

## HEATH BLACKMON

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### ACADEMIC POSITIONS

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2017–present	Assistant Professor, Texas A&M University; Department of Biology Faculty of Ecology and Evolutionary Biology Faculty of Genetics
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: <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      **16 Blackmon H.,** Y. Brandvain. Short-term resolution of sexual antagonism dominates long-term fragility of Y chromosomes. *Genetics* 207:4 1621-1629
- 15 Blackmon H.,** L. Ross, D. Bachtrog. 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	chromePlus: Probabilistic models of chromosome and ploidy evolution <a href="https://github.com/coleoguy/chromePlus/">https://github.com/coleoguy/chromePlus/</a>  SAGA: Software for the Analysis of Genetic Architecture. <a href="https://github.com/coleoguy/SAGA">https://github.com/coleoguy/SAGA</a>  EvobiR: Evolutionary biology analysis in R. <a href="https://github.com/coleoguy/EvobiR">https://github.com/coleoguy/EvobiR</a>
Databases	Coleoptera Karyotype Database. <a href="https://uta.edu/karyodb/">https://uta.edu/karyodb/</a>  Tree of Sex Database – responsible for invertebrates <a href="https://treeofsex.org">https://treeofsex.org</a>
Pedagogy	PopGenSim: Wright-Fisher Simulator <a href="https://github.com/coleoguy/popgensim">https://github.com/coleoguy/popgensim</a>

## INVITED SEMINARS

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- 2017 Louisiana State University; Department of Biology  
University of Houston; Department of Biology and Biochemistry  
Texas A&M University; Genetics and Genomics Seminar Series  
Texas A&M University; Biology Department  
University of Minnesota, Department of Plant and Microbial Biology
- 2016 Tel Aviv University, Department of Plant Biology  
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 predict 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
- Software for the Analysis of Genetic Architecture: SAGA*  
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

#### **AWARDS AND MINOR GRANTS**

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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

#### **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

## 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. *Newsletter of the Ontario Entomological Society* 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

## GRADUATE STUDENTS MENTORED

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Terrence Sylvester

Kevin Bredemeyer

## UNDERGRADUATES MENTORED (\* McNair Research Scholar)

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Nathan Anderson	Darelle Collinot*	Erin Simmons
Andrew Armstrong	Erin Gilbertson	Andrew Armstrong
Mason Bartels*	Athena Myer	Nathan Anderson

## PEER REVIEW

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Annals of the New York Academy of Sciences	Journal of Heredity
Applications in Plant Science	Myrmecological News
Axios	National Science Foundation
European Journal of Entomology	Nature Scientific Reports
Evolution	New Phytologist
Genome Biology and Evolution	PeerJ
Genes	PLOS One
Genetics	Proceedings of the Royal Society B
Heredity	Systematic Biology
Intl Jnl of Gynecology and Obstetrics Research	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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2017–present	Graduate Recruitment & Admissions Committee
2017–present	Founder and instructor for the Vets who Code program at Texas A&M
2016–2018	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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University of Minnesota  
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