

Joel Sharbrough

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EDUCATION

- 2016 Ph.D. Biology
University of Iowa, Iowa City, IA 52241
Advisor: Dr. Maurine Neiman
- 2016 Bioinformatics Certificate
University of Iowa, Iowa City, IA 52241
- 2009 B.Sc. Biological Sciences
University of Notre Dame, Notre Dame, IN 46556
Advisor: Dr. Jeffrey L. Feder
- 2009 Secondary Education Teaching Certification
Saint Mary's College, Notre Dame, IN 46556
Advisor: Dr. Catherine Green

PROFESSIONAL EXPERIENCE

- 2016- Postdoctoral Fellow with Dr. Daniel B. Sloan
Department of Biology, Colorado State University, Fort Collins, CO

RESEARCH FUNDING

- 2019-2021 National Science Foundation. The Cytonuclear Dimension of Allopolyploidy PGRP – 1829176 (\$1,829,880). Role: co-PI and co-author (with PI Daniel B. Sloan, co-PI Jonathan F. Wendel, and co-PI Corrine E. Grover). [*This was a collaboration I helped forge between CSU and ISU. I was largely responsible for producing the first draft of the research plan for this proposal, which was then collaboratively developed into the now funded proposal, with a start date of January 1st, 2019. [See link for CSU press release.](#)*]
- 2018-2020 National Science Foundation. Genomic and functional tests of mitochondrial-nuclear coevolution. DEB – 1753851 (\$189,998). Role: Senior personnel and co-author (with PI Maurine Neiman and co-PI Kristi L. Montooth). [*I was responsible for drafting the molecular evolution aim of this proposal, which was awarded jointly to UI and UNL on July 1st, 2018.*]
- 2013-2015 National Science Foundation Doctoral Dissertation Improvement Grant. Evaluating phenotypic consequences of accelerated mutation accumulation in the absence of sex. DEB – 1310825 (\$19,600). Role: Co-PI and lead author (with PI Maurine Neiman and co-PI Jennifer L. Cruise).
- 2013-2014 Iowa Academy of Sciences. Evaluating phenotypic consequences of accelerated mutation accumulation in the absence of sex. ISF #13-10 (\$5,000). Role: Co-PI and lead author (with PI Maurine Neiman and co-PI Jennifer L. Cruise).

PUBLICATIONS

† – Corresponding author; * – Supervised Undergraduate Researcher; § – Supervised High School Intern

Peer-Reviewed Research Papers

1. Forsythe ES[†], **Sharbrough J**[†], Havird JC, Warren JW, Sloan DB. 2019. CyMIRA: the Cytonuclear Molecular Interactions Reference for *Arabidopsis*. *Genome Biology and Evolution*. 11: 2194-2202 DOI: <https://doi.org/10.1093/gbe/evz144> [† – **Authors contributed equally to this work.**]
2. Greimann ES*, Fahrner S, Woodell JD*, Hennessey SK*, Kline MR*, Moreno JA*, Peters MR*, Cruise JL, Neiman M, **Sharbrough J**[†]. 2018. Variation in physiological function across source populations of a New Zealand freshwater snail. In revision for *Integrative and Comparative Biology*. bioRxiv DOI: <https://doi.org/10.1101/230979>
3. **Sharbrough J**[†], Luse M*, Boore JL, Logsdon Jr JM, Neiman M. 2018. Radical amino acid mutations persist longer in the absence of sex. *Evolution*. 72: 808-824. DOI: <https://doi.org/10.1111/evo.13465>
4. Sloan DB, Wu Z, **