

BRIAN D. CONNELLY

Department of Biology
University of Washington
Box 351800
Seattle, WA 98105 USA

bdcx@uw.edu
<http://www.bconnelly.net>

Education

- 2012 **Ph.D. in Computer Science; Ecology, Evolutionary Biology, and Behavior**
Dissertation: *Ecological Effects on the Evolution of Cooperative Behaviors*
Advisor: Philip K. McKinley
Michigan State University, East Lansing, MI USA
- 2005 **M.S. in Computer Science**
Thesis: *A Distributed Approach to Managing Large Simulation Data Sets*
Advisors: Li Xiao and Michael Feig
Michigan State University, East Lansing, MI USA
- 2002 **B.S. in Computer Science**
Minors in German and Psychology
Purdue University, West Lafayette, IN USA

Professional Experience

- 2013– **Postdoctoral Research Fellow:** NSF Postdoctoral Research Fellowship in Biology (PRFB)
Research: *The Co-Evolution of Cooperation and Communication in Quorum Sensing Systems*
Mentors: Benjamin Kerr (University of Washington) and Michael Doebeli (University of British Columbia)
- 2012–2013 **Postdoctoral Research Associate:** BEACON Center for the Study of Evolution in Action
Research: The evolution of cooperation and quorum sensing
Michigan State University and University of Washington
- 2011–2012 **Graduate Research Assistant:** BEACON Center for the Study of Evolution in Action
Research: Ecological effects on the evolution of cooperation and bacterial biofilm formation
Michigan State University, East Lansing, MI USA
- 2009–2011 **Graduate Research Assistant:** Department of Computer Science and Engineering
Research: Ecological effects on the evolution of cooperation and bacterial biofilm formation
Michigan State University, East Lansing, MI USA
- 2008 **Lead Teaching Assistant:** Technical Computing and Problem Solving (CSE 131)
Responsibilities: Managed group of 17 teaching assistants, designed biweekly labs and quizzes, designed midterm examinations, taught biweekly labs, assisted in weekly lectures, held office hours, grading
Michigan State University, East Lansing, MI USA
- 2005–2006, 2007–2008 **Teaching Assistant:** Technical Computing and Problem Solving (CSE 131)
Responsibilities: Taught biweekly labs, assisted in lectures, held office hours, grading
Michigan State University, East Lansing, MI USA
- 2007–2009 **Graduate Research Assistant:** Department of Computer Science and Engineering
Research: The evolution of cooperative behaviors
Michigan State University, East Lansing, MI USA

2003–2007	Graduate Research Assistant: Department of Biochemistry and Molecular biology Research: The analysis and management of large molecular dynamics simulation data sets Michigan State University, East Lansing, MI USA
2000	Software Engineering Internship: Intel Corporation Responsibilities: Software development, research, design of project distribution system Hillsboro, OR USA
1999–2000, 2001–2002	Teaching Assistant: Problem Solving and Programming (CS 180) Responsibilities: Taught weekly labs, developed class projects, grading Purdue University, West Lafayette, IN USA

Publications

- 2012 Brian D. Connelly, Luis Zaman, and Philip K. McKinley. The seeds platform for evolutionary and ecological simulations. In *Proceedings of the Genetic and Evolutionary Computation Conference*, pages 133–140, 2012
- ▶ Benjamin E. Beckmann, David B. Knoester, Brian D. Connelly, Christopher M. Waters, and Philip K. McKinley. Evolution of resistance to quorum quenching in digital organisms. *Artificial Life*, pages 1–20, 2012
 - ▶ Brian D. Connelly. *Ecological Effects on the Evolution of Cooperative Behaviors*. PhD thesis, Michigan State University, April 2012
- 2011 Brian D. Connelly, Luis Zaman, Philip K. McKinley, and Charles Ofria. Modeling the evolutionary dynamics of plasmids in spatial populations. In *Proceedings of the Genetic and Evolutionary Computation Conference*, pages 227–233, 2011
- 2010 Brian D. Connelly, Luis Zaman, Charles Ofria, and Philip K. McKinley. Social structure and the maintenance of biodiversity. In *Proceedings of the 12th International Conference on the Synthesis and Simulation of Living Systems (ALIFE)*, pages 461–468, 2010
- ▶ Brian D. Connelly, Benjamin E. Beckmann, and Philip K. McKinley. Resource abundance promotes the evolution of public goods cooperation. In *Proceedings of the Genetic and Evolutionary Computation Conference*, pages 143–150, 2010
- 2009 Brian D. Connelly and Philip K. McKinley. Evolving social behavior in adverse environments. In *Proceedings of 10th European Conference on Artificial Life*, pages 498–498, 2009
- ▶ Brian D. Connelly, Philip K. McKinley, and Benjamin E. Beckmann. Evolving cooperative pheromone usage in digital organisms. In *Proceedings of IEEE Symposium on Artificial Life*, pages 184–191, 2009
- 2008 Michael Feig, Seiichiro Tanizaki, Jana Chocholousova, Maryam Sayadi, Jacob W. Clifford, Brian D. Connelly, Shayantani Mukherjee, and Sean M. Law. Simulating biomolecules in cellular environments. In *Proceedings of the NIC Workshop, From Computational Biophysics to Systems Biology (CBSB08)*, pages 23–39, 2008
- ▶ Seiichiro Tanizaki, Jacob W. Clifford, Brian D. Connelly, and Michael Feig. Conformational sampling of peptides in cellular environments. *Biophysical Journal*, 94(3):747–759, 2008
- 2006 Brian D. Connelly, Christopher W. Bowron, Li Xiao, Pang-Ning Tan, and Chen Wang. Adaptively routing P2P queries using association analysis. In *Proceedings of the 2006 International Conference on Parallel Processing*, pages 281–288, 2006
- 2005 Brian D. Connelly. A distributed approach to managing large simulation data sets. Master’s thesis, Michigan State University, May 2005

