

HEATH BLACKMON

College of Biological Sciences,

University of Minnesota,

Saint Paul, MN 55108

coleoguy.github.io

coleoguy@gmail.com

ACADEMIC POSITIONS

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

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

2016 \$102,000 University of Minnesota Grand Challenges Grant – Accepted
Sex chromosome aneuploidy: reproductive health in humans and domestic animals and driving forces in the evolution of genome architecture

\$46,000 BARD Postdoctoral Fellowship – Declined
The evolutionary dynamics of ploidy evolution in plants

\$589,881 NSF: DEB-BSF – recommended for funding: *Breaking Barriers to the Study of Trait-Dependent Lineage Diversification*. 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
The Tree of Sex: A comprehensive synthesis of sex determination systems and their evolution in invertebrates

PEER REVIEWED PUBLICATIONS

- 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.

- 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.

SOFTWARE AND DATABASES

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

PRESENTATIONS (T – talk P – poster * invited)

- 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

AWARDS AND MINOR GRANTS

- 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

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

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

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

UNDERGRADUATES MENTORED (* McNair Research Scholar)

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

JOURNAL REVIEW

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

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

UNIVERSITY AND COMMUNITY SERVICE

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:
 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

Emma Goldberg
 Assistant Professor
 University of Minnesota
 612-625-5713
 eeg@umn.edu

Jeffery Demuth
 Associate Professor
 University of Texas at Arlington
 817-272-2653
 jpdemuth@uta.edu

Yaniv Brandvain
 Assistant Professor
 University Minnesota
 612-624-4375
 ybrandva@umn.edu