

CURRICULUM VITAE
JOHN DAVID NAGY

Department of Life Sciences
Scottsdale Community College
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Scottsdale, Arizona 85250
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EDUCATION

<u>Institution</u>	<u>Degree</u>	<u>Year Granted</u>
Arizona State University	Ph.D. Zoology	1996
The University of Michigan	B.S. Forestry	1986
Eastern Michigan University	B.S. Biology	1986

Dissertation Title

Evolutionarily Attracting Dispersal Strategies in Vertebrate Metapopulations.

HONORS

Art DeCabooter Professor of the Year, Scottsdale Community College, 2008
Graduate College Outstanding Graduate, Arizona State University, 1996
Outstanding Teaching Associate, Arizona State University, Department of Zoology, 1996
Summa Cum Laude, Eastern Michigan University
Phi Kappa Phi, Eastern Michigan University
Stoic Society, Eastern Michigan University
Student Athlete of the Year, Track, Eastern Michigan University, 1985
Phi Beta Kappa, The University of Michigan

ACADEMIC APPOINTMENTS

<u>Employer</u>	<u>Title</u>	<u>Year</u>
Scottsdale Community College Department of Life Science	Chair	2007-present
Scottsdale Community College Department of Life Science	Professor of Biology	1997-present
Arizona State University School of Mathematical and Statistical Sciences	Adjunct Professor	2006-present
Arizona State University School of Life Sciences	Adjunct Professor	1999-2006
Scottsdale Community College Department of Life Science	Professor of Biology, Provisional	1997-2003
Midwestern University Department of Biomedical Sciences	Adjunct Professor	1999-2003

AREAS OF SPECIALIZATION

Research Program: Evolutionary Dynamics of Disease

Teaching Specialization: General Biology for Majors, Dynamical Models in Medicine

General Areas of Interest: Mathematical and Computational Biology, Evolutionary Biology, Pathology, Biology Education

PROFESSIONAL ORGANIZATIONS

American Association for the Advancement of Science
American Mathematical Society
Society for Mathematical Biology
European Society for Mathematical and Theoretical Biology
American Institute for Biological Sciences
Society for Integrative and Comparative Biology

FELLOWSHIPS AND GRANTS

National Science Foundation, Department of Mathematical Sciences Infrastructure Program. Towards an integrative mechanistic theory of within-host disease dynamics. Dr. Yang Kuang, Program Director; Drs. James Elser, Timothy Newman, Val Smith and John Nagy, Co-Primary Investigators. \$1.59 million (4 year award; awarded 2004).

Center for Field Studies (Earthwatch). Metapopulation Dynamics of Pikas: Modeling Conservation Alternatives. Dr. Andrew Smith, Dr. John Nagy and Mr. John Frisch, Co-Primary Investigators. Approximately \$20,000. 1997-1999.

Department of Zoology, Arizona State University. Travel Grant for Travel to Woudschoten, The Netherlands. \$1,300. 1996.

Department of Mathematics, Arizona State University. Travel Grant for Travel to Houston, Texas. \$500. 1995.

Arizona State University. Regent's Graduate Academic Scholarship. \$7,500. 1994-1995.

University of Toronto. E.E. Johnson Award. \$6,900. 1989-1990.

University of Toronto. E.E. Johnson Award. \$6,900. 1988-1989.

University of Toronto. Open Fellowship. \$8,100. 1987-1988.