Awards and Honors

- 2014 **Google Research Cloud Services Award:** Brian D. Connelly, Sylvie Estrella, and Benjamin Kerr. *Expanding the Scale of Eco-Evolutionary Models.*
- 2013 **Research Fellowship**
National Science Foundation Postdoctoral Research Fellowships in Biology (PRFB)
- 2012 **Outstanding Graduate Student**
Department of Computer Science and Engineering, Michigan State University
 - ▶ **Outstanding Service Award**
Department of Computer Science and Engineering, Michigan State University
 - ▶ **Nominee for Fitch-Beach Outstanding Graduate Research Award**
College of Engineering, Michigan State University
- 2010 **Best Paper**
Genetic and Evolutionary Computation Conference (GECCO) 2010 for *Resource Abundance Promotes the Evolution of Public Goods Cooperation*
- 2006 **Best Poster, 3rd Place**
Department of Computer Science and Engineering, Michigan State University for *Adaptively Routing P2P Queries Using Association Analysis*
- 2004 **Graduate Research Fellowship Award**
Quantitative Biology Program, Michigan State University for research project: *The Simulation Database (SimDB) for Comparing Molecular Dynamics Simulations*

Teaching Experience

- 2014 **Mentor:** Worked with two zoology and one computer science graduate students to conduct course research project modeling the evolution of pheromone-based navigation for *Multi-disciplinary Research Methods for the Study of Evolution* at BEACON Center for the Study of Evolution in Action
- 2013 **Tutorial Instructor:** Data Visualization! How to convey scientific datasets through plots, movies, and interaction.
BEACON Center for the Study of Evolution in Action Congress 2013
 - ▶ **Mentor:** Worked with two undergraduate students to conduct research and gain experience through Biology 482: *Independent Research in Experimental Evolutionary Ecology* at the University of Washington
- 2012 **Mentor:** Worked with a Lansing, Michigan area high school biology teacher to develop and conduct experimental evolution studies and corresponding classroom materials as part of the Research Experience for Teachers program at MSU
 - ▶ **Seminar Organizer:** Organized, led, and developed *BEACON Toolkit*, a seminar series introducing computational techniques to researchers in evolutionary biology and ecology
- 2011 **Tutorial Instructor:** SEEDS: Life Off of the Grid
BEACON Center of the Study of Evolution in Action
- 2008 **Lead Teaching Assistant:** Technical Computing and Problem Solving (MSU CSE 131)
Managed group of 17 teaching assistants, designed biweekly labs and quizzes, designed midterm examinations, taught biweekly labs, assisted in weekly lectures, grading
- 2005–2008 **Teaching Assistant:** Technical Computing and Problem Solving (MSU CSE 131)
Taught biweekly labs, assisted in lectures, grading

1999–2002 | **Teaching Assistant:** Problem Solving and Programming (Purdue CS 180)
Taught weekly labs, developed class projects, grading

Service Activities

University Committee Service

2014– | Biology Department Representative, University of Washington Postdoctoral Association
2013–2014 | UW Biology Faculty Appointments Committee
2011– | Co-founder, BEACON Students and Postdocs Association
2011–2012 | MSU College of Engineering Research Committee
2011 | MSU College of Engineering Graduate Studies Committee
2009–2012 | Chair, MSU CSE Graduate Students Association
2009–2010 | MSU CSE Computing Environment Committee
2007–2008 | MSU CSE Graduate Studies and Research Committee
2006–2007 | MSU CSE Faculty Meetings
2004–2012 | MSU CSE Graduate Students Association

