

**Contact Information**

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 Department of Biology and Biochemistry  
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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	<p>Cartwright RA, Lartillot N, and Thorne JL (submitted). Studying ancestral lineages to improve phylogenetics and other evolutionary inferences.</p> <p>Cartwright RA (submitted). Bards, poets, and cliques: Frequency-dependent selection and the evolution of language.</p> <p>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.</p> <p>Cartwright RA and Graur D (in preparation). Eliminating bioinformatics' dirty little secret: Choosing optimal alignments consistently.</p> <p>Lücking R, Hodkinson B, Stamakis A, and Cartwright RA (submitted). PICS-Ord: unlimited coding of ambiguous regions by pairwise identity and cost scores ordination.</p> <p>* co-first authors.</p>
Published Papers	<p>Cartwright RA (2009a). Problems and solutions for estimating indel rates and length distributions. <i>Molecular Biology and Evolution</i>, <b>26</b>:473–480.</p> <p>Cartwright RA (2009b). Antagonism between local dispersal and self-incompatibility systems in a continuous plant population. <i>Molecular Ecology</i>, <b>18</b>:2327–2336.</p> <p>Cartwright RA (2007). Ngila: global pairwise alignments with logarithmic and affine gap costs. <i>Bioinformatics</i>, <b>23</b>:1427–1428.</p> <p>Cartwright RA (2006). Logarithmic gap costs decrease alignment accuracy. <i>BMC Bioinformatics</i>, <b>7</b>:527.</p> <p>Comai L and Cartwright RA (2005). A toxic mutator and selection alternative to the non-mendelian, RNA cache hypothesis for hothead reversion. <i>Plant Cell</i>, <b>17</b>:2856–2858.</p> <p>Cartwright RA (2005). DNA assembly with gaps (Dawg): simulating sequence evolution. <i>Bioinformatics</i>, <b>21</b>(Suppl. 3):iii31–iii38.</p> <p>Asmussen MA, Cartwright RA, and Spencer HG (2004). Frequency-dependent selection with dominance: A window onto the behavior of the mean fitness. <i>Genetics</i>, <b>167</b>:499–512.</p>
Books	Cartwright RA and Zivkovic B, editors (2008). <i>The Open Laboratory: The Best Writing on Science Blogs 2007</i> . 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 support 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/>

Assistant              SPAGE<sub>DI</sub>: 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

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.

                                Science Online Conference (Sigma Xi Center, RTP, NC)

2008                      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 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 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  
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Dr. Dan Graur John and Rebecca Moores Professor of Biology and Biochemistry  
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Dr. Eric A. Stone Assistant Professor of Genetics  
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Dr. Jeffrey L. Thorne Professor of Genetics and Statistics  
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