

## HEATH BLACKMON

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### ACADEMIC POSITIONS

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2016 – present Postdoctoral Associate, University of Minnesota; College of Biological Sciences  
2015 – 2016 Postdoctoral Associate, University of Minnesota; Goldberg Lab  
2013 Graduate Fellow, National Evolutionary Synthesis Center

### EDUCATION

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2015 Ph.D., Quantitative Biology, University of Texas at Arlington  
Dissertation: Synthesis and phylogenetic comparative analyses of the causes and consequences of karyotype evolution in arthropods  
Major Professor: Jeffery Demuth  
  
2010 B.S., Environmental Science, Oregon State University, Summa Cum Laude

### GRANTS

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|      |           |  |
|------|-----------|--|
| 2016 | \$102,000 | University of Minnesota Grand Challenges Grant – Accepted<br><i>Sex chromosome aneuploidy: reproductive health in humans and domestic animals and driving forces in the evolution of genome architecture</i>   |
|      | \$46,000  | BARD Postdoctoral Fellowship – Declined<br><i>The evolutionary dynamics of ploidy evolution in plants</i>  |
|      | \$589,881 | NSF: DEB-BSF – recommended for funding: <i>Breaking Barriers to the Study of Trait-Dependent Lineage Diversification</i> . Emma Goldberg and Itay Mayrose co-PIs. I wrote portions funding My work on discrete trait model adequacy and broader impact activities with veterans. |
| 2013 | \$23,000  | NESCent Graduate Fellowship – Accepted<br><i>The Tree of Sex: A comprehensive synthesis of sex determination systems and their evolution in invertebrates</i>  |

## PEER REVIEWED PUBLICATIONS

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- 2017      **15 Blackmon H.**, Ross L, Bachtrog D. Sex determination, sex chromosomes and karyotype evolution in insects. – *Journal of Heredity* 108:1 78-93 – *recommended by Faculty of 1000*.
- 2016      **14 Adams R., D Schield, D. Card, H. Blackmon,** and T. Castoe. GppFst: Genomic posterior predictive simulations of Fst and dxy for identifying outlier loci from population genomic data – *Bioinformatics* – doi:10.1093/bioinformatics/btw795
- 13 Blackmon, H.** and J.P. Demuth. An information-theoretic approach to estimating the composite genetic effects contributing to variation among generation means: moving beyond the joint-scaling test for line cross analysis. – *Evolution* 70:2 420-432.
- 12 Asian Longhorn Beetle Consortium (67 Authors).** Genome of the Asian longhorned beetle (*Anoplophora glabripennis*), a globally significant invasive species, reveals key functional and evolutionary innovations at the beetle-plant interface. *Genome Biology* 17:1 227 - *Responsible for analysis of genome structure evolution*.
- 11 Ross, L. and H. Blackmon.** Sex Determination. In R. Kliman (Ed.) *Encyclopedia of Evolutionary Biology*. 81-88 Elsevier Academic Press. doi:10.1016/B978-0-12-800049-6.00146-3
- 10 Adams R.; H. Blackmon;** J. Reyes-Velasco; D. Schield; D. Card; A. Andrew; N. Waynewood; T. Castoe. Microsatellite landscape evolutionary dynamics across 450 million years of vertebrate genome evolution. *Genome* 59:5, 295-310- Editor's choice.
- 2015      **9 Blackmon, H.,** N. Hardy, L. Ross. The evolutionary dynamics of haplodiploidy: genome architecture and haploid viability. *Evolution* 69:11 2971-2978.
- 8 Blackmon, H.,** and J. P. Demuth. The fragile Y hypothesis: Y chromosome aneuploidy as a selective pressure in sex chromosome and meiotic mechanism evolution. *Bioessays* 37:9 942-950.
- 7 Blackmon, H.,** and J. P. Demuth. Coleoptera Karyotype Database. *The Coleopterists Bulletin* 69:1 174-175.
- 6 Ross, L., H. Blackmon,** P. Lorite, V. Gokhman, and N. Hardy. Recombination, chromosome number and eusociality in the Hymenoptera. *Journal of Evolutionary Biology* 28:1 105-116.

