2008-2010  
First position: Research Scientist, Medical School, University of Chicago, Chicago, IL  
Current position: Research Scientist, UT Southwestern Medical Center, Dallas
  - **Xinfeng Liu**, Ph.D., SUNY, Stony Brook 2006-2009  
Current position: Associate Professor, U. of South Carolina, Columbia, SC
  - **Ching-Shan Chou**, Ph.D. Brown University 2006-2009  
Current position; Associate Professor, The Ohio State University, Columbus, OH
  - **Shanqin Chen**, Ph.D., Brown University 2005-2006  
Current position: Associate Professor, Indiana University at South Bend, South Bend, IN
  - **Yongtao Zhang**, Ph.D., Brown University 2003-2006  
Current position: Associate Professor, Notre Dame University
  - **Jinzhi Lei**, Ph.D., Beijing Aeronautic & Aerospace University 2004-2005  
Current position: Associate Professor, Tsinghua University, Beijing, China
  - **David Iron**, Ph.D., University of British Columbia 2003-2004  
Current position: Professor, Dalhousie University, Nova Scotia, Canada
  - **Lan Pham**, Ph.D., The Ohio State University. 2001-2003  
Current position: Tenured Professor, Irvine Valley College, Irvine, CA.

**Supervised Ph.D. Thesis (10)**

- **Dongyong Wang** Ph.D. 06/2014  
“Numerical Methods for Reaction Diffusion Systems in High Dimensions”  
Current position: Software Engineer, Google.
- **Jeremy Ovadia** Ph.D. 06/2013  
“Computational Modeling of Tissue Growth, Organization, and Patterning.”  
Current position: Investment Research Associate, Wilshire Associate, CA
- **Meng Chen** Ph.D. 06/2013  
“Noise and Stochastic Dynamics in Biological Signaling and Patterning Systems”  
Current position: Data Scientist, Intuit, San Jose, CA

- Wing-Cheong Lo**; Ph.D. 06/2011  
 “Growth and Pattern Controls by Morphogen Gradients”  
 Current position: tenure-track assistant professor, City University of Hong Kong, Hong Kong, China
- Yu-Yu Peng**; Ph.D. 12/2011  
 “Multiscale Modeling of Cell Populations and Intracellular Gene Regulatory”  
 Current position: CEO & Co-Founder of MyYam, Inc.
- Su Zhao**; Ph.D. 06/2011  
 “Computational Study of Signaling Specificity and Epigenetic Regulation”  
 Current position: Software Engineer, Siemens PLM Software, Cypress, CA
- Carlo Chan**; Ph.D. 06/2010  
 “Scaffold can Induce Bistability in Multisite Phosphorylation”  
 Current position: Assistant professor (Tenure-track), Irvine Valley College, Irvine, CA
- Seth Haney**; Ph.D. 06/2010  
 “Specificity, Ultrasensitivity and Polarization in Yeast Cell Mating”  
 After graduation: lecture, University of San Diego, San Diego, CA  
 Current position: Postdoc in Department of Cell Biology and Neuroscience biology, UC Riverside.
- Rui Zhao**; Ph.D. 06/2006  
 “*Computational Analysis of Morphogen Gradients.*”  
 Position after graduation: Postdoc at Mathematical Biosciences Institute at Ohio State University, Columbus, Ohio (later declined due to health reasons).  
 Current position: Analyst, PayPal Inc., San Jose, CA
- Myung Yun**; Ph.D. 09/2003  
 “*Numerical Simulations of Microstructure Evolution in Three-Dimensional Inhomogeneous Elastic Media.*”  
 Current position: Faculty, Department of Mathematics, East L.A. College, Los Angeles, CA

