

Justin L. Conover

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Education

Ph.D., Genetics and Genomics

2021 - Iowa State University

Dissertation: Molecular Evolution Following Allopolyploidization in *Gossypium*.

Advisor: Dr. Jonathan F. Wendel

B.S., Biology

2015 - Missouri State University

Summa Cum Laude, with Distinction in the Honors College

Fellowships and Awards

- Cotton Incorporated** **2021**
\$27,340
Grant used to complete dissertation work on the genomic distribution of wild and domesticated *Gossypium hirsutum* and *Gossypium barbadense*.
- Harry and Audrey Finch Fellowship** **2020**
\$2,000
Fellowship awarded to graduate students in the Ecology, Evolution, and Organismal Biology Department at ISU to supplement research activities. Used for travel to SMBE conference in Quebec, Canada (*cancelled due to COVID-19*)
- Cotton Incorporated** **2018**
\$72,055
Grant used to fund dissertation work on the cytonuclear dimensions of allopolyploidy and deleterious mutation accumulation in allopolyploid and diploid *Gossypium*.
- Sui Tong Chan Fung Fund, Promotion of Study and Research in Genetics** **2018**
\$500
Travel Fellowship from the Interdepartmental Genetics and Genomics graduate program. Used to travel to II Joint Conference on Evolutionary Biology 2018, in Montpellier, France.
- Harry and Audrey Finch Fellowship** **2016**
\$2,000
Fellowship awarded to graduate students in the Ecology, Evolution, and Organismal Biology Department at ISU to supplement research activities. Used to travel to Provo, UT for workshop with collaborating scientists.
- Brown Graduate Fellowship** **2015**
\$10,000
Used to strategically advance research at Iowa State University in the areas of science, agriculture, and space science. In 2015, only fifteen graduate students were awarded this prestigious award.
- Phi Kappa Phi Fellowship** **2015**
\$5,000
The Honor Society of Phi Kappa Phi awards 51 Fellowships to members who are entering their first year of graduate school. Each institution can only nominate one student to receive this Society-wide award.
- ISU CALS + PRES Graduate Student Supplemental Funding Fellowship** **2015**
\$18,000
Funds awarded to first-year graduate students who qualify to be directly admitted into a lab of their choice.

Professional Affiliations and Campus Activities

Phi Kappa Phi	<i>2014 – Present</i>
Society for Molecular Biology and Evolution	<i>2016 – Present</i>
Society for the Study of Evolution	<i>2018 – Present</i>
Out in STEM (oSTEM)	<i>2019 – Present</i>
● Chapter Secretary, 2019-2021	
Graduate Genetics Group	<i>2015 – 2021</i>
● Chapter Treasurer, 2016-2017	
EEOB Diversity, Equity, and Inclusion Committee	<i>2020 - 2021</i>
● Graduate Student Representative, Inaugural Year of the Committee in the EEOB Department at Iowa State University.	
ISU CALS Graduate Education Advisory Committee	<i>2019 – 2020</i>
● Graduate Student Representative	

Teaching Experiences

Course Development

Evolution (BIOL 315)	<i>Summer 2021</i>
<i>Assisted Drs. Nicole Valenzuela and Ryan Weaver create lecture slides and exams for transition to new textbook</i>	
Evolutionary Genetics (BIOL 462)	<i>Summer 2020</i>
<i>Assisted Dr. Matthew Hufford create lecture slides and R workshop assignments for new course</i>	

Teaching Assistantships

Principles in Biology II Lab (BIOL 212L)	<i>Spring 2016</i>
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Peer Reviewer for Journals

G3; Genome Biology and Evolution; Trends in Genetics; Plant Communications; New Phytologist

Conference Presentations

Oral Presentations

4. Online Polyploidy Webinar (organized by Dr. Mike Barker). 2020. "Mutation Load in Cotton: The Impacts of Polyploidy, Domestication, and Speciation."
3. SMBE 2020, Quebec City, Quebec, Canada. "Understanding Mutational Load in Cotton: The Roles of Polyploidy, Speciation, and Domestication." (*Cancelled due to COVID-19*)
2. International Conference on Polyploidy, Ghent, Belgium. 2019. "Deleterious Mutation Accumulation in Cotton Polyploids."
1. PAG XXVI Plant and Animal Genome Conference, San Diego, California. 2018. "Unusual Biogeographic Disjunction in the Cotton Tribe Yields Insight into Genome Downsizing."

Poster Presentations

5. **Conover JL**, N Karimi, N Stenz, C Ané, CE Grover, C Skema, JA Tate, K Wolff, SA Logan, JF Wendel, DA Baum. II Joint Congress on Evolutionary Biology, Montpellier, France, 2018. "A Malvaceae Mystery: a Mallow Maelstrom of Genome Multiplications and Maybe Misleading Methods?"

