**NICHOLAS G. COGAN**
**Florida University**
**Department of Mathematics**

# 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

- *Assistant Professor*, Department Mathematics, Florida State University, January 2006 - present.
- *Visiting Assistant Professor*, Department of Computational and Applied Mathematics, Rice University, July 2005 - December 2005.
- *Postdoctoral Fellow*, Department of Mathematics, Tulane University, July 2004 - July 2005.
- *Postdoctoral Fellow*, Center for Computational Science, Tulane University, July 2003- July 2004.
- *Postdoctoral Fellow*, Department of Mathematics, Tulane University, January 2002- July 2003.

## Research Interests

- Mathematical Biology
- Fluid/Structure Interactions
- Scientific Computation
- Mathematical Physiology

**External Funding**

- 2005 - 2006: NSF - DMS # 0548511(Mathematical Biology) *Modeling Biofilms: Fluid Dynamics, Reaction/Diffusion/Advection and Biomass Redistribution*

**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, Bulletin of Mathematical Biology 67 (4): 831-853 (2005).

- *Pattern Formation by Bacteria-driven Flow*
  N. G. Cogan and C.W. Wolgemuth, Biophysical Journal 88 (4): 2525-2529 (2005).

- *Channel Formation in Gels*
  N.G. Cogan and James P. Keener, SIAM J. Appl. Math. 65 (6): 1839-1854 (2005).

- *Effects of Persister Formation on Bacterial Response to Dosing*
  N.G. Cogan, Journal of Theoretical Biology 238(3): 694-703 (2006) .

- *Hybrid Numerical Treatment of Two Fluid Problems with Passive Interfaces*
  N.G. Cogan, Submitted.

**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 (1999).

- *Biofilm Control by Antimicrobial Agents*
  P.S. Stewart, S. Sanderson, X. Xu, J. Raquepas, and N. Cogan, In Biofilms II: Process Analysis and Applications, 2nd edition, J. D. Bryers, ed. New York: John Wiley & Sons (2000).

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

**Selected Presentations**

- *Simulating Biofilm Disinfection*, Joint SIAM-SMB Conference on the Life Sciences, Raleigh, North Carolina, July 2006.

- Poster: *Persisters and Biofilm Disinfection*,Center for Biofilm Engineering Technical Advisory Conference, Bozeman, Montana, June 2006.

- *Boundary Integral Methods for Two-Fluid Systems*, Mathematics Departmental Colloquium, Duke University, Durham, North Carolina, October 2005.

- *Boundary Integral Methods Biofilms*, Mathematics Departmental Colloquium, University of Texas at Arlington, Arlington, Texas, October 2005.
- *Mathematical Treatment of Biofilm/Fluid Interactions and Disinfection*, Mathematics Departmental Colloquium, Florida State University, Tallahassee, Florida, October 2005.
- *Pattern Formation by Bacteria-driven Flow*, SIAM Annual Meeting, July 2005.
- *Boundary Integral Method for Coupled Biofilm Gel/Fluid Problems*, SIAM Annual Meeting, July 2005.
- *Incorporating the Biofilm/Fluid Interface into a Comprehensive Model of Biofilm Development*, Microorganism Motility Workshop, Tulane University, New Orleans, LA, May 2005.
- *Boundary Integral Method for Coupled Biofilm Gel/Fluid Problems*, SIAM Annual Meeting, July 2005.
- *Incorporating the Biofilm/Fluid Interface into a Comprehensive Model of Biofilm Development*, Microorganism Motility Workshop, Tulane University, New Orleans, LA, May 2005.
- *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.

**Professional Activities**

- Co-Organizer, Minisymposiums: Fluid/Structure Interactions in Biofluids
  Joint SIAM-SMB Conference on the Life Sciences
  Raleigh, NC, July 2006.
- Organizer, Minisymposium on Fluid/Structure Interactions
  SIAM Annual Meeting
  New Orleans, LA, July 2005.
- 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
  - Biophysical Journal
  - Journal of Theoretical Biology

  - Biotechnology and Bioengineering
  - NSF Proposal MSPA-INTERDISCIPLINARY
  - NSF Proposal RIG-INTERDISCIPLINARY

**Professional Affiliation**

- SIAM (Society for Industrial and Applied Mathematics)
- SMB (Society for Mathematical Biology)
- AMS (American Mathematical Society)