

Contact Information

Affiliation Research Associate II
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Research Interests molecular evolution, population genetics & evolutionary biology, biological theory & computational biology, statistical genetics and genomics, biology education

Education

Ph.D. Genetics University of Georgia, 2006

Dissertation *Studies in Theoretical Evolutionary Genetics*
 Co-Advisers Wyatt Anderson and Paul Schliekelman
 Late Adviser Marjorie Asmussen

Committee Members John Wares, Jessica Kissinger, James Hamrick, and H. Ronald Pulliam

B.S. Genetics *cum laude* with honors, University of Georgia, 2000

A.B. Latin *cum laude* with honors, University of Georgia, 2000

Academic Experience

Aug. 2009–Present Research Associate II with Dan Graur
 Department of Biology and Biochemistry
 University of Houston

Aug. 2006–Aug. 2009 Postdoctoral Research Associate with Jeffrey. L. Thorne
 Bioinformatics Research Center
 North Carolina State University

Aug. 2001–Aug. 2006 Graduate Student
 Department of Genetics
 University of Georgia

Spring 2006 Graduate Lab Assistant
 BIOL 1108L—Principles of Biology II Lab

Fall 2006 Graduate Teaching Assistant
 GENE 3000—Evolutionary Biology

Fall 2002 Graduate Teaching Assistant
GENE 3200—Genetics

Jan. 2001–Aug. 2001 Research Technician with Marjorie Asmussen
Department of Genetics
University of Georgia

Publications

Active Papers

Cartwright RA (submitted). Bards, poets, and cliques: Frequency-dependent selection and the evolution of language.

Cartwright RA and Graur D (submitted). The multiple personalities of Watson and Crick strands.

Keebler* J, Cartwright* RA, Rouleau G, Stone EA, and Awadalla P (in preparation). Probabilistic discovery of de novo mutations using next generation whole genome sequencing of trio and twin family cohorts.

Lücking R, Hodkinson B, Stamatakis A, and Cartwright RA (submitted). PICS-Ord: unlimited coding of ambiguous regions by pairwise identity and cost scores ordination.

Price* N, Cartwright* RA, Sabath N, Graur D, and Azevedo RBR (in preparation). No evidence of direct selection for mutational or environmental robustness in *Drosophila* pre-miRNAs.

* co-first authors.

Published Papers

Cartwright RA, Lartillot N, and Thorne JL (accepted). History can matter: Non-markovian behavior of ancestral lineages. *Systematic Biology*.

Cartwright RA (2009a). Problems and solutions for estimating indel rates and length distributions. *Molecular Biology and Evolution*, **26**:473–480.

Cartwright RA (2009b). Antagonism between local dispersal and self-incompatibility systems in a continuous plant population. *Molecular Ecology*, **18**:2327–2336.

Cartwright RA (2007). Ngila: global pairwise alignments with logarithmic and affine gap costs. *Bioinformatics*, **23**:1427–1428.

Cartwright RA (2006). Logarithmic gap costs decrease alignment accuracy. *BMC Bioinformatics*, **7**:527.

Comai L and Cartwright RA (2005). A toxic mutator and selection alternative to the non-mendelian, RNA cache hypothesis for hothead reversion. *Plant Cell*, **17**:2856–2858.

Cartwright RA (2005). DNA assembly with gaps (Dawg): simulating sequence evolution. *Bioinformatics*, **21**(Suppl. 3):iii31–iii38.

Asmussen MA, Cartwright RA, and Spencer HG (2004). Frequency-dependent selection with dominance: A window onto the behavior of the mean fitness. *Genetics*, **167**:499–512.

Books

Cartwright RA and Zivkovic B, editors (2008). *The Open Laboratory: The Best Writing on Science Blogs 2007*. Lulu.com, Chapel Hill, NC.

Other

Hogue LL and Ross CJ with Cartwright RA and Pallas SL (2005). Selman v. Cobb County: Brief of Georgia Citizens for Integrity in Science Education, et al. as amici curiae in sup-

port of appellees. United States Eleventh Circuit Court of Appeals. Nos. 05-10341-II and 05-11725-II.

Fant L with Sandefur T, Cartwright RA, and Pallas SL (2004). *Selman v. Cobb County: Brief amicus curiae of Colorado Citizens for Science, et al. in support of plaintiffs.* United States District Court, Northern District of Georgia. No. 1:02-CV-2325-CC.

Cartwright RA (2004). Ignorance excludes evolution. *Atlanta Journal-Constitution*, **Jan 28**.

Cartwright RA and Theobald DL (2003). Citing Scadding (1981) and misunderstanding vestigiality. *Talk.Origins Archive*. URL <http://www.talkorigins.org/faqs/quotes/scadding.html>.

Published Scientific Software

Lead Developer DAWG: a simulator of related sequences. URL <http://scit.us/projects/dawg/>
 NGILA: pairwise alignment with log-affine gap costs. URL <http://scit.us/projects/ngila/>

Contributor SPAGEDI: spatial analysis of genetic data. URL <http://ebe.ulb.ac.be/ebe/Software.html>

Honors and Awards

2001–2006 NSF Predoctoral Fellowship

2006 Scholarship to the Summer Institute in Statistical Genetics (University of Washington)

2005 James L. Carmon Scholarship for research reflecting state-of-the-art utilization of computer technology in the sciences or creative arts.