PUBLICATIONS

Research

- Wang, H., **J.D. Nagy**, O. Gilg and Y. Kuang. 2009. The roles of predator maturation delay and functional response in determining the periodicity of predator-prey cycles. *Journal of Theoretical Biology*. To Appear.
- Hews, S., S. Eikenberry, **J.D. Nagy** and Y. Kuang. 2009. Rich dynamics of a Hepatitis B Virus infection with logistic hepatocyte growth. *Submitted to Journal of Mathematical Biology*, To Appear.
- Armbruster, D., **J.D. Nagy**, V.A.F. van de Rijt and J.E. Rooda. 2009. Dynamic simulations of single molecule enzyme networks. *Journal of Physical Chemistry B* **113**:5537-5544.
- Eikenberry, S., S. Hews, **J.D. Nagy** and Y. Kuang. 2009. The dynamics of a delay model of HBV infection with logistic hepatocyte growth. *Mathematical Biosciences and Engineering* **6**:283-299.
- Nagy, J.D.** 2007. Hypertumors in cancer can be caused by tumor phosphorus demand. *Proc. Appl. Math. Mech.*, **7**: 1121703-1121704.
- Gourley, S.A., Y. Kuang and **J.D. Nagy**. 2008. Dynamics of a delay differential equation model of hepatitis B virus infection. *Journal of Biological Dynamics* **2**:140-153.
- Elser, J.J., M. Kyle, M.S. Smith and **J. D. Nagy**. 2007. Biological stoichiometry in human cancer. *PLoS ONE* **2**:e1028.doi:10.1371/journal.pone.0001028.
- Nagy, J.D.**, E.M. Victor and J.H. Cropper. 2007. Why don't all whales have cancer? A novel hypotheses resolving Peto's paradox. *Integrative and Comparative Biology* **47**:317-328.
- McKane, A.J., T.J. Newman, **J.D. Nagy** and M.O. Stephanini. 2006. Amplified biochemical oscillations in microscopic systems. *Journal of Statistical Physics* **128**: 165-191.
- Nagy, J.D.** 2005. The ecology and evolutionary biology of cancer: a review of mathematical models of necrosis and tumor cell diversity. *Math. Biosci. Eng.* **2**: 381-418.
- Nagy, J.D.** 2005. Review of *Dicing with Death: Chance, Risk and Health*, by Stephen Senn. *Cambridge Quarterly of Healthcare Ethics* **14**: 119-124.

- Nagy, J.D.** 2004. Competition and natural selection in a mathematical model of cancer. *Bull. Math. Biol.* 66: 663-687.
- Kuang, Y., **J.D. Nagy** and J. Elser. 2004. Biological Stoichiometry of Tumor Dynamics: Mathematical Models and Analysis. *Discrete and Continuous Dynamical Systems – Series B* 4: 221-240.
- Elser, J.J., **J.D. Nagy** and Y. Kuang. 2003. Biological Stoichiometry: an ecological perspective on tumor dynamics. *BioScience* 53: 1112-1120.
- Nagy, J.D. 1996. Evolutionarily attracting dispersal strategies in vertebrate metapopulations. Doctoral Dissertation, Arizona State University.

Education

- Stein, J.D., **J.D. Nagy** and K.E. Cooper. 2006. Introductory Biology for Allied Health: A laboratory manual for BIO 156. 1st ed. Kendall/Hunt, Dubuque, Iowa.
- Nagy, J.D.** and K.E. Cooper. 2003. Laboratory Manual for Human Biology. 2nd edition. Kendall/Hunt, Dubuque, Iowa.
- Nagy, J.D.** and K.E. Cooper. 1999. Laboratory Manual for Biology 156: Human Biology for Allied Health. Kendall/Hunt, Dubuque, Iowa
- Cooper, K.E. and **J.D. Nagy**. 1997. Quantitative Exercises and Solutions. In: Sherwood, L. *Human Physiology: From Cells to Systems* (Third Edition). Wadsworth Publishing, Washington D.C.
- Cooper, K.E. and **J.D. Nagy**. 1997. Appendix C: Principles of Quantitative Reasoning. In: Sherwood, L. *Human Physiology: From Cells to Systems* (Third Edition). Wadsworth Publishing, Washington D.C.