#### **Current Postdoctoral Fellows (6)**

- Adam MacLean**, Ph.D. Systems Biology, Imperial College London, UK 2016-
- Lina Meinecke**, Ph.D. Scientific Computing, Uppsala University, Sweden 2016 -
- Suoqin Jin**, Ph.D. Mathematics, Wuhan University, China 2016-
- Shuxiong Wang**, Ph.D. Academy of Mathematics and Systems Science, Chinese Academy of Sciences 2016-
- Qixuan Wang**, Ph.D., Mathematics, University of Minnesota 2012-
- Weitao Chen**, Ph.D., Mathematics, The Ohio State University 2013-

#### **Current Ph.D. Students (7)**

- Seth Figueroa** (BS, Tulane University)  
 Supported by NIH training grant T32EB009418 & NSF Graduate Research Fellowship
- Tao Peng** (BS, Wuhan University, China)
- Yuchi Qiu** (BS, Nanjing University, China)
- Chris Rackauckas** (BS, Oberlin College)  
 Supported by NIH training grant T32EB009418, Ford Foundation Fellowship & NSF Graduate Research Fellowship
- Catherine Ta** (BS, U. of California, Irvine)
- Yangyang Wang** (BS, U. of Science and Technology, China)
- Daniel Bergman** (BS, Cal State University at Northridge)

#### **CONFERENCE ORGANIZATION (25)**

- Analysis of Complex Data in Biological Systems – Emphasis Year Program at NSF Mathematical Biosciences Institute (Half-year program for 2016)**  
 Member of Organization Committee 09/2013 –
- Workshop on Mathematical Biology, Beijing University, Beijing, Organizer,**  
 07/2016
- A3 Workshop on Interdisciplinary Research Connecting Mathematics and Biology,**  
 Member of Scientific Committee 04/2016

- International Workshop on Mathematics in the Life and Physical Science, Renmin University, Beijing, Member of organization committee,** 05/2015
- Workshop on Systems Biology, Beijing University, Beijing, Organizer,** 09/2014
- 10<sup>th</sup> AIMS conference on Dynamical Systems, Differential Equations & Application Organizer, Special Session on Mathematical Models and Computations in Cell and Developmental biology. Madrid, Spain .** 07/2014
- 35<sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 13)**  
Track Chair for “Computational Modeling of Regenerative Medicine and Cellular Pattern Formation, Osaka, Japan. 07/2013
- The Society for Mathematical Biology Annual Meeting and Conference**  
Member of Scientific Advisory Committee, Tempe, Arizona, 06/2013
- The 4th International Conference on Computational and Mathematical Population Dynamics**  
Member of Organization Committee, Taiyuan, China. 05/2013
- 34<sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 12)** 08/2012  
Track Chair for “Computational Modeling of Regenerative Medicine and Cellular Pattern Formation, San Diego, CA, USA
- 9<sup>th</sup> AIMS conference on Dynamical Systems, Differential Equations & Application**  
Organizer, Special Session on Mathematical Models and Computations in Cell and Developmental. Orlando, FL. 07/2012
- IMA Hot Topics Workshop** 09/2010  
Chair of Organization Committee, Medical Device-Biological Interactions at the Material-Tissue Interface, Institute for Mathematics and Its Applications, Minneapolis, Minnesota
- 2<sup>nd</sup> UCI Symposium on Mathematical Systems Biology** 01/2010  
Chair of Organization Committee, “Collective Dynamics in Biological Systems” Beckman Center of National Academics of Sciences and Engineering
- 31<sup>st</sup> Annual International Conference of the IEEE in Medicine and Biology Society** 09/2009  
Track Chair for “Advances in Theory and Clinical Applications of Biological Network Studies”, Minneapolis, Minnesota
- SIAM Life Science Meeting** 08/2008  
Member of Organizing Committee, Montreal, Canada
- 1st UCI Symposium on Mathematical Systems Biology** 03/2008  
Chair of Organizing Committee. “Spatial Dynamics and Cell Signaling.”
- International Conference on Systems Biology** 10/2007  
Scientific committee member, Long Beach, CA
- Conference on Advances in Scientific Computing** 09/2007  
Organizer & Scientific Committee Member; The University of Chicago, Chicago, IL
- Mini-Symposium on Modeling and Simulation for Tissue-Level and Multicellular Phenomena** - Organizer; SIAM Conference on Life Science; Raleigh, NC 07/2006
- Mini-Symposium on Bio-Mechanics of Tissues** 06/2006  
Organizer; 15<sup>th</sup> U.S. National Congress on Theoretical and Applied Mechanics; Boulder, CO
- Conference on Biology and Mechanics: Applications of Mathematics and Computations-** Chair of the Organization Committee; Beckman Center for National Academics; Irvine, CA 05/2006
- International Conference on High Performance Computing and Applications** - Program Committee Member; Shanghai, P.R. China 08/2004
- Mini-Symposium on Quantitative Studies of Complex Systems in Cell and Developmental Biology-** Organizer; 2<sup>nd</sup> SIAM Conference on the Life Sciences; Portland, OR 07/2004
- Mini-Symposium on Computational and Analysis of Interfaces in Materials** 07/2002  
Organizer; 50<sup>th</sup> SIAM Annual Meeting
- Mini-Symposium on Modeling, Analysis and Computational in Materials Science** - Organizer; 3<sup>rd</sup> SIAM meeting on Mathematical Aspects of Material Science; Philadelphia, PA 05/2001

