NICHOLAS G. COGAN
Tulane University
Mathematics Department
Curriculum Vitae

Contact Information

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Education

- *Ph.D.*, University of Utah, Mathematics, May, 2003.
  Dissertation: A Model of Biofilm Growth and Structural Development
  Chair: James P. Keener
- *M.S.*, Montana State University, Mathematics, May, 1996.
- *B.A.*, Texas Tech University, Mathematics, May, 1994.

Experience

- *Postdoctoral Fellow*, Department of Mathematics, Tulane University, July 2004 - present.
- *Postdoctoral Fellow*, Center for Computational Science, Tulane University, July 2003-July 2004.
- *Postdoctoral Fellow*, Department of Mathematics, Tulane University, January 2002-July 2003.
- *Research Assistant*, Department of Mathematics, University of Utah, 2001-2002.
- *Teaching Assistant*, Department of Mathematics, University of Utah, 1999-2001.
- *Research Assistant*, Center for Biofilm Engineering, Montana State University, 1996-1999.
- *Teaching Assistant*, Department of Mathematics, Montana State University, 1994-1996.

Research Interests

- Mathematical Biology
- Fluid/Solid Interactions
- Transport Phenomena
- Mathematical Physiology

Refereed Publications

- *The Role of the Biofilm Matrix in Structural Development*
  N.G. Cogan and James P. Keener, Mathematical Medicine and Biology 21(2),147-166 (2004)

- *Modeling Physiological Resistance in Bacterial Biofilms*
  N.G. Cogan, Ricardo Cortez and Lisa J. Fauci, to appear in Bulletin of Mathematical Biology (2005).

- *Channel Formation in Gels*
  N.G. Cogan and James P. Keener, to appear in SIAM Journal on Applied Mathematics (2005).

- *Pattern Formation by Bacteria-driven Flow*
  C.W. Wolgemuth and N.G. Cogan, Biophysical Journal - In Revision.

- *Effects of Persister Formation on Bacterial Response to Dosing*
  N.G. Cogan, To be submitted to Journal of Theoretical Biology.

Conference Proceedings

- *Boundary Element Analysis of Intracardiac Electrogram Sensing*
  John Alford, Nick Cogan, Charles Miller, Seth Patinkin, Bradford E.Peercy, and Noah A. Rosenberg, IMA Preprint Series # 1589, October 1999.

- *Microbial Biofilms: Persisters, Tolerance and Dosing*, N.G. Cogan, International Symposium on Interdisciplinary Science, To appear in American Institute of Physics Conference Proceedings (2005).

Invited Talks and Seminars

- *Microbial Biofilms: Persisters, Tolerance and Dosing*, International Symposium on Interdisciplinary Science, Natchitoches, LA, October 2004.

- *Modeling Biocide Delivery and Biofilm Resistance Mechanisms*, SIAM Conference on the Life Sciences, Portland, Oregon, July 2004.

- *Modeling Biofilm Structural Development and Biocide Resistance*, CCS Seminar Series, Tulane University, December 2, 2003.

- *Modeling Biofilm Structure and Development*, Applied Math Seminar, Tulane University, October 3, 2003.

- *Development of Heterogeneous Morphology in Growing Biofilms*, Computation and Control of Biological Systems VIII, Bozeman, Montana, July 2003.

- *Mechanisms for Biofilm Heterogeneity*, SIAM Conference on Applications of Dynamical Systems VII, Snowbird, Utah, May 2003.

- *Maze Solving Ameboids: How Smart are They Really?*, Math Biology Seminar, University of Utah, April 23, 2001.

- *The BZ Reaction - Mathematics and Experiments*, Undergraduate Research Seminar, Texas Tech University, December 2001.
- *Modeling Biofilm Heterogeneity*, CBE-TAC Meeting, Center for Biofilm Engineering, Montana State University, February 1998.

Selected Poster Presentations

- *Channel Formation in a Polymer Gel*, N. G. Cogan and James P. Keener. Seventh SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 2003.
- *A Model of Biofilm Behavior*, Nicholas G. Cogan and James P. Keener. First SIAM Conference on Life Sciences, Boston, MA, March 2002.
- *A Two Dimensional Biofilm Model with Fingering Instabilities.* Nicholas G. Cogan, Jack Dockery, Isaac Klapper, and Mark Pernarowski. Fifth SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 1999.
- *Modeling Signaling Induced Heterogeneity.* Nicholas G. Cogan, David Davies, Jack Dockery. CBE-TAC Meetings, Center for Biofilm Engineering, Montana State University, February 1998.
- *Computational Analysis of Oxygen Mass Transport in Biofilm Systems.* Nicholas G. Cogan, John Komlos, A. Cunningham, M. Hamilton, E. Visser, C. Wend. CBE-TAC Meetings, Center for Biofilm Engineering, Montana State University, January 1997.

Professional Activities

- Co-organizer, Minisymposium on Gel Dynamics
  SIAM Applications of Dynamical Systems
  Snowbird, Utah, May 2003.
- Selected reviewer for:
  - Mathematical Medicine and Biology
  - SIAM Journal on Applied Mathematics

References

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