PAPERS PRESENTED, CONFERENCES, WORKSHOPS

- The Role of Stem Cells in the Evolution of Hypertumors in Malignant Neoplasia. *In* Stem Cells, Regeneration and Cancer Minisymposium. (Organized by R. Reshef, **J. Nagy**, E. Witten and A. Huyseune.) 2nd Euro Evo Devo Meeting, Ghent, Belgium. July 29-Aug. 1, 2008.
- Natural Selection on Cell ATP Allocation May Constrain Evolutionary Suicide in Cancer: A Multiscale Model of Adenylate Dynamics in Vascularized Tumors. (Coauthor: Kelley Thompson.) Dynamical Systems in Biology and Medicine Minisymposium. (Organized by Yang Kuang, Bingtuan Li and Jiaxu Li.) 7th AIMS International Conference on Dynamical Systems, Differential Equations and Applications, Arlington, TX. May 18-21, 2008.
- Production Systems in Biology: Stochastic Simulation of Complex Biological Networks. Marrakech International Conference and Workshop on Mathematical Biology, Marrakech, Morocco. January 3-8, 2008. (NOTE: Slightly more detailed than the presentation actually made at the conference.)
- Evolutionary Suicide by Hypertumor: Can Cancer be Self-Defeating? *Plenary address* in the IV International Seminar in Biomathematics (IV SEMBIOMAT), Chiclayo, Peru. August 18, 2007.
- Hypertumors in Malignant Neoplasia can be Caused by Tumor Phosphorus Demand. Modeling Cancer Growth and Treatment Minisymposium. (Organized by Thomas Hillen, University of Alberta and Dan Coombs, University of British Columbia.) 6th International Congress on Industrial and Applied Mathematics, Zurich, Switzerland. July 16-20, 2007.
- Hypertumors in Malignant Neoplasia can be Caused by Tumor Phosphorus Demand. Tumor Modeling Minisymposium. (Organized by Thomas Hillen, University of Alberta and Dan Coombs, University of British Columbia.) CAIMS Annual Conference, Banff, Alberta, Canada. May 20-24, 2007.
- Why Don't All Whales Have Cancer? A Novel Hypothesis Resolving Peto's paradox. Ecology and Evolution of Disease Dynamics Minisymposium. (Organized by Yang Kuang, James Elser, **John Nagy**, Timothy Newman & Val Smith.) Society for Integrative and Comparative Biology Annual Meeting, Phoenix, AZ. January 3-7, 2007.

- Biological stoichiometry of tumors: a test of the growth rate hypothesis using paired biopsy samples of human tumors. (Coauthors: Jim Elser, Marcia Kyle, Marilyn Smith, John Nagy. Presented by Jim Elser.) Ecology and Evolution of Disease Dynamics Minisymposium. (Organized by Yang Kuang, James Elser, **John Nagy**, Timothy Newman & Val Smith.) Society for Integrative and Comparative Biology Annual Meeting, Phoenix, AZ. January 3-7, 2007.
- Interdisciplinary training for undergraduates in biological and mathematical sciences at Arizona State University. (Coauthored with Yang Kuang.) Crossing Disciplinary Boundaries through Undergraduate Research Minisymposium (Organized by Amitabha Bose, NJIT), Joint SMB/SIAM Life Sciences Conference, Raleigh, N.C. August 2, 2006.
- Evolutionary suicide by hypertumor: A novel hypothesis for the cause of necrosis in malignant neoplasia. Quantitative Study of Disease Minisymposium (Organized by Paul Tian, OSU), Joint SMB/SIAM Life Sciences Conference, Raleigh, N.C. July 31, 2006.
- Modeling the effects of climate change on predator-prey cycles and population dynamics: A discussion. (Co-presented with Yang Kuang, Hao Wang and Irakli Loladze.) Workshop on Global Ecology, Mathematical Biosciences Institute, Ohio State University. June 2006.
- Meeting participant. American Association of Physical Anthropology, Anchorage, AK. March 2006.
- Workshop on Mathematical Models in Biology and Medicine Participant. Arizona State University, Tempe, AZ. February 2006.
- Undergraduate research in mathematical biology: a collaboration between ASU and SCC. Joint ECMTB/SMB meeting, Dresden, Germany. July 2005.
- Integrating faculty development and outcomes assessment. (Co-presenter with Dr. John Neibling and Prof. Alan Jacobs.) 108th Annual Meeting of the Higher Learning Commission of the Commission of the North Central Association of Colleges and Schools. April 2003.
- Adaptive dynamics of dispersal behavior in vertebrate metapopulations. Adaptive Dynamics Workshop, Matrahaza, Hungary. August 1996.
- A model of evolutionarily attracting dispersal strategies in vertebrate metapopulations. International Conference on Systematics and Evolutionary Biology V, Budapest, Hungary. August 1996.
- A structured metapopulation model and the evolution of dispersal strategies. Winter School on Population Dynamics, Woudschoten, The Netherlands. January 1996.
- The evolutionary dynamics of dispersal behavior in vertebrate metapopulations. Fourth International Conference on Mathematical Population Dynamics. Rice University, Houston, Texas. May 1995.
- A discrete-space structured metapopulation dynamics model (with Dr. Horst Thieme.) Fourth International Conference on Mathematical Population Dynamics. Rice University, Houston, Texas. May 1995.
- Dynamics Days Arizona: Chaos and Nonlinear Dynamics Participant. Arizona State University, Tempe, AZ. January 1992.
- The role of dispersal in population regulation of spruce grouse. CONFOR '89. Barrie, Ontario. February, 1989.
- Dispersal and population regulation in spruce grouse. Northeast Natural Resources and Forestry Organization. Syracuse, New York. February 1988.