4. **Conover JL**, Campbell C, Pap D, Riaz S, Coleman C, Kovács LG. 2015. Phenotyping a segregant mapping population of *Vitis piasezkii* X *Vitis vinifera* hybrids for quantitative trait loci analysis for resistance to *Plasmopara viticola*. 4th Annual Grape and Wine Research Symposium, Columbia, Missouri.
3. **Conover JL**, Trousdale C, Kim K. 2015. Changes in Membrane Lipid Composition Disrupt Yeast Protein Recycling. Missouri State University, College of Natural and Applied Sciences, Undergraduate Research Symposium, Springfield, Missouri.
2. **Conover JL**, Campbell C, Pap D, Riaz S, Coleman C, Kovács LG. 2015. Phenotyping a segregant mapping population of *Vitis piasezkii* X *Vitis vinifera* hybrids for quantitative trait loci analysis for resistance to *Plasmopara viticola*. Missouri State University, College of Natural and Applied Sciences, Undergraduate Research Symposium, Springfield, Missouri. (Won First Prize in Cell and Molecular Biology Division)
1. **Conover JL**, Pap D, Riaz S, Coleman C, Kovács LG. 2014. Differential host series analysis of *Plasmopara viticola* on select varieties of *Vitis vinifera*. Undergraduate Research Symposium, Springfield, Missouri.

Publications

(*Indicates Co-First Authorship)

Accepted & In Revision/In Press

3. *Forsythe, E. S., *Grover, C. E., Miller, E. R., **Conover, J. L.**, Arick, M. A., Chavarro, M. C. F., Leal-Bertioli, S. C. M., Peterson, D. G., Sharbrough, J., Wendel, J. F. and Sloan, D. B. Organellar transcripts dominate the cellular mRNA pool across plants of varying ploidy levels. (bioRxiv preprint here)
2. Grover, C. E., Forsythe, E. S., Sharbrough, J., Miller, E. R., **Conover, J. L.**, DeTar, R. A., Chavarro, C., Arick, M. A., Peterson, D. G., Leal-Bertioli, S. C. M., Sloan, D. B. and Wendel, J. F. Variation in cytonuclear expression accommodation among allopolyploid plants. (bioRxiv preprint here)
1. *Sharbrough, J., ***Conover, J. L.**, Gyorfy, M. F., Grover, C. E., Miller, E. R., Wendel, J. F., Sloan, D. B. Global patterns of subgenome evolution in organelle-targeted genes of six allotetraploid angiosperms. *Molecular Biology and Evolution*. (Accepted. bioRxiv preprint here)

Peer-Reviewed

17. Karimi, N., Grover, C. E., Gallagher, J. P., **Conover, J. L.**, Miller, E. R., Wendel, J. F., and Baum, D. A. Genetic diversity of Malagasy baobabs inferred by phased alleles from targeted sequence capture. *Adansonia* 44, (2022).
16. **Conover, J. L.**, Wendel, J. F. Deleterious Mutations Accumulate Faster in Allopolyploid than Diploid Cotton (*Gossypium*) and Unequally Between Subgenomes. *Mol. Biol. Evol.* 2021.09.22.461419 (2022). doi:10.1093/molbev/msac024
15. Gyorfy, M. F., Miller, E. R., **Conover, J. L.**, Grover, C. E., Wendel, J. F., Sloan, D. B. and Sharbrough, J. Nuclear-cytoplasmic balance: whole genome duplications induce elevated organellar genome copy number. *The Plant Journal: for cell and molecular biology*, (tpj.15436). (2021) <https://doi.org/10.1111/tpj.15436>
14. **Conover, J. L.**, Sharbrough, J. and Wendel, J. F. pSONIC: Ploidy-aware Syntenic Orthologous Networks Identified via Collinearity, *G3 Genes|Genomes|Genetics*, Volume 11, Issue 8, August 2021, jkab170, <https://doi.org/10.1093/g3journal/jkab170>.
13. Yuan, D., Grover, C. E., Hu, G., Pan, M., Miller, E. R., **Conover, J. L.**, Hunt, S. P., Udall, J. A. and Wendel, J. F. Parallel and intertwining threads of domestication in allopolyploid cotton. *Adv. Sci.* 2003634 (2021). doi:10.1002/advs.202003634

