

## HEATH BLACKMON

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### ACADEMIC POSITIONS

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2015 – 2017 Postdoctoral Associate, University of Minnesota; Goldberg & Brandvain Labs  
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 <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 <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 <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*.
- 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
- 2016      **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.

- 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.
- 2014 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. Vamosi. Tree of Sex: A database of sexual systems. *Nature Scientific Data* 1:140015.  
– responsible for 11,526 invertebrate records and all figures.
- 2012 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 <a href="https://github.com/coleoguy/chromePlus/">github.com/coleoguy/chromePlus/</a></p> <p>SAGA: Software for the Analysis of Genetic Architecture. <a href="https://github.com/coleoguy/SAGA">github.com/coleoguy/SAGA</a></p> <p>EvobiR: Evolutionary biology analysis in R. <a href="https://github.com/coleoguy/EvobiR">github.com/coleoguy/EvobiR</a></p>
Databases	<p>Coleoptera Karyotype Database. <a href="http://uta.edu/karyodb/">uta.edu/karyodb/</a></p> <p>Tree of Sex Database – responsible for invertebrates <a href="http://treeofsex.org">treeofsex.org</a></p>
Pedagogy	<p>Popgensim: Wright-Fisher Simulator – undergraduate lab exercise <a href="https://github.com/coleoguy/popgensim">github.com/coleoguy/popgensim</a></p>

## INVITED SEMINARS

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- 2017 Texas A&M University; College Station, Biology Department  
University of Minnesota, Department of Plant and Microbial Biology
- 2016 Tel Aviv University, Department of Plant Biology, Israel  
James F. Crow early career researcher award symposium - Genetic Society of America. Florida
- 2015 American Genetics Association: President's Symposium, Bainbridge Washington
- 2013 University of Texas at Austin, Department of Population Biology

## CONFERENCE PRESENTATIONS (T – talk P – poster † coauthored with a student/postdoc)

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- 2017 *Inference of outlier loci in population genomic studies*  
Society for the Study of Evolution. Oregon – T† (co-author Richard A. Adams)
- The evolution of transfer RNA genes in *Tigriopus californicus**  
Society for the Study of Evolution. Oregon – P† (co-author Eric Watson)
- Life history predicts evolutionary patterns in P53 network*  
Society for the Study of Evolution. Oregon – P† (co-author Erin Gilbertson)
- Gene loss in reptile lineages*  
Society for the Study of Evolution. Oregon – P† (co-author Courtney Passow)
- Short-term resolution of sexual antagonism leads to long-term Y chromosome instability*  
Society for the Study of Evolution. Oregon – P
- 2016 *Chromosome number evolution in beetles*  
Society for the Study of Evolution. Texas. – P
- 2015 *Fragile Y chromosomes may be common across the tree of life*  
University of Minnesota Postdoctoral Symposium. – P
- A three locus 2 allele model of chromosome aneuploidy*  
University of Minnesota theory group – T
- The causes and consequences of karyotype evolution in invertebrates*  
University of Texas at Arlington, Exit Seminar – T
- Transitions in life history lead to higher rates of chromosome evolution*  
University of Texas at Arlington, Genome Biology Group. – T
- 2014 *SilicoPainter an R package to perform in-silico chromosome painting*

Arthropod Genomics Conference, Notre Dame, Indiana. – P

*Y chromosome loss is driven by meiotic mechanisms*

University of Texas at Arlington, Genome Biology Group. – T

2012 *Evolution of sex chromosome systems in Coleoptera*  
Society for the Study of Evolution. Canada. – P

2011 *Chromosome number variation across 1000 Beetles*  
Society for the Study of Evolution. Oklahoma. – P

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### AWARDS AND MINOR GRANTS

2016 Outstanding presentation University of Minnesota postdoctoral seminar  
Finalist James F. Crow early career researcher award

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

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

2010 – present Coleopterists Corner - blog. 100+ posts. 4,000+ views/month

2014 Blackmon, H. Coleoptera Karyotypes: The evolution of sex chromosomes and chromosome number. *Newsletter of the Ontario Entomological Society* 19:2 19–21

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### TEACHING EXPERIENCE

(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

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#### **UNDERGRADUATES MENTORED (\* McNair Research Scholar)**

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

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#### **JOURNAL REVIEW**

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

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#### **PROFESSIONAL MEMBERSHIPS**

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

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#### **UNIVERSITY AND COMMUNITY SERVICE**

2016 – present Genetics Society of America Board of directors – postdoctoral representative  
Grant review for Phi Sigma Biological Sciences Honor Society;

2016 The Allied Genetics Conference GSA poster judge  
2 Software Carpentry Instructor: Reproducible research in R - 4 hour module

2010 – 2015 Elementary and Middle School Hands on Science Programs:  
Scientific Inference - Fossils and Skeletons: 213 students  
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  
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  
                 Faculty search committee — graduate student representative
- 2011            Judge for Undergraduate Research Posters at LSAM Conference

## REFERENCES

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