- 2014
- 5 **Blackmon, H.**, and J. P. Demuth. Genomic origins of insect sex chromosomes. *Current Opinion in Insect Science* 7 45-50. – recommended by Faculty of 1000.
  - 4 **Blackmon, H.**, and J. P. Demuth. Estimating tempo and mode of Y chromosome turnover: explaining Y chromosome loss with the fragile Y hypothesis. *Genetics* 197:2 561-572.
  - 3 Streicher, J. W., T. J. Devitt, C. S. Goldberg, J. H. Malone, **H. Blackmon**, and M. K. Fujita. Diversification and asymmetrical gene flow across time and space: lineage sorting and hybridization in polytypic barking frogs. *Molecular Ecology* 23:13 3273-3291.
  - 2 Ashman T., D. Bachtrog, **H. Blackmon**, E.E. Goldberg, M.W. Hahn, M. Kirkpatrick, J. Kitano, J.E. Mank, I. Mayrose, R. Ming, S.P. Otto, C.L. Peichel, M.W. Pennell, N. Perrin, L. Ross, N. Valenzuela, and J.C. Vamasi. Tree of Sex: A database of sexual systems. *Nature Scientific Data* 1:140015.  
– responsible for 11,526 invertebrate records and all figures.
  - 1 **Blackmon, H.**, and J. P. Demuth. Ring Species and Speciation. *Encyclopedia of Life Science*. [www.els.net](http://www.els.net).

## SOFTWARE AND DATABASES

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|------------|--|
| R Packages | <p>chromePlus: Probabilistic models of chromosome and ploidy evolution<br/> <a href="https://github.com/coleoguy/chromePlus/">github.com/coleoguy/chromePlus/</a></p> <p>SAGA: Software for the Analysis of Genetic Architecture.<br/> <a href="https://github.com/coleoguy/SAGA">github.com/coleoguy/SAGA</a></p> <p>EvobiR: Evolutionary biology analysis in R.<br/> <a href="https://github.com/coleoguy/EvobiR">github.com/coleoguy/EvobiR</a></p> |
| Databases  | <p>Coleoptera Karyotype Database.<br/> <a href="http://uta.edu/karyodb/">uta.edu/karyodb/</a></p> <p>Tree of Sex Database – responsible for invertebrates<br/> <a href="http://treeofsex.org">treeofsex.org</a></p>  |
| Pedagogy   | <p>Popgensim: Wright-Fisher Simulator – undergraduate lab exercise<br/> <a href="https://github.com/coleoguy/popgensim">github.com/coleoguy/popgensim</a></p>  |

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**PRESENTATIONS** (T – talk P – poster \* invited)

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|------|--|
| 2017 | University of Minnesota, Department of Plant and Microbial Biology – T*  |
| 2016 | James F. Crow early career researcher award symposium - The Allied Genetics Conference Genetic Society of America. Florida. – T* |
|      | Evolution Conference joint meeting of SSE, SSB, & ASN. Texas. – P  |
|      | Tel Aviv University, Department of Plant Biology, Israel – T   |
| 2015 | American Genetics Association: President’s Symposium, Bainbridge Island – T*   |
|      | University of Minnesota theory group - T   |
|      | University of Minnesota Postdoctoral Symposium. – P  |
|      | Exit Seminar - T   |
| 2014 | Arthropod Genomics Conference, Notre Dame, Indiana. 2014 – P   |
|      | University of Texas at Arlington, Genome Biology Group. 2014 – T   |
| 2013 | University of Texas at Austin, Department of Population Biology. – T*  |
| 2012 | Evolution Conference joint meeting of SSE, SSB, & ASN. Canada. – P   |
| 2011 | Evolution Conference joint meeting of SSE, SSB, & ASN. Oklahoma. – P   |

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**AWARDS AND MINOR GRANTS**

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|-----------|--|
| 2016      | Outstanding poster presentation University of Minnesota postdoctoral seminar |
| 2010-2015 | Carrizo Oil and Gas Doctoral Student Fellowship – \$10,000                   |
|           | STEM Fellowship – \$104,000  |
| 2014      | Learning Community Grant - University of Texas at Arlington – \$500          |
|           | Writing Fellowship - University of Texas at Arlington – \$6,726              |
|           | Eck Institute for Global Health Travel Grant – \$600                         |
| 2013      | Excellence in Teaching Award - \$500   |
| 2012      | NESCent Working Group Travel Funds – \$2,300                                 |
|           | Department Travel Grant – \$1,125  |
| 2010      | The Utley Graduate Fellowship - \$2,000                                      |

