

Michael A. Gilchrist, Ph.D.

Assistant Professor in Evolutionary Bioinformatics

Department of Ecology & Evolutionary Biology
University of Tennessee, Knoxville
569 Dabney Hall
Knoxville, TN 37996

phone: (865) 974-6453

fax: (505) 277-0304

email: mikeg@utk.edu

web page: <http://eeb.bio.utk.edu/pages/faculty/gilchrist.htm>

Faculty Positions

2004- Present Assistant Professor in Evolutionary Bioinformatics
Department of Ecology & Evolutionary Biology
University of Tennessee, Knoxville TN

Research Positions

2002 - 2004 Post-Doctoral Research Associate
Department of Biology
University of New Mexico, Albuquerque NM
Supervisor: Dr. Andreas Wagner

2001 - 2002 Post-Doctoral Research Associate
Division of Theoretical Biology and Biophysics
Los Alamos National Laboratory, Los Alamos NM
Supervisor: Dr. Alan S. Perelson

Education

1996 - 2001 Ph.D. Department of Biology
Duke University, Durham NC
Supervisors: Drs. William G. Wilson and Janis Antonovics

1994 - 1996 M.A. Department of Ecology and Evolution
University of California, Santa Barbara
Supervisor: Dr. Alice Alldredge

1989 - 1993 B.A. Environmental Sciences
University of California at Berkeley

Emphasis: Biology

Grants & Fellowships

- 2000 Research Experience Fellowships for Young Foreign Researchers, Japanese Ministry of Education, Science, Sports, and Culture, Tokyo, Japan
- 1999 - 2001 National Science Foundation Dissertation Improvement Grant
- 1998 Explorers Club Exploration Grant, The Explorers Club, New York, NY
- 1997 International Travel Grant, Duke University, Durham, NC
Grants in Aid of Research, Sigma Xi
- 1994 - 1995 Regent's Fellowship, University of California, Santa Barbara
- 1993 R.E.U. Fellowship, University of Michigan Biological Station, Pellston, MI
- 1989 - 1993 Mayo Foundation Scholarship, Mayo Clinic, Rochester, MN

Teaching Experience

- 2004-Present Assistant Professor
Department of Ecology and Evolutionary Biology
Courses: Evolution of Parasite Virulence
Guest Lecturer: Genome Science and Technology
- 1996 - 2001 Teaching Assistant
Department of Zoology, Duke University, Durham, NC.
Courses: Ecology, Ecology and Society, The Evolution of Animal Form,
Cell and Genetics I and II, Evolutionary Mechanisms
- 1995 - 1996 Teaching Assistant
Department of Ecology and Evolution,
University of California, Santa Barbara, CA.
Courses: Population Ecology, Introductory Biology

Professional Service

- 1998 Co-Chair and Organizer, Zoology Graduate Student Mini-Symposium
- 1998 - Present Member of the Society for the Study of Evolution
- 1999 - Present Member of the Society for Integrative and Comparative Biology
- 2001 - Present Reviewer for *Genetics* and *Theoretical Population Biology*
- 2003 - Present Reviewer for *Bioinformatics*

Invited Seminars

- 2004 Mathematical Biology Seminar, Mathematics Department, University of British Columbia, Vancouver, BC
- 2001 Brown Bag Seminar Series, Department of Biology, University of New Mexico, Albuquerque, NM
- 2000 G. Wagner Laboratory. Dept. of Ecology and Evolutionary Biology, Yale University, New Haven, CT
- Bio-Mathematics Group, Department of Biology, Faculty of Science, Kyushu University, Fukuoka, Japan
- Ocean Research Institute, University of Tokyo, Tokyo, Japan
- Department of Biology, Nara Women's University, Nara, Japan
- 1999 Department of Biology, Lake Forest College, Lake Forest, IL
- Symposium on the Evolutionary Biology of Host-Parasite Systems, Annual Meeting of the Society for the Study of Evolution, Madison, WI

Conference Presentations

- 2004 Workshop on the Protein and Affinity Tag Facility for the Department Energy Genomes to Life Program sponsored by Los Alamos National Laboratory, Albuquerque NM. Invited Speaker
- 2003 Gordon Conference on Evolutionary & Ecological Functional Genomics, Colby Sawyer College, New London, NH
- Los Alamos National Laboratory Center for Nonlinear Studies 23rd Annual Conference, Santa Fe NM.
- Annual Meeting of the Society for the Study of Evolution, Chico CA.
- 2002 Annual Meeting of the Southwestern Association of Biologists , Portal AZ.