## INVITED LECTURES

### Conferences (15 Plenary/Keynote Speeches and 57 Invited Talks)

- Invited speaker, Interdisciplinary Workshop on Multi-scale Modeling of Complex Systems in Developmental and Plant Biology. U. of California, Riverside, 12/2016
- Invited Speaker, Workshop on Mathematical Biology, Beijing U., 7/2016
- Invited Speaker, Workshop on Analysis and Quantification of Noise Effects in Biological Systems, Huazhong University of Science and Technology, June, 2016
- Plenary Speaker, Korea SIAM annual meeting, Daejeon, Korea, May, 2016
- Plenary Speaker, A3 Workshop on Interdisciplinary Research Connecting Mathematics and Biology, Beijing, China, April, 2016
- Invited symposium speaker, SIAM meeting on mathematical aspect of material sciences, Philadelphia, 5/16
- Invited speaker, Symposium of Biodynamical Systems, South University of Science and Technology of China, Shenzhen, 03/16
- Invited Speaker, Applied Mathematics in Germinating Oncology Solutions (AMIGOS) Workshop, National Cancer Institute in collaboration with Jayne Koskinas Ted Giovanis Foundation for Health and Policy (JKTF) and the Breast Cancer Research Foundation (BCRF) – *by invitation-only*, Bethesda, MD, 03/16
- Invited speaker, New Realm of Human Biology Workshop, U. of Tsukuba, Japan, 09/15
- Keynote speaker, UCLA Quantitative and Computational Biology Retreat, 09/15
- Invited speaker, Quantitative Biology Workshop, Peking University, 08/15
- Invited speaker, mini-symposium on Modeling and Simulations of Complex Biological Systems. 8<sup>th</sup> International Congress on Industrial and Applied Math. Beijing, 08/15
- Invited speaker, mini-symposium on Recent Development of Mathematical Models in Computational Biology. 8<sup>th</sup> International Congress on Industrial and Applied Math., Beijing, 08/15
- Invited Speaker, Forum on Scientific and Engineering Computing, Institute of Computational Mathematics and Scientific Engineering Computing, Chinese Academy of Sciences, Beijing, 06/15
- International Workshop on Mathematics in the Life and Physical Science, Renmin University, Beijing, China, 05/15
- Invited Speaker, Mathematical Approaches to Breast Cancer Initiation and Dormancy, National Cancer Institute – *by invitation-only* conference, Bethesda, MD, 01/15
- Invited Speaker, Focused Program on Multiscale and Simulation of Defect Problems in Materials Science, Institute for Advanced Study, Hong Kong U. of Sci. and Tech, HK, 12/14
- Invited Speaker, International Conference on Applied Math. City U. of Hong Kong, HK, 12/14
- Plenary Speaker, International Workshop on Parallel and Fast Solvers for PDE. Shanghai, 11/14
- Plenary Speaker, Workshop for Young Researchers in Mathematical Biology, Mathematical Biosciences Institute, Columbus, Ohio State University, 08/14
- Invited Speaker, mini-Symposium on modeling and numerical methods for complex systems in developmental and cell biology, SIAM Conference on the Life Sciences, 08/14
- Invited Speaker, Special session on random dynamical systems in the life sciences, 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain, 07/14
- Invited Speaker, mini-Symposium on mathematical modeling of biological regeneration, 9th European Conference of Mathematical and Theoretical Biology (ECMTB), Gothenburg, Sweden. 06/14
- Invited Speaker, International Conference on Modeling and Simulation of Complex Biology Systems, Nankai University, Tianjin, China, 05/14
- Invited Speaker, Frontiers in Applied and Computational Mathematics, NJIT, 05/14
- Invited Speaker, International Congress for Chinese Mathematicians, Taipei, China, 07/13