TEACHING DUTIES

Scottsdale Community College

- Introductory Biology for Majors I (BIO 181), Fall 1999-present, Lead instructor.
- Introduction to Biological Research (BIO 298AA), Spring 2006-present, Lead instructor.
- Introductory Biology for Majors II (BIO 182), Spring 2000, 2002.
- Natural History of Arizona (BIO 109), Co-instructor (with Roy Barnes and Dr. John Weser), Spring 2006.
- Natural History of Arizona Lab (BIO 110), Co-instructor, Spring 2006.
- Human Biology for Allied Health Majors (BIO 156), Fall 1998-2004, Lead instructor.

Introductory Biology for Nonmajors (BIO 100), Fall 1997-1998, Co-lead instructor.
Environmental Biology (BIO 105), Spring 1999.

Arizona State University

Mathematical Models in Medicine (MAT 598), Spring 2007, 2009.
General Biology (Majors) I (BIO 187), Summers 2003-2009.
General Biology (Majors) II (BIO 188), Summer 2003.
Biometry (BIO 415), Spring, Fall 2001.
Introductory Biology for Nonmajors (BIO 100), Co-lecturer (with Dr. Andrew Smith), Summer 1997.
Introductory Biology for Nonmajors (BIO 100), Fall 1996.
Introductory Biology for Nonmajors (BIO 100) Co-lecturer (with Dr. Andrew Smith), Summer 1996.
Introductory Biology for Nonmajors (BIO 100) Co-lecturer (with Dr. Andrew Smith), Summer 1995.
Basic Physiology Laboratory (ZOL 360). Fall 1991 through Spring 1996.
Human Anatomy and Physiology Laboratory I (ZOL 201), Summer 1992.
Human Anatomy and Physiology Laboratory I (ZOL 201), Summer 1991.
Human Anatomy and Physiology Laboratory II (ZOL 202), Spring 1991.

Midwestern University

Graduate Biostatistics (GEID 511), Spring 2003
Cancer Biology Seminar (BS 300B), Spring 2000
Epidemiology (MICR 465), Fall 2000

Mesa Community College

Human Anatomy and Physiology II (BIO 202), Summer 1997.
Human Anatomy and Physiology II Laboratory, Summer 1997.

University of Toronto

Silvics and Forest Ecology Laboratory (FOR 215) Instructor. Fall 1989.
Wildlife Biology Laboratory (FOR 301) Instructor. Fall 1989.
Silvics and Forest Ecology Laboratory (FOR 215) Instructor. Fall 1988.
Wildlife Biology Laboratory (FOR 301) Instructor. Fall 1988.
Silvics and Forest Ecology Laboratory (FOR 215) Instructor. Fall 1987.
Wildlife Biology Laboratory (FOR 301) Instructor. Fall 1987.