12. Hu, G., Grover, C. E., Yuan, D., Dong, Y., Miller, E., **Conover, J. L.** and Wendel, J. F. in Cotton Precision Breeding (eds. Rahman, M.-U.-, Zafar, Y. and Zhang, T.) 25–78 (Springer International Publishing, 2021). doi:10.1007/978-3-030-64504-5_2
11. Grover, C. E., Yoo, M.-J., Lin, M., Murphy, M. D., Harker, D. B., Byers, R. L., Lipka, A. E., Hu, G., Yuan, D., **Conover, J. L.**, Udall, J. A., Paterson, A. H., Gore, M. A. and Wendel, J. F. Genetic Analysis of the Transition from Wild to Domesticated Cotton (*Gossypium hirsutum* L.). *G3* 10, 731–754 (2020).
10. Chen, Z. J., Sreedasyam, A., Ando, A., Song, Q., De Santiago, L. M., Hulse-Kemp, A. M., Ding, M., Ye, W., Kirkbride, R. C., Jenkins, J., Plott, C., Lovell, J., Lin, Y.-M., Vaughn, R., Liu, B., Simpson, S., Scheffler, B. E., Wen, L., Saski, C. A., Grover, C. E., Hu, G., **Conover, J. L.**, Carlson, J. W., Shu, S., Boston, L. B., Williams, M., Peterson, D. G., McGee, K., Jones, D. C., Wendel, J. F., Stelly, D. M., Grimwood, J. and Schmutz, J. Genomic diversifications of five *Gossypium* allopolyploid species and their impact on cotton improvement. *Nat. Genet.* (2020). doi:10.1038/s41588-020-0614-5
9. Grover, C. E., Arick, M. A., 2nd, Thrash, A., **Conover, J. L.**, Sanders, W. S., Peterson, D. G., Frelichowski, J. E., Scheffler, J. A., Scheffler, B. E. and Wendel, J. F. Insights into the Evolution of the New World Diploid Cottons (*Gossypium*, Subgenus *Houzingenia*) Based on Genome Sequencing. *Genome Biol. Evol.* 11, 53–71 (2019).
8. Li, C., Sun, X., **Conover, J. L.**, Zhang, Z., Wang, J., Wang, X., Deng, X., Wang, H., Liu, B., Wendel, J. F. and Gong, L. Cytonuclear Coevolution following Homoploid Hybrid Speciation in *Aegilops tauschii*. *Mol. Biol. Evol.* 36, 341–349 (2019).
7. ***Conover, J. L.**, *Karimi, N., Stenz, N., Ané, C., Grover, C. E., Skema, C., Tate, J. A., Wolff, K., Logan, S. A., Wendel, J. F. and Baum, D. A. A Malvaceae mystery: A mallow maelstrom of genome multiplications and maybe misleading methods? *J. Integr. Plant Biol.* 61, 12–31 (2019).
6. *Bao, Y., *Hu, G., Grover, C. E., **Conover, J.**, Yuan, D. and Wendel, J. F. Unraveling cis and trans regulatory evolution during cotton domestication. *Nat. Commun.* 10, 5399 (2019).
5. Udall, J. A., Long, E., Hanson, C., Yuan, D., Ramaraj, T., **Conover, J. L.**, Gong, L., Arick, M. A., Grover, C. E., Peterson, D. G. and Wendel, J. F. De Novo Genome Sequence Assemblies of *Gossypium raimondii* and *Gossypium turneri*. *G3* 9, 3079–3085 (2019).
4. Udall, J. A., Long, E., Ramaraj, T., **Conover, J. L.**, Yuan, D., Grover, C. E., Gong, L., Arick, M. A., 2nd, Masonbrink, R. E., Peterson, D. G. and Wendel, J. F. The Genome Sequence of *Gossypioideis kirkii* Illustrates a Descending Dysploidy in Plants. *Front. Plant Sci.* 10, 1541 (2019).
3. Woodman, S., Trousdale, C., **Conover, J.** and Kim, K. Yeast membrane lipid imbalance leads to trafficking defects toward the Golgi. *Cell Biol. Int.* 42, 890–902 (2018).
2. Grover, C. E., Arick, M. A., 2nd, **Conover, J. L.**, Thrash, A., Hu, G., Sanders, W. S., Hsu, C.-Y., Naqvi, R. Z., Farooq, M., Li, X., Gong, L., Mudge, J., Ramaraj, T., Udall, J. A., Peterson, D. G. and Wendel, J. F. Comparative Genomics of an Unusual Biogeographic Disjunction in the Cotton Tribe (*Gossypieae*) Yields Insights into Genome Downsizing. *Genome Biol. Evol.* 9, 3328–3344 (2017).
1. Sharbrough, J., **Conover, J. L.**, Tate, J. A., Wendel, J. F. and Sloan, D. B. Cytonuclear responses to genome doubling. *Am. J. Bot.* 104, 1277–1280 (2017).