- Invited Speaker, Workshop on Mathematical and Computational Biology, University of Science and Technology, Hefei, China, 07/13
- Seminar, Beijing Computational Science Research Center, Beijing, China, 06/13
- Keynote Speaker, The HKUST International Conference on Biomedical Engineering, Hong Kong, 01/13
- Plenary Speaker, The 19<sup>th</sup> International Conference on Neural Information Processing, Doha, Qatar, 11/12
- Mini-symposium speaker, Advances in Theory and Application of Operator Splitting Methods, SIAM Annual meeting, Minneapolis, 07/12
- Keynote Speaker, Interdisciplinary Workshop on Mathematics and Biology, Center for Optimization and Applications, Chinese Academy of Sciences, Beijing, 05/12.
- Keynote Speaker, Conference on Frontiers in Mathematical Biology, U. of Maryland, 03/12
- Invited Speaker, Workshop on “Robustness in Biological Systems”, Mathematical Biosciences Institute. 02/12
- Invited Speaker, Special Session on Mathematics and Statistics in Computational Biology, AMS Annual meeting, Boston, 01/12
- Invited Speaker, Two Mini-symposiums, International Congress on Industrial and Applied Mathematics, Vancouver, Canada, 07/11
- Invited Speaker, International Conference on Applied and Computational Mathematics and Interdisciplinary Research, Nankai University, Tianjin, China, 06/11
- Invited Speaker, Symposium, AMS Sectional meeting, UNLV, Las Vegas, 04/11
- Invited Speaker (45 minutes), International Congress for Chinese Mathematicians, Beijing, China, 12/10
- Invited speaker, Mini-symposium, AMS sectional meeting, Notre Dame U. South Bend, 11/10
- Invited Symposium Speaker, SIAM Life Science Conference, Pittsburgh, 7/10
- Plenary Speaker, International Symposium on Optimization and Systems Biology, Zhangjiajie, China, 09/09
- Invited Speaker, Computational Systems Biology Workshop, Shanghai University, 09/09
- Invited Speaker, Workshop on Function and Dynamics of Biomolecules, Kavli Institute for Theoretical Physics China, Beijing, China, 07/09
- Invited Speaker, International Conference of Mathematics, Taiwan Univ. Taipei, 07/09
- Invited Speaker, Symposium on Cell signaling, SIAM Life Science Meeting, Montreal, 07/08
- Invited Speaker, Symposium on Multi-scale Modeling of Biological Systems, Annual Meeting of The Society of Mathematical Biology, Toronto, 07/08
- Invited Speaker, Symposium on Mechanisms of Positional Specification in Development, European Conference on Mathematical and Theoretical Biology, Edinburgh, Scotland, 07/08
- Keynote Speaker, Session on Computational Biology, International Conference on Computational and Experimental Engineering and Sciences, Honolulu, Hawaii, 03/08.
- Invited Speaker, Symposium on Pattern Formation, AMS annual joint meeting, San Diego, 01/08
- Invited Speaker, International Congress for Chinese Mathematicians, Hangzhou, 12/07
- Invited Speaker, Conference on Advances in Scientific Computing, The University of Chicago, 09/07
- Plenary speaker, Workshop on Modeling, Analysis and Computations for Biological Applications, Institute of Mathematical Modeling and Scientific Computing, NCTU, Taiwan, 12/06
- Invited talk, Workshop on Cells and Materials: At the Interface between Mathematics, Biology and Engineering, Arrowhead, IPAM, UCLA, 06/06
- Southwest Consortium on Mathematics in Life Science, Phoenix, ASU, 01/05