Conference Program Committee Membership

2014 | Fourteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE)
▶ Artificial Life/Robotics/Evolvable Hardware Track, Genetic and Evolutionary Computation Conference (GECCO)
2013 | Artificial Life/Robotics/Evolvable Hardware Track, Genetic and Evolutionary Computation Conference (GECCO)
▶ Generative and Developmental Systems Track, Genetic and Evolutionary Computation Conference (GECCO)
2012 | Thirteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE)
▶ Artificial Life/Robotics/Evolvable Hardware Track, Genetic and Evolutionary Computation Conference (GECCO)

Education Outreach

2014 | Science Fair Judge at Jane Addams K-8 School in Seattle, WA
▶ Judge for Biology Graduate Student Symposium, University of Washington
2013 | Science Fair Judge at Jane Addams K-8 School in Seattle, WA
▶ Co-Instructor and Co-Organizer of CompCamp, an introduction to computational tools and programming for biologists, Department of Biology, University of Washington
2012 | Developed and taught BEACON Tools: A seminar series introducing computational tools for data-driven science to students, postdocs, and faculty of BEACON Center
▶ Taught a class of third grade students from East Lansing, MI how computers can be used to study evolution

- ▶ Worked with MSU's Graduate Women In Science showing high school students science and engineering using computers, robots, and digital evolution as part of the NSF-sponsored College Ambition Program
- 2011 Taught a class of first grade students from East Lansing, MI how computers can be used to study evolution

External Activities

- 2013 Volunteer, Decibel International Festival of Electronic Music Performance, Visual Art and New Media
- 2002– Volunteer counselor for Hoosier Burn Camp, a camp for child burn survivors

Software Contributions

- **Primary Developer**, SEEDS Platform for computational ecology and evolution
Available: <https://github.com/briandconnelly/seeds>
- **Primary Developer**, pushoverr, an R package for sending notifications
Available: <https://github.com/briandconnelly/pushoverr>
- **Primary Developer**, PlateTools for reading, manipulating, and analyzing microplate data
Available: <https://github.com/briandconnelly/PlateTools>
- **Developer**, Avida Digital Evolution Platform
Available: <http://avida.devosoft.org>

Presentations

- 2013 **Conference Presentation:** *The Co-Evolution of Cooperation and Communication in Quorum Sensing Systems*
BEACON Congress 2013
 - ▶ **Guest Lecture:** *Digital Evolution*
Evolutionary Biology (UW Biology 354)
 - ▶ **Guest Blog Post:** *When Cooperating Means Just Saying No*
BEACON Center for the Study of Evolution in Action
 - ▶ **Invited Talk:** *Ecological Effects on the Evolution of Cooperation*
North Carolina A&T State University
- 2011 **Guest Lecture:** *Ecological Effects on the Evolution of Cooperative Behavior*
Evolutionary Dynamics and Modeling (MSU MMG 982)
 - ▶ **Conference Presentation:** *Modeling the Evolutionary Dynamics of Plasmids in Spatial Populations*
Genetic and Evolutionary Computation Conference (GECCO), Dublin, Ireland
 - ▶ **Guest Blog Post:** *The Role of Environment in the Evolution of Cooperation*
BEACON Center of the Study of Evolution in Action
 - ▶ **Invited Talk:** *Social Structure and the Maintenance of Biodiversity*
BEACON Center of the Study of Evolution in Action
 - ▶ **Guest Lecture:** *Evolving Cooperative Behaviors*
Advanced Topics in Distributed Computing Systems (MSU CSE 912)
- 2010 **Invited Talk:** *Environmental Resource Abundance and the Evolution of Cooperation*
BEACON Center of the Study of Evolution in Action

- ▶ **Conference Presentation:** *Social Structure and the Maintenance of Biodiversity*
12th International Conference on the Synthesis and Simulation of Living Systems (ALIFE),
Odense, Denmark
- ▶ **Conference Presentation:** *Resource Abundance Promotes the Evolution of Public Goods
Cooperation*
Genetic and Evolutionary Computation Conference (GECCO), Portland, Oregon, USA
- 2009 **Conference Presentation:** *Evolving Cooperative Pheromone Usage in Digital Organisms*
IEEE Symposium Series on Computational Intelligence in Nashville, Tennessee, USA
- 2007 **Guest Lecture:** *Peer-to-Peer Networks*
Computer Networks (MSU CSE 422)

References

Available upon request