

Curriculum Vitae

Benjamin M. Jordan

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Biological Laboratories at Harvard University
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Background

Ph.D. Candidate

Department of Organismic and Evolutionary Biology
Harvard University
www.oeb.harvard.edu
Cambridge, MA, USA
(2008 - September 2013)

- Ph.D. in Biology with emphasis on development and biomechanics of plant cell walls, embryonic zebrafish, rat brain cells, vertebrate limbs, and hydrothermal vent worms.
- Design and implementation of hardware devices and analysis software for the measurement of mechanical and chemical quantities within biological cells, tissues and membranes.
- Theoretical development, analysis, simulation, fitting, and visualization of mathematical models with experimental data from biological cells, tissues and membranes.
- Extensive experience in modeling of chemical reaction kinetics, mass and heat transport, and the mechanics, kinematics, and geometry of biological cells, tissues and membranes.
- Award-winning teacher of “Mathematical Modeling of Biological Systems using Differential Equations” (Taught with Dr. John Hall, Harvard Department of Mathematics, Course 19a).

Student and Undergraduate Researcher

Institute of Technology and Minnesota Supercomputing Institute
University of Minnesota
www.cs.umn.edu
www.msi.umn.edu
Minneapolis, MN, USA
(2004 - 2008)

- B.S. in Computer Science with Mathematical Biology emphasis.
- Research in modeling and visualization of biological systems and number theoretical problems.
- Provided tutoring services in biology, chemistry, mathematics and computer science.

Linux Technical Specialist

IBM Corporation
www.ibm.com
Auckland, New Zealand

(2003 - 2004)

- Provided technical and sales support for potential and existing clients.
- Authored 1000 user Linux desktop migration TCO and ROI study.
- Coordinated initial phase of Linux infrastructure project for Vodafone, New Zealand.

Technical Specialist

Bynari, Inc.

www.bynari.net

Dallas, Texas, USA

(2002 - 2003)

- Provided technical and sales support for potential and existing clients.
- Designed and managed migrations to our open-source email system.
- Created successful partnership between Intrcomm Technology and Bynari.

Founder

Intrcomm Technology, Inc.

www.intrcomm.net

Delano, MN, USA

(1998 - 2002)

- Provided technical and sales support for potential and existing clients.
- Installed and managed small business computer systems and web sites.
- Developed intrusion detection system for intrBOX network appliance product.
- Established in 1997, grew to 1.1 million USD yearly revenue in 2002, buyout in 2003.

Computer Trainer

New Horizons Computer Learning Center

Minneapolis, Minnesota, USA

(1996 - 1997)

- Teacher of information technology subjects including Microsoft Exchange Server, Windows NT Server, and Microsoft Office.

Publications

- Patrick Müller, Katherine W. Rogers, Ben M. Jordan, Joon S. Lee, Drew Robson, Sharad Ramanathan, Alexander F. Schier "Differential diffusivity of Nodal and Lefty underlies a reaction-diffusion patterning system." *Science Signalling* 336.6082 (2012).
- Benjamin M. Jordan, and Jacques Dumais. "Biomechanics of Plant Cell Growth." *Wiley Encyclopedia of Life Sciences* (2010).
- Reid Priedhorsky, Benjamin Jordan, and Loren Terveen. "How a personalized geowiki can help bicyclists share information more effectively." *Proceedings of the 2007 international symposium on Wikis.* ACM, 2007.

Research Experience

Constitutive modeling and shape change in single cells with reinforced walls

Advisor: Dr. Laksrikanth Mahadevan, School of Engineering and Applied Science, Harvard University
(2012 - Present)

Measurement of kinematics and rheometry of live algal cell walls

Advisor: Dr. Jacques Dumais, Dept. of Organismic and Evolutionary Biology, Harvard University
(2008 - 2012)

Measurement and modeling of reaction kinetics and transport during zebrafish development

Advisor: Dr. Alex Schier, Dept. of Molecular and Cellular Biology, Harvard University
(2008 - 2013)

Modeling and measurement of kinematics and mechanics of CB1-induced neuronal shape change

Advisor: Dr. Zsolt Lenkei, Laboratoire de Neurobiologie, ESPCI ParisTech
(2011)

Modeling the reaction kinetics, transport and mechanics of vertebrate limb development

Advisor: Dr. Hans Othmer, School of Mathematics, University of Minnesota

Advisor: Dr. Magdalena Stolarska, Dept. of Mathematics, University of St. Thomas
(2006 - 2008)

Cultivation of *Pleurotus ostreatus* on agricultural byproducts of MN farms

Advisor: Dr. Albert Markhart III, Dept. of Horticulture, University of Minnesota

Advisor: Dr. Wen Ping-Chen, Dept. of Horticulture, University of Minnesota
(2005)

Technical Experience

Mathematical modeling and simulation: Extensive experience in modeling biological systems, including reaction kinetics, mass/heat transport, biomechanics, evolution, disease modeling, sequence analysis, and population models. High mathematical proficiency using differential equations and their associated tools.

Programming and visualization: Fluency in MATLAB, Maple, Comsol, TecPlot, C(++), Java, FORTRAN, Perl, Python in single and multiprocessor environments. Current library of > 10⁶ lines of well-written and documented code, including fully developed applications for (i) the measurement of diffusion coefficients and reaction kinetics rates in living systems using FRAP and (ii) the measurement of geometry and kinematics of living cells using confocal microscopy, image analysis and particle velocimetry.

Device design and implementation: Original hardware and software development of devices for the measurement and regulation of pressure, temperature, geometry, and kinematics of individual cells and tissues during mechanical, osmotic, and growth stimulation. Working examples include (i) a new device capable of dynamically and precisely measuring *and* regulating local pressure differences (ii) a novel device for measuring the structural reinforcement of biological membranes and walls using polarized confocal microscopy.

Information technology: *nix, OS/400, Windows, and Android operating systems environments. Systems experience includes network and system configuration for clustering, file sharing, intrusion detection, email, routing, and firewalling. 10+ years of experience on thousands of devices.

Accomplishments and Awards

- Bok Center Teaching Award recipient for (2013)
- Featured speaker at “Nerd Nite” in Boston (2010)
- Awarded NSF IGERT Fellowship in Biomechanics (2008)
- Awarded Society for Mathematical Biology Landahl Travel Grant (2007)
- Invited speaker at SPARK (<http://spark.cla.umn.edu/>) Music Festival (2006)
- Awarded MN Mycological Society Travel Grant (2005)
- Awarded Vincent Bailey Scholarship (2007)

- Awarded Leon Snyder Memorial Scholarship (2007)
- Awarded I.T. Merit Scholarship (2007)
- Awarded H.M. Rothschild Scholarship (2005)
- Awarded U of M CFANS Scholarship (2006)
- Completed Ironman triathlon in Madison, WI (2004)
- Extensive travel experience in 20+ countries including France, Finland, New Zealand, Germany, and the U.K.

Organizational Affiliations

- Member of the Society of Mathematical Biology (2005 - Present)
- Twin Cities Linux Users Group Meeting Organizer (2005)
- Cornercopia - U of M Student Organic Farm (2005)
- Regular speaker at MN Mycological Society (2005 - 2008)