1999 Phi Beta Kappa

 Warlick-Mannion Classical Scholar

1998 Kossack Calculus Prize, Second Place

 Golden Key

1997 AP National Scholar

1996 Cum Laude Society

 National Honor Society

Conferences and Presentations

2010 Evolution Conference (Portland State University)
Presentation: Extracting Phylogenetic Information from Ambiguous Regions. Cartwright RA, Lücking R, Hodkinson B, Stamatakis A
 East Carolina University, Department of Biology
Presentation: Predicting Evolutionary Events using Biologically Robust Statistical Models

 Rice University, Department of Ecology and Evolutionary Biology
Presentation: Predicting Evolutionary Events from Uncertain Data

2009 Society for Molecular Biology and Evolution Conference (University of Iowa)
Poster: Using Population Genetics to Improve Phylogenetics and Evolutionary Inference. Cartwright RA, Lartillot N, and Thorne JL.

- Evolution Conference (University of Idaho)
Presentation: Using Population Genetics to Improve Phylogenetics and Evolutionary Inference. Cartwright RA, Lartillot N, and Thorne JL.
- 2008 Science Online Conference (Sigma Xi Center, RTP, NC)
- Evolution Conference (University of Minnesota, Twin Cities)
Presentation: Estimating the Rate and Length-Distribution of Insertions and Deletions
- North Carolina Science Blogging Conference (Sigma Xi Center, RTP, NC)
- Personal Genomes (Cold Spring Harbor Laboratory)*
Poster: Probabilistic Discovery of *de Novo* Mutations using “Next Generation” Whole Genome Sequencing of Trio and Twin Family Cohorts. Keebler J, Cartwright RA, Stone EA, and Awadalla P.
- 2007 UNC Charlotte, Department of Bioinformatics and Genomics
Presentation: Estimating the Rate and Length Distribution of Indels
- Society for Molecular Biology and Evolution Conference (Dalhousie University)
Presentation: Estimating the Rate and Length Distribution of Indels
- Invited speaker, Undergraduate Honors “C-START” Seminar (University of North Carolina at Chapel Hill)
Presentation: Evolutionary Biology in 30 Minutes
- North Carolina Science Blogging Conference (University of North Carolina at Chapel Hill)
- 2005 The Fifth Georgia Tech-ORNL International Conference on Bioinformatics
Proceedings: Cartwright (2005)
- Evolution Conference (University of Alaska, Fairbanks)
Presentation: DNA Assembly with Gaps (Dawg): Simulating Sequence Evolution
- Southeast Ecology & Evolution Conference (University of Georgia)
Presentation: DNA Assembly with Gaps: Simulating Sequence Evolution
- 2004 Invited participant, National Center for Science Education’s Activist Summit (Berkeley, CA)
- Evolution Conference (Colorado State University)
- Southeast Ecology & Evolution Conference (Georgia Tech)
- 2002 Evolution of Language: Fourth International Conference (Harvard University)

* Did not attend; co-first author presented work.

Society Memberships

The American Society of Naturalists
 Genetics Society of America
 Society for Molecular Biology and Evolution
 The Society for the Study of Evolution

Funding History

Aug. 2009–Present	NLM grant LM010009-01 to D Graur and G Landan
Aug. 2006–Aug. 2009	NIH grant GM070806 to JL Thorne
Aug. 2001–Aug. 2006	NSF Predoctoral Fellowship
Aug. 2005–Aug. 2006	Graduate Teaching Assistantship
Aug. 2003–Aug. 2004	Graduate Research Assistantship, NIH Grant 5R01 GM48528-06 to MA Asmussen

Service

Reviewer For	National Science Foundation (DEB), American Journal of Botany, Bioinformatics, BMC Evolutionary Biology, Evolutionary Bioinformatics, Genetics, IEEE/ACM Transactions on Computational Biology and Bioinformatics, Molecular Biology & Evolution, Nucleic Acids Research
Websites Administered	http://pandasthumb.org/ , http://talkorigins.org/ , http://dererumnatura.us/ , http://scit.us/ , among others.

Other Skills

Programming	C/C++, R, Perl, Ruby, \LaTeX , Matlab, Mathematica, Javascript
Languages Studied	Classical Latin, Greek, and Sanskrit

References

Dr. Wyatt W. Anderson	Alumni Foundation Distinguished Professor of Genetics University of Georgia, Athens, GA USA wyatt@uga.edu — 706-542-7001
Dr. Dan Graur	John and Rebecca Moores Professor of Biology and Biochemistry University of Houston, Houston, TX USA dgraur@uh.edu — 713-743-7236
Dr. Jeffrey Ross-Ibarra	Assistant Professor of Plant Sciences University of California, Davis, CA USA rossibarra@ucdavis.edu — 530-752-1152
Dr. Paul Schliekelman	Associate Professor of Statistics University of Georgia, Athens, GA USA pdschlie@stat.uga.edu — 706-542-4241
Dr. Hamish G. Spencer	Professor of Zoology University of Otago, Dunedin, NZ hamish.spencer@stonebow.otago.ac.nz — +64-3-479-7981
Dr. Eric A. Stone	Assistant Professor of Genetics North Carolina State University, Raleigh, NC USA eric_stone@ncsu.edu — 919-515-7315
Dr. Jeffrey L. Thorne	Professor of Genetics and Statistics North Carolina State University, Raleigh, NC USA thorne@statgen.ncsu.edu — 919-515-1946

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