- Mini-symposium on Chemotherapy and Tumor Biology, International Conference for Mathematics in Biology and Medicine, Ann Arbor, 07/04
- Mini-symposium on Quantitative Studies of Complex Systems in Cell and Developmental Biology, 2nd SIAM Conference on the Life Sciences, Portland, 07/04
- Mini-symposium on Mathematics Inspired by Biology, AIMS' fifth International Conference on Dynamical Systems and Differential Equations, Pomona, 06/04
- Mini-symposium on Mathematical Biology, AIMS' fifth International Conference on Dynamical Systems and Differential Equations, Pomona, 06/04
- Mini-symposium on Computational Modeling of Microstructure Evolution, 4th SIAM Conference on Mathematical Aspects of Materials Sci., Los Angeles, 05/04
- Workshop on Multi-scale Challenges in Soft Matter Materials, SAMSI, Research Triangle, North Carolina, 02/04
- Workshop on Mathematical Challenges Arising in Cancer Models Mathematical Biosciences Institute, OSU, 11/03
- Mini-symposium on Advances of Numerical Methods and Analysis for Interface Problems with applications, 5th International Congress on Industrial and Applied Mathematics, 07/03
- Mini-symposium on The Role of Signaling Systems in Developmental Biology, 5th International Congress on Industrial and Applied Mathematics, 07/03
- Mini-symposium on Modeling of Biological Tissues, 2nd M.I.T. Conference on Computational Fluid and Solid Mechanics, MIT, 06/03
- Workshop on Cell & Materials: at the Tissue Engineering Interface, Institute for Pure and Applied Mathematics, UCLA, 02/03
- Mini-symposium, Satellite Conference on Scientific Computing of 2002, ICM, Xi'an, China, 08/02
- Mini-symposium on Computations and Analysis of Interfaces in Materials, 50th SIAM annual meeting, 07/02
- Workshop on Multi-scale Analysis and Computation National Center for Theoretical Sciences, Taiwan, 6/02
- Barrett Memorial Lectures on "New Directions and Developments in Computational Mathematics", U. of Tennessee, 05/01
- Section on Nonlinear Waves, AMS-HK joint meeting, Hong Kong, 12/00
- Mini-symposium on Modeling, Analysis and in Materials Science 3rd SIAM meeting on mathematical aspects of material science, Philadelphia, 05/00
- Section on Nonlinear PDE, AMS Meeting at Chicago, 09/98
- Mini-symposiums in SIAM Annual Meeting at Toronto, 07/98
- Mini-symposiums, 2nd SIAM meeting on mathematical aspects of material science, Philadelphia, 05/97

