

Maria Kiskowski-Byrne Curriculum Vitae

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Education

University of Notre Dame	Mathematics	Ph.D. 2004
University of Notre Dame	Mathematics	B.S. 1998
University of Notre Dame	Environmental Science	B.S. 1998

Research Interests

Dynamical systems, discrete stochastic particle systems.

Mathematical biology, development and morphogenesis, protein signaling, membrane organization.

Research Experience

2008-2009 **Assistant Professor**, University of South Alabama, Mobile, AL.

2007-2008 **Consultant**, Mitchell Cancer Institute, University of South Alabama, Mobile, AL.

2006-2007 **Research Instructor**, Mol Phys & Biophysics, VU School of Medicine, Nashville, TN.

2004-2006 **Research Assistant Professor**, Mathematics, Vanderbilt University, Nashville, TN.

1999-2004 **Ph.D. Candidate of Mathematics**, University of Notre Dame, Notre Dame, Indiana.

2002-2003 **Summer Research Assistant**, Los Alamos National Laboratory with Dr. Yi Jiang, T7 Mathematical Modeling and Analysis Group, Los Alamos, New Mexico.

Teaching Experience

2008 Fall **Assistant Professor**, Finite Math, University of South Alabama, Mobile, Alabama.

2008 Fall **Assistant Professor**, Linear Algebra, University of South Alabama, Mobile, Alabama.

2003 Fall **Teaching Assistant**, Linear Algebra, University of Notre Dame, Notre Dame, Indiana.

2002 Spring **Math Instructor**, Calculus II, University of Notre Dame, Notre Dame, Indiana.

2001 Fall **Math Instructor**, Calculus I, University of Notre Dame, Notre Dame, Indiana.

1999 Spring **Substitute Teacher**, Havre de Grace High School, Havre de Grace, Maryland.

1998 Fall **Math Instructor**, United States Peace Corps Volunteer, Tougnifili, Guinea, West Africa.

1998 Summer **Math Instructor**, United States Peace Corps Trainee, Thiès, Senegal, West Africa.

Grant Writing Experience

- **Wrote math modeling component for RO1** "Regulation of microdomain structure in living cells", Head PI Dr. Anne Kenworthy, **\$175,000** funded for project period 5/2006 – 4/2011.
- **Wrote math core component for U54 with role as math core director** "Paracrine TGF-beta signaling in tumor initiation and progression", Head PI Dr. Lynn Matrisian, **\$849,187** funded for project period 9/2006 – 9/2011.

Honors and Awards

- **Fellow of the Center for Applied Mathematics**, University of Notre Dame, 2002-2003.
- **Poster Competition, First Place in Mathematics**, Frontiers of Simulation: 22nd Annual International Conference, Los Alamos, 2002.
- **Notre Dame Scholar**, University of Notre Dame, 1995-1998.
- **First Place**, R. Catesby Talioferro Mathematics Essay Prize Competition, 1997.

Synergistic Activities

- 2006-2007 Member of the Biophysical Society.
- 2004-2007 Review of articles for *Nature Cell Biology*, *Journal of the American Chemical Society*, *Biophysical Journal* and of a grant proposal for the Basic Research and Higher Education Program for the US Civilian Research and Development Foundation.
- 2006 Ph.D. committee member appointment within the Physics Department, Vanderbilt University, Nashville, TN.
- 2005 Organization of bi-monthly biomathematics meetings at Vanderbilt University for the Biomathematics Study Group.

Three Principle Publications

1. **Kiskowski, M.A.**, M.S. Alber, G.L. Thomas, J.A. Glazier, N.B. Bronstein, and S.A. Newman, 2004. Interplay between activator-inhibitor couple and cell-matrix adhesion in a cellular automaton model for chondrogenic patterning, *Developmental Biology* **271** 372-387.
2. Yin, C., **M.A. Kiskowski**, P. Pouille, E. Farge and L. Solnica-Krezel, 2008. Cooperation of polarized cell intercalations drives convergence and extension of presomitic mesoderm during zebrafish gastrulation, *Journal of Cell Biology* **180** 221-32.
3. **Kiskowski, M.A.**, and A. Kenworthy, 2009. On the use of Ripley's K function and its derivatives to analyze domain size, *Biophysical Journal*, doi:10.1016/j.bpj.2009.05.039.

Other Chronological Publications

4. Alber, M.S. and **M.A. Kiskowski**, 2001. On aggregation in CA models in biology, *Journal of Physics A: Mathematical and General* **34**:10707-10714.
5. Alber, M.S., **M.A. Kiskowski**, J.A. Glazier and Y. Jiang. On cellular automation approaches to modeling biological cells, *Mathematical Systems Theory in Biology, Communication, and Finance*, J. Rosenthal and D.S. Gilliam, editors. (IMA 142, Springer-Verlag, New York, 2002)
6. Alber, M.S., Y. Jiang and **M.A. Kiskowski**, 2004. Two-stage aggregate formation via streams in myxobacteria, *Physical Review Letters* **93**.068102.
7. Alber, M.S., Y. Jiang, and **M.A. Kiskowski**. 2004. Lattice gas cellular automata model for rippling and aggregation in myxobacteria, *Physica D* **191** 343-358.
8. **Kiskowski, M.A.**, M.S. Alber, G.L. Thomas, J.A. Glazier, N.B. Bronstein, and S.A. Newman, 2004. Interplay between activator-inhibitor couple and cell-matrix adhesion in a cellular automaton model for chondrogenic patterning, *Developmental Biology* **271** 372-387.
9. Alber, M.S., **M.A. Kiskowski**, Y. Jiang and S.A. Newman, 2004. Biological Lattice Gas Models, in *Dynamics and Bifurcation of Patterns in Dissipative Systems*, G. Dangelmayr and I. Oprea (eds.), World Scientific Series on Nonlinear Science, Vol. 12, Singapore, 274-291.
10. **Kiskowski, M.A.**, Y. Jiang, and M.S. Alber, 2005. Role of streams in myxobacteria aggregate formation, *Physical Biology* **1** 173-183.
11. Sepich, D., C. Calmelet, **M.A. Kiskowski**, and L. Solnica-Krezel, 2005. Initiation of convergence and extension movements of lateral mesoderm during zebrafish gastrulation, *Developmental Dynamics* **234** 279-292.
12. **Kiskowski, M.A.**, and A. Kenworthy, 2007. *In silico* characterization of resonance energy transfer for disk-shaped domains, *Biophysical Journal* **92** 3040-3051.

Selected Presentations

- “Methods of domain investigation in noisy membrane environments”, presentation for Vanderbilt Integrative Cancer Biology Center seminar, May 2007, Nashville, TN, USA (**Invited**) and poster for Biophysical Society 51st Annual Meeting, March 2007, Bethesda, MD, USA.
- “Discrete stochastic models of domain formation and FRET in biomembranes”, presentation for Biomathematics seminar at Middle Tennessee State University, April 2006, Murfreesboro, TN, USA (**Invited**) and at Vanderbilt University, May 2006.
- “Cell-based models for patterning in the chick limb bud and zebrafish gastrulation”, presentation for SIAM conference on Dynamical Systems, May 2005, Snowbird, Utah, USA. (**Invited**)