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**ADDITIONAL TRAINING**

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|------|--|
| 2016 | Software Carpentry Instructor Training                         |
| 2015 | CIRTL Associate level certification in STEM teaching           |
| 2014 | Bark Beetle Academy – University of Florida                    |
| 2012 | Bodega Phylogenetics Workshop – University of California Davis |
| 2011 | Geometric Morphometrics Workshop – University of Manchester    |

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**OTHER PUBLICATIONS**

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|----------------|---|
| 2010 – present | Coleopterists Corner - blog. 100+ posts. 4,000+ views/month   |
| 2014           | Blackmon, H. Coleoptera Karyotypes: The evolution of sex chromosomes and chromosome number. <i>Newsletter of the Ontario Entomological Society</i> 19:2 19–21 |

## TEACHING EXPERIENCE

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(U – undergraduate G – graduate) Average student evaluation 4.5/5

### Developed curricula and primary instructor

|      |                                  |               |
|------|----------------------------------|---------------|
| 2013 | Introduction to R for Biologists | G 12 students |
| 2011 | Entomology Laboratory            | U 60 students |

### Teaching assistant

|      |                |               |
|------|----------------|---------------|
| 2016 | Biostatistics  | U 60 students |
| 2014 | Bioinformatics | G 21 students |

### Laboratory instructor

|           |                               |               |
|-----------|-------------------------------|---------------|
| 2014-2015 | Anatomy and Physiology I      | U 96 students |
| 2014      | Anatomy and Physiology II     | U 72 students |
| 2013-2015 | Research Methods              | U 76 students |
| 2012      | Zoology                       | U 46 students |
| 2010      | Introductory Biology (majors) | U 72 students |

### Guest lectures

|      |                                  |                |
|------|----------------------------------|----------------|
| 2016 | Measurement error in PCMs        | G 6 students   |
| 2015 | Reproducible research in R       | G 15 students  |
| 2014 | Phyloinformatics                 | G 21 students  |
| 2012 | Graphing in R                    | G 21 students  |
| 2011 | Ancestral State Reconstruction   | G 14 students  |
| 2011 | Evolution and Ecology of Insects | U 191 students |

## UNDERGRADUATES MENTORED (\* McNair Research Scholar)

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Athena Myer, Mason Bartels\*, Erin Simmons, Darelle Collinot\*

## JOURNAL REVIEW

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Annals of the New York Academy of Sciences; Axios; European Journal of Entomology; Evolution; Genome Biology and Evolution; Heredity; International Journal of Gynecology and Obstetrics Research; Journal of Heredity; Myrmecological News; New Phytologist; Proceedings of the Royal Society B; Systematic Biology; Zoological Science

## PROFESSIONAL MEMBERSHIPS

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Genetics Society of America; Society for the Study of Evolution, American Genetics Association; Coleopterists Society; American Society of Naturalists

## UNIVERSITY AND COMMUNITY SERVICE

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2016 – present Genetics Society of America Board of directors – postdoctoral representative  
2016 The Allied Genetics Conference GSA poster judge  
Grant review for Phi Sigma Biological Sciences Honor Society;  
2 Software Carpentry Instructor: Reproducible research in R - 4 hour module

|             |  |
|-------------|--|
| 2010 – 2015 | Elementary and Middle School Hands on Science Programs:<br>Scientific Inference - Fossils and Skeletons:      213 students<br>Insects Adaptation:      69 students |
| 2015        | Organize and facilitate the EvolTwin group (evolution group in the Twin Cities)  |
| 2015        | Software Carpentry Class at University of Texas at Arlington; assistant<br>Organized and led reading group – Primary literature in undergraduate biology           |
| 2014        | Formed and moderated foundations of evolutionary biology graduate study group  |
| 2012        | Session Moderator for ACES conference<br>Faculty search committee — graduate student representative  |
| 2011        | Judge for Undergraduate Research Posters at LSAM Conference  |

## REFERENCES

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