**Colloquium & Seminars** (75 colloquiums and 57 seminars)

- Seminar, Computational Biology, U. of Southern California, 1/17
- Seminar, Systems Biology, School of Medicine, Vanderbilt University, Nashville, 11/16
- Seminar, Mathematical Biology, Fisk University, Nashville, 11/16
- Colloquium, Department of Mathematics, Michigan State University, 09/16
- Colloquium, School of Mathematics and Statistics, Wuhan University, China, 06/16
- Colloquium, Department of Mathematical Sciences, Korea Advanced Institute of Technology, Korea, 05/16
- Colloquium, Computational Medicine, University of Texas, Austin, 04/16
- Colloquium, LeClerg Lecture, Dept. of Animal & Avian Sciences, U. of Maryland, 04/16
- Colloquium, Science at Edge, Michigan State University, 04/16
- Colloquium, Center for Nonlinear Studies (CNLS), Los Alamos National Lab. 04/16
- Colloquium, Department of Mathematics, Colorado State University, 02/16



- Colloquium, Frontier of Biology, Institute of Molecular Biology, Academia Sinica, 12/15
- Seminar, Applied Mathematics, Ohio State University, Ohio 11/15
- Seminar, Scientific Computing, Applied Mathematics, Brown University, 11/15
- Colloquium, School of Mathematics, Peking University Beijing, China 10/15
- Seminar, Key Lab on Systems Biology, Shanghai Institute for Biological Sciences, Chinese Academy of Sciences, Shanghai, 10/15
- Seminar, Cambridge-Suzhou Genomic Resource Center, Suzhou U, China 10/15
- Colloquium, Beijing Institute for Scientific Computing and Engineering, Beijing University of Technology 10/15
- Colloquium, Department of Math. & Statistics, U. of Nevada, Reno, 03/15
- Colloquium, Department of Mathematics, U. of Tennessee, Chattanooga, 02/15
- Seminar, Center for Computational Systems Biology, Fudan University, China 09/14
- Distinguished lecture, Beijing University of Technology, 09/14
- University-wide Distinguished Lecture, Sun Yat-Sen University, China 05/14
- Colloquium, School of Computer Science, Beihang University, 04/14
- Distinguished Lecture, Interdisciplinary Mathematics Institute, University of South Carolina 03/14
- Colloquium, Department of Mathematical Sciences, IUPUI, 02/14
- Colloquium, School of Computer Engineering and Science, Shanghai University, 12/13
- Applied and Computational Math. Colloquium, Department of Mathematics, Penn State University, State College, 11/13
- Colloquium, Department of Mathematical Sciences, NJIT, New Jersey, 09/13
- Colloquium, Department of Mathematics, Beijing Science and Technology University, Beijing, 07/13
- Colloquium, Department of Mathematics, UCLA, 05/13
- Colloquium, Applied Mathematics, Univ. of California, Merced, 05/13
- Colloquium, Laufer Center for Physical and Quantitative Biology and Department of Chemistry, SUNY, Stony Brook, NY, 04/13
- Colloquium, Department of Mathematics, Claremont McKenna College, 04/13
- Molecular Cell Biology and Biotechnology Seminar Series, Virginia Tech, Blacksburg, 03/13
- Colloquium, Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan, 03/13
- Seminar, Systems Biology, College of Life Science, National Taiwan Univ, Taipei, Taiwan, 03/13
- Colloquium, Department of Mathematics, City University of Hong Kong, Hong Kong, 01/13
- Colloquium, College of Mathematics and Statistics, Wuhan University, Wuhan, China, 01/13
- Colloquium, Computational Science Initiative, Hong Kong University of Science and Technology, Hong Kong, 08/12
- Seminar, Interdisciplinary Research, Department of Mathematics, National Taiwan University, Taipei, 07/12
- Colloquium, Institute for Genetics and Developmental Biology, Chinese of Academy of Sciences, Beijing, 05/12
- Seminar, Scientific Computing, Peking University, Beijing, 05/12
- Seminar, Center for Systems Biology, Chinese of Academy of Sciences, Shanghai, 04/12
- Colloquium, College of Mathematics, Sun Yet-Sen University, Guangzhou, 04/12
- Colloquium, College of Mathematics, Guangzhou University, Guangzhou, 04/12
- Colloquium, Department of Mathematics, Colorado State University, 03/12
- Colloquium, Department of Mathematics, George Washington University, 03/12

