

John Nardini  
*Department of Applied Mathematics*  
*University of Colorado, Boulder*  
*Boulder, Colorado 80309-0526 USA*

## Education

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- 2018 University of Colorado, Boulder, CO  
*Doctor of Philosophy in Applied Mathematics, anticipated*  
*Certificate in Interdisciplinary Quantitative Biology*
- 2016 University of Colorado, Boulder, CO  
*Master of Science in Applied Mathematics*
- 2013 North Carolina State University, Raleigh, NC  
*Bachelor of Science in Mathematics, graduated summa cum laude*  
*University Honors Program*  
*Departmental Honors Program*

## Academic Positions

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- 2013-pres. Graduate Student - University of Colorado, Boulder
- 2011-2013 Research Assistant - Center for Research in Scientific Computation, Raleigh, NC
- 2011 REU student - Virginia Bioinformatics Institute, Blacksburg, VA

## Research Interests

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**Collective Migration** – Determining how population-wide migration and signaling patterns may emerge from single cell activity.

**Partial Differential Equations** – Using reaction-diffusion and structured population equations to model biological systems. Analysis of such systems for traveling wave solutions, bifurcation analysis, etc.

**Inverse Problems** – how might different (but equivalent) parameterizations of a mathematical model influence the ability of inverse problems to fit experimental data?

## Research Publications

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1. **J. Nardini**, D. Bortz. Investigation of a Structured Fisher's Equation with Applications in Biochemistry. Submitted (2016).
2. **J. Nardini**, D. Chapnick, X. Liu, D. Bortz. Modeling keratinocyte wound healing dynamics: cell-cell adhesion promotes sustained collective migration. *Journal of Theoretical Biology*, 7 July 2016, 103-117.
3. K. Adoteye, R. Baraldi, K. Flores, **J. Nardini**, H. T. Banks, W. C. Thompson. Correlation of parameter estimators for models admitting multiple parameterizations. *International journal of Pure and Applied Mathematics*, 105(3) 497, 2015.

4. T. Huffman, K. Link, **J. Nardini**, L. Poag, K. Flores, H.T. Banks, B. Biasco, J. Jungfleisch, J. Diez. A mathematical model of RNA3 recruitment in the replication cycle of brome mosaic virus. *International journal of Pure and Applied Mathematics*, 92(1) 27, 2014.
5. H.T. Banks, A. Choi, T. Huffman, **J. Nardini**, L. Poag, W.C. Thompson. Quantifying CFSE label decay in flow cytometry data. *Applied Mathematics Letters*, 26(5) 571, 2013.

## Presentations

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| 2017 | <p>Society for Mathematical Biology Annual Meetings - "Investigation of a Structured Fisher's Equation with Applications in Biochemistry"</p> <p>SIAM Conference on Applications of Dynamical Systems - "Investigation of a Structured Fisher's Equation with Applications in Biochemistry" (poster presentation)</p> <p>Quantitative Biology Student Symposium: Systems Biology in the Context of Aging and Disease - "Investigation of a Structured Fisher's Equation with Applications in Biochemistry" (poster presentation)</p> |
| 2016 | <p>SIAM Meeting on the Life Sciences - "Modeling Keratinocyte Wound Healing Dynamics: Cell-cell Adhesion Promotes Collective Migration"</p> <p>N.C. State Tutorial Workshop on Parameter Estimation for Biological Models - "Modeling Keratinocyte Wound Healing Dynamics: Cell-cell Adhesion Promotes Collective Migration" (poster presentation)</p> <p>C.U. Complex/Dynamical Systems Seminar - "An Investigation of a Structured Version of Fisher's Equation"</p>   |
| 2015 | <p>Society for Mathematical Biology Annual Meetings - "The role of Cell-cell Adhesion in Collective Migration During Wound Healing"</p>  |
| 2014 | <p>Graduate SIAM chapter, CU "Reaction-Diffusion Model of Collective Migration in Wound Healing"</p>   |
| 2013 | <p>N.C. State Math Department Undergraduate Research Seminar - "The Effects of Reparameterization on Inverse Problems"</p> <p>University of Colorado Butcher Symposium - "MAPK Waves in wound healing" (poster presentation)</p>   |
| 2012 | <p>Joint Math Meetings - "A discrete Model of the Iron Metabolic Network in Response to <i>Aspergillus</i> Infection"</p> <p>N.C. State Math Department Undergraduate Research Seminar - "Quantifying Label Decay in CFSE data" (joint presentation with Laura Poag)</p>   |
| 2011 | <p>University of North Carolina Greensboro Regional Mathematics &amp; Statistics Seminar - "A discrete Model of the Iron Metabolic Network in Response to <i>Aspergillus</i> Infection"</p>  |

## Teaching Experience

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- Instructor, APPM 1350: Calculus I for Engineers (Summer 2017)
- Teaching Assistant, APPM 1360: Calculus II for Engineers (Spring 2016)
- Teaching Assistant, APPM 1350: Calculus I for Engineers (Summer 2016)
- Teaching Assistant, APPM 1235: Pre-Calculus for Engineers (Fall 2016)
- Teaching Assistant, APPM 2360 Introduction to Differential Equations with Linear Algebra (Spring 2017)

## Conference Organizing

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- **Stage-structured Populations Models in Biology** (with David Bortz)  
Minisymposium at SMB Annual Meetings, Salt Lake City, UT 7/2017
- **Quantitative Biology Student Symposium: Systems Biology in the Context of Aging and Disease**  
(co-organizer)  
Symposium at University of Colorado, Boulder, CO 5/2017
- **Migration and Signaling Waves in Cellular Biology** (with David Bortz)  
Minisymposium at SMB Annual Meetings, Atlanta, GA 7/2015

## Honors and Awards

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2013-2015 IGERT Fellowship Program (through IQ Biology)

2014, 2015 NSF GRFP Honorable Mention

2012 Phi Beta Kappa

## Affiliations

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Society for Industrial and Applied Mathematics

Society for Mathematical Biology