- Annual Meeting of the American Society of Naturalists, Banff, AB
- Annual Meeting of the Society for the Study of Evolution, Champaign, IL
- 2001 Symposium on the Developmental Basis of Evolutionary Change, Chicago, IL
- Annual Meeting of the Society for Integrative and Comparative Biology, Chicago, IL
- 2000 Duke University Biological Sciences Graduate Student Symposium, Durham, NC
- Annual Meeting of the Society for the Study of Evolution, Indianapolis, IN.
 Invited Speaker
- Annual Meeting of the Society for Integrative and Comparative Biology,
 Atlanta, GA
- 1999 NATO Advanced Studies Institute on Mathematical Problems Arising from Biology
 Toronto, ON, Canada
- 1998 Duke University Biological Sciences Graduate Student Symposium, Durham, NC
- Ecological Genetics Symposium, Durham, NC
- Annual Meeting of the Society for the Study of Evolution, Vancouver, BC, Canada
- Zoology Graduate Student Mini-Symposium, Durham, NC
- 1997 South-East Ecology and Population Genetics Annual Meeting, Townsend, TN

Peer Reviewed Publications

- 1 **Gilchrist, M.A.**, and H. F. Nijhout. 2001. Nonlinear Developmental Processes as Sources of Dominance. *Genetics* **159**: 423-432.
- 2 **Gilchrist, M.A.** and A. Sasaki. 2002. Modeling host-parasite coevolution: a nested approach based on mechanistic models. *Journal of Theoretical Biology* **218**: 289-308.

- 3 Hickerson, M.J., **M.A. Gilchrist**, and N. Takebayashi. 2003. Calculating a Molecular Clock from Phylogeographic Data: Moments and Likelihood Estimators. *Evolution* 57: 2216 -2225.
- 4 Coombs, D., **M.A. Gilchrist**, J. Percus, and A.S. Perelson. 2003. Optimal Viral Production. *Bulletin of Mathematical Biology* 65: 1003-1023
- 5 **Gilchrist, M.A.**, L.A. Salter, and A. Wagner. 2004. A Statistical Framework for Combining and Interpreting Proteomic Datasets. *Bioinformatics* 20: 689-700
- 6 **Gilchrist, M.A.**, D. Coombs, and A.S. Perelson. 2004. Optimizing Within-host Viral fitness: Infected Cell Lifespan and Virion Production Rate *Journal of Theoretical Biology* 229: 281-288
- 7 Nelson, P. W., **M.A. Gilchrist**, M. A., D. Coombs, J.M. Hyman, and A.S. Perelson. 2004. An age-structured model of HIV infection that allows for variations in the production rate of viral particles and the death rate of productively infected cells. *Math. Biosci. Eng.* 1, 267-288.

Manuscripts in Review

- 8 **Gilchrist, M.A.** And D. Coombs. Evolution of Virulence: Interdependence, Constraints, and Selection using Nested Models. Submitted to *Theoretical Population Biology*.
- 9 **Gilchrist, M.A.** and A. Wagner. A Model of Protein Translation Including Ribosome Recycling and Processivity Errors: Implications for Codon Usage Bias. Submitted to *Journal of Theoretical Biology*.

Manuscripts in Preparation

- 10 **Gilchrist, M.A.**, D. L. Sulsky, and A. Pringle. Fitness and Optimal Life-History Strategies in *Filamentous Fungi*. For submission to *Evolution*.
- 11 **Gilchrist, M.A.** and A. Wagner. Estimating Ribosome Initiation and Protein Translation Rates Using a Model of Protein Translation. For submission to *Genetics*.
- 12 **Gilchrist, M.A.** and A. Wagner. Processivity Errors and Codon Usage Bias: Variation in Selection Strength Across a Transcript. For submission to *Proceedings of the National Academy of Sciences*.
- 13 White, E.P. and **M.A. Gilchrist**. The effects of intra- and inter-specific aggregation and temporal autocorrelation on the species-time relationship. For submission to *Ecology*.

References

Dr. Andreas Wagner
University of New Mexico
Albuquerque, NM 87131
email: wagnera@unm.edu
phone: (505) 277-2021
fax: (505) 277-0304

Dr. Janis Antonovics
University of Virginia
Charlottesville, NC 22903
email: ja8n@duke.edu
phone: (804) 243-5076
fax: (804) 982-5626

Dr. Alan Perelson
Los Alamos National Laboratory
Los Alamos, NM 87545
email: asp@lanl.gov
phone: (505) 667-6829
fax: (505)665-3493

1/05