ADDITIONAL RESEARCH EXPERIENCE AND ACTIVITIES

Director, Cancer Modeling Group, Scottsdale Community College and Midwestern University.
Investigating phenotypic plasticity and evolution in human lung cancer. Fall 1999 to present.

Director, Indian Bend Wash Urban Lakes System Project, Sonoran Sustainable Resources Institute and the City of Scottsdale. Assessment and analysis of water quality in the City of Scottsdale. Fall 1998 to Fall 1999.

Research Associate for Dr. Andrew Smith, Arizona State University. Causes and consequences of dispersal in a metapopulation of American pika (*Ochotona princeps*). Summer 1996 to Spring 1997.

Co-organizer of the Mathematical Biology Discussion Group, Arizona State University (with Assistant Professor of Biology Dr. Kim Cooper and Professors of Mathematics Dr. Horst Thieme and Dr. Yang Kuang). Fall 1991-Fall 1995.

Research Assistant for Dr. James Bendell, University of Toronto. Dispersal and population regulation of Hudsonian spruce grouse (*Dendragapus canadensis*). 1987-1990.

Field Research Assistant for Dr. Dan Richter and Dr. John Witter, The University of Michigan. The effects of nitrogen deposition and soil quality on regeneration of red pine (*Pinus resinosa*) in Michigan's Upper Peninsula. Summer, 1986.

ADDITIONAL TEACHING EXPERIENCE AND ACTIVITIES

Scottsdale Community College

Co-advisor (with Dr. Patricia Ashby), Scottsdale Community College Pre-medical Club. Fall 1998-2000.

Arizona State University

Instructor, General Biology for Majors I and II (BIO 187, 188). Summer 2003.

Instructor, Basic Physiology Laboratory (ZOL 360). Fall 1997.

Guest Lecturer, Basic Physiology (ZOL 360). Fall 1997. Cardiovascular Control.

Physiology Teaching Assistant Coordinator. Spring 1997. Instructed Teaching Assistants for all physiology laboratories (ZOL 201, 202 and 360).

Guest Lecturer, Seminar in Mathematical Biology (MAT 598) . Dr. Horst Thieme, Dr. Hal Smith and Dr. Yang Kuang, Instructors:

Semester	Topic
Spring 1997	Genetic Introgression and the Evolution of the DNA Molecule.
Spring 1996	Adaptive Dynamics of Dispersal Behavior in a Metapopulation of Pikas.
Spring 1995	Discrete-time Processes in Metapopulation Dynamics.
Spring 1994	Stability in Predator/Prey Metapopulation Systems.
Spring 1993	Modeling Dispersal in Metapopulations.
Spring 1992	Metapopulation Dynamics and Theory.

Guest Lecturer, Wildlife Conservation (ZOL 415). Fall 1994. Population Dynamics Modeling.

Guest Instructor, Wildlife Biology Laboratory (ZOL 410). Spring 1994. Population Dynamics Modeling.

Guest Instructor, Wildlife Biology Laboratory (ZOL 410). Spring 1993. Population Dynamics Modeling.

Instructor, Teaching Assistant Training Seminars. Organized by the Graduate College, Arizona State University:

Semester	Topic
Spring 1996	Teaching Science Laboratories, General Teaching Tactics
Fall 1995	Teaching Science Laboratories, General Teaching Tactics
Spring 1995	Teaching Science Laboratories
Fall 1994	Teaching Science Laboratories
Spring 1994	Maintaining Student Motivation
Fall 1993	Maintaining Student Motivation

Research Assistant, Human Anatomy and Physiology Laboratory (ZOL 201, 202) Reorganization Project. Fall 1996. Reorganized laboratories and laboratory exercises around computer-based data acquisition systems. Dr. Jon Harrison, Project Director.

Participant, Inquiry-based teaching methods workshop. Summer 1995. Developing inquiry-based teaching strategies for college biology curricula. Dr. Tony Lawson, Workshop Leader.

University of Toronto

Guest Lecturer, Silvics and Forest Ecology (FOR 215). Fall 1989. Population Dynamics.

Instructor, Field Ecology Station. Fall 1989. General Ecology Seminar for Beginning Forestry Majors.