- Colloquium, Department of Applied and Computational Mathematics and Statistics, U. of Notre Dame, 02/12
- Colloquium, Department of Molecular and Computational Biology, U. of Southern California, Los Angeles, 02/12
- Seminar, Bioinformatics and Systems Biology, UCSD, 11/11
- Colloquium, Department of Mathematics, California State University, Fullerton, 10/11
- Applied Math. Seminar, Dept. of Mathematics, Ohio State University, 05/11
- Colloquium, Mathematical Biosciences Institute, Ohio State U., 04/11
- Colloquium, Dept. of Applied Mathematics and Statistics, U. of California, Santa Cruz, 04/11
- Annual Symposium, Institute of Mechanics, Chinese Academy of Sciences, 12/10
- Colloquium, Institute of Sciences, Shanghai Jiaotong University, Shanghai, 12/10
- Seminar, Department of Systems Biology, Harvard Medical School, Harvard, 06/10
- Seminars, School of Life Science and School of Mathematics, Sun Yet-Sen University, 05/10
- Seminar, Center for Theoretical Biological Physics, UCSD, 04/10
- Colloquium, Department of Mathematics, University of Tennessee, Knoxville, 03/10
- Colloquium, Department of Mathematics, University of South Carolina, Columbia, 03/10
- Seminar on Systems Biology, Medical School, U. of Illinois of Chicago, Chicago, 11/09
- Colloquium, Department of Bioengineering, U. of Illinois at Chicago, Chicago, 11/09
- Seminar, Institute for Systems Medicine and Department of Mathematics, Shanghai Jiaotong University, Shanghai, 09/09
- Colloquium, School of Information Science and Technology, East China Normal University, Shanghai, 09/09
- Colloquium, Department of Mathematics, U. of Miami, 04/09
- Colloquium, Department of Mathematical Sciences, UNLV, 04/09
- Colloquium, Department of Mathematical Sciences, Worcester Polytechnic Institute, 04/09
- Seminar, Department of Mathematics, UNC-Charlotte, 03/09
- Colloquium, Department of Engineering Science and Applied Math, Northwestern U. 03/09
- Seminar, Bioengineering, U. of Illinois at Chicago, 03/09
- Colloquium, Applied Mathematics, IIT, 03/09
- Seminar, Mathematical Biology, Arizona State University, 02/09
- *Information Science and Technology Center Distinguished Lecture*, Colorado State University, 11/08
- Colloquium, Dept. of Math, Colorado State University, 11/08
- Annual Symposium, Institute of Mechanics, Chinese Academy of Sciences, 12/07
- Annual Computational & Theoretical Biology Symposium, Biomedical Engineering, Rice University, 12/07
- Seminar, Mathematical Biology, UC Davis, 11/07
- Seminar, Department of Cellular and Molecular Biology, Colorado State U. 10/07
- Seminar, School of Math., Fudan U. Shanghai, China, 07/07
- Colloquium, Zou Peiyuan Center for Applied Math. Tsinghua U. Beijing, China, 07/07
- Seminar, Department of Computational Math. Beijing Univ. Beijing, China, 07/07
- Applied Math. Seminar, Department of Math. Stanford University, 05/07
- Colloquium, Department of Mathematics, University of Central Florida, 04/07
- Colloquium, Department of Mathematics, Norte Dame University, 03/07
- PDE/Applied Mathematics Seminar, Dept. of Math., Indiana University, 01/07
- Colloquium; Dept. of Mathematics, Michigan State University, East Lansing, 10/06
- Colloquium; Dept. of Math. Science, NJIT, 09/06
- Computational Math. Seminar; Dept. of Applied Math., SUNY, Stony Brook, NY, 04/06
- Colloquium on Applied Math.; Dept. of Mathematics, Notre Dame University, 03/06

