# David H. Brown

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## EDUCATION

Ph.D. in Applied Mathematics, University of California, Davis, 2001
  Dissertation: Stochastic Spatial Models of Plant Diseases
  Advisor: Dr. Alan Hastings

Undergraduate and graduate studies in mathematics, Univ. of New Mexico, 1993-1995

B.A. in Liberal Arts, St. John's College, Santa Fe, NM, 1992

## EMPLOYMENT

**Assistant Professor**, Dept. of Mathematics and Computer Science,
  Colorado College, 2004 – present

**Visiting Assistant Professor**, Dept. of Agronomy and Range Science, U.C. Davis,
  Summers of 2004, 2005, 2006

**Postdoctoral Researcher**, Dept. of Agronomy and Range Science,
  U.C. Davis, 2002-2003
  Funded by NSF Grant DEB 0120169 "Coupling Rhizosphere Biogeochemical Cycles
      to Plant Growth Under Differing Levels of Carbon Dioxide"
  Supervisor: Dr. Richard Plant

**Lecturer**, Dept. of Mathematics, U.C. Davis, 2002

**Teaching Assistant**, Dept. of Mathematics, U.C. Davis, 1995-2001

**Teaching Assistant**, Dept. of Mathematics, Univ. of New Mexico, 1994-1995

**Graduate Research Assistant**, Los Alamos National Laboratory, 1992-1993

## AWARDS

**MacArthur Professorship**, Colorado College, 2006-2007
  Course release and summer stipend for outstanding promise in teaching and
  scholarship.

**Named Outstanding Professor** by Order of Omega (Greek Honor Society),
  Colorado College, 2007

**William Karl Schwarze Scholarship in Mathematics**, U.C. Davis, 1998
  Departmental award ($10,000) for excellence in teaching and scholarship.

## GRANTS

**Principal Investigator**, NSF Grant EF 0734213 for $234,200, 2007-2010
>I am the PI of a UBM grant to support undergraduate research in mathematical biology, which will involve 8 faculty and 16 students over three years. I am directly involved in two of the research projects, as well as responsible for taking students to conferences and administering the grant.

**Subaward**, from NSF grant DEB 0120169 to U.C. Davis, 2004-2006
>Used to support 5 Colorado College students with summer research stipends.

## PUBLICATIONS

**Brown**, D. and C.P. Lostroh. 2008. Inferring gene expression dynamics from reporter protein levels. *Biotechnology Journal* 3:1437-1448.

**Fu**, S., H. Ferris, D. Brown, and R. Plant. 2005. Does the positive feedback effect of nematodes on their bacterial prey vary with nematode species and population size? *Soil Biology and Biochemistry* 37:1979-1987.

**Brown**, D., H. Ferris, S. Fu, and R. Plant. 2004. Modeling direct positive feedback between predators and prey. *Theoretical Population Biology* 65:143-152.

**Brown**, D. and B. Bolker. 2004. The effects of disease dispersal and host clustering on the epidemic threshold in plants. *Bulletin of Mathematical Biology* 66:341-371.

**Brown**, D. and A. Hastings. 2003. Resistance may be futile: dispersal scales and selection for disease resistance in competing plants. *Journal of Theoretical Biology* 222:373-388.

## WORK IN PROGRESS

**Brown**, D. A mathematical model of the Gac/Rsm regulatory network in *Pseudomonas fluorescens*. Submitted to *Journal of Theoretical Biology*.

**Kummel**, M. and D. Brown. Spatiotemporal dynamics of an insect predator-prey metapopulation. In preparation.

## PRESENTATIONS

**Poster Presentation**, "Modeling the Gac/Rsm Quorum Sensing System in *Pseudomonas fluorescens*", Society for Mathematical Biology Annual Meeting, 2009

**Departmental Talk**, "The Life and Legacy of Alan Turing", 2008

## PRESENTATIONS (cont.)

**Departmental Talk**, "Three Short Talks About Bacterial Genetics", 2008

**Departmental Talk**, "Modeling the Gac/Rsm Quorum Sensing System in *Pseudomonas fluorescens*", 2008

**Poster Presentation**, "The UBM Program at Colorado College", UBM Grant Awardees Annual Meeting, 2008

**Invited Talk**, "Moment Closure Methods in Stochastic Spatial Models", UCCS Department of Mathematics Colloquium, 2005

**Contributed Talk**, "Teaching a Seminar on the Mathematics of HIV", Rocky Mountain Section of the MAA Annual Meeting, 2004

**Contributed Talk**, "Developing a Course on the Mathematics of HIV", Bridging Research and Teaching Workshop, WUSL School of Medicine, 2003

**Contributed Talk**, "A Spatial Model of Plant Competition Mediated by Sublethal Diseases", Society for Mathematical Biology Annual Meeting, 2000

## OTHER ACTIVITIES

**Participant**, MITC Workshop "Hands-on Teaching of Bioinformatics", 2004

**Invited Participant**, NIH-NSF Symposium "Accelerating Mathematical-Biological Linkages", 2003

**Attendee**, NATO Advanced Studies Institute on Mathematical Problems Arising from Biology, 1999

## SERVICE

**Councilor,** Council on Undergraduate Research, 2009 -
Nationally elected member of organization dedicated to strengthening research opportunities for undergraduates.

**Co-organizer**, Pikes Peak Regional Undergraduate Mathematics College, 2008

**Panel Member**, "How to Get a Tenure-Track Job", SMB Annual Meeting, 2008

**Reviewer** for manuscripts submitted to *American Mathematical Monthly, Journal of Theoretical Biology, Journal of Mathematical Biology, Theoretical Population Biology*, *Oecologia*, and *The American Naturalist*, 2001 – present

**TEACHING**

**Courses Taught at CC:**

Introduction to Probability and Statistics
Calculus 1, 2, 3
Introduction to Mathematical Modeling
Linear Algebra
Environmental Modeling
Mathematical Biology
The Mathematics of HIV
Probability
Ordinary Differential Equations
Partial Differential Equations
Numerical Analysis
Real Analysis I

**Student Research Projects and Theses Supervised:**

Casey Rommel and Alex Tom, "Spatial Structure and Metapopulation Dynamics of an Insect Predator-Prey System", 2009 (Joint with Dr. Miro Kummel)

Noah Brostoff and Laura Johnson, "Modeling the Evolution of the GASP Phenotype in *E. coli*", 2008 (Joint with Dr. Phoebe Lostroh)

Jette Petersen, "An Exploration of Stochastic Models of Carcinogenesis", 2007

Angela Campbell, "Stochastic Calculus and Mathematical Finance", 2006

Zheng Mi, "Multiple Nutrient Limitation in Soil Decomposition Models", 2006

Young Yi, "Modeling the Gac/Rsm Quorum Sensing System in *P. fluorescens*", 2006

Alexis Loretz, "Complex Predator-Prey Metapopulation Dynamics", 2005

Chris Morin, "Modeling the Control of Antibiotic Synthesis in *P. fluorescens*", 2005

Lawrence Chien, "Positive Feedback via Prey Dispersal by Predators", 2004

**MEMBERSHIPS**

Mathematical Association of America
Society for Mathematical Biology
Council on Undergraduate Research