- Applied and Computational Math. Seminar; School of Math., Georgia Tech. Univ., 11/05
- Computational and Applied Math. Seminar; Dept. of Math., Iowa State Univ., Ames, IA, 09/05
- Colloquium; Dept. of Computational Math., Wuhan University, China, 06/05
- Seminar; Institute of Mechanics, Chinese Academy of Science, Beijing, China 06/05
- Colloquium; Dept. of Mathematics, The Ohio State University, 05/05
- Numerical Analysis Seminar; Dept. of Mathematics, UC-San Diego, 02/05
- Colloquium; Applied and Computational Math., Penn State University, 01/05
- Seminar; Center for Sci. Computation and Math. Modeling, Univ. of Maryland, College Park, 02/04
- Seminar; Dept. of Mechanics and Engineering Sciences, Fudan University, China 01/04
- Seminar; Dept. of Computational Mathematics, Beijing University, China, 01/04
- Seminar; Inst. for Comp. Math. and Sci. Computations., Chinese Academy of Sci., Beijing, 01/04
- Applied Math. Seminar; Dept. of Mathematics, The Ohio State University, 05/03
- Colloquium; Dept. of Mathematics, Penn State University, 04/03
- Mathematical Physics Seminar; Dept. of Mathematics, Univ. of Texas, Austin, 04/03
- Seminar; Institute for Comp. Engineering and Science (TICOM), Univ. of Texas, Austin, 04/03
- Colloquium; Dept. of Applied Math., Illinois Institute of Technology, 03/03
- Scientific Computation & Applied Math. Seminar; Dept. of Mathematics, Florida State Univ., 11/02
- Applied Math./Statistical Mech. Seminar; Institute for Advanced Study, 10/02
- PDE and Numerical Analysis Seminar; Dept. of Mathematics, Florida State University, 11/02
- Colloquium; Dept. of Mathematics, Science & Technology University of Hong Kong, 08/02
- Colloquium; Dept. of Applied and Computational Mathematics, Caltech, 05/02
- Colloquium; Dept. of Mathematics, Shenzhen University, China, 12/01
- Applied Math. Seminar; Dept. of Mathematics, The Ohio State University, 06/01
- Numerical Analysis Seminar, Dept. of Mathematics, University of California- San Diego, 06/01
- Colloquium; Dept. of Computational Mathematics, Wuhan University, China, 12/00
- Colloquium; Dept. of Mathematics, Purdue University, 11/00
- Colloquium; Dept. of Bioengineering, University of Illinois at Chicago, 09/00
- Colloquium; Dept. of Applied Mathematics, Illinois Institute of Technology, 09/00
- Numerical Analysis Seminar; Dept. of Mathematics, North Carolina State University, 08/00
- Numerical Analysis Seminar; Dept. of Mathematics, University of Maryland, 08/00
- Colloquium; Dept. of Mathematics, Purdue University, 05/00
- Colloquium; Dept. of Control and Dynamical Systems, Caltech, 04/00
- Analysis Seminar; Dept. of Mathematics, University of Southern California, 03/00
- Applied Math. Seminar; Dept. of Mathematics, University of North Carolina at Chapel Hill, 02/00
- Applied Math. Seminar; Dept. of Mathematics, The Ohio State University, 05/99
- Colloquium; Dept. of Mathematics, University of North Carolina at Chapel Hill, 02/99
- Colloquium; Dept. of Mathematics, Iowa State University, 02/99
- Colloquium; Dept. of Mathematics, Florida State University, 01/99
- Colloquium; Dept. of Mathematics, NJIT, 01/99
- Colloquium; Dept. of Mathematics, University of California, Irvine, 12/98
- Colloquium; Dept. of Mathematics, University of North Carolina at Chapel Hill, 02/98
- Applied Math. Seminar; Dept. of Mathematics, University of Chicago, 10/97

- IMA Postdoc Seminar; IMA, University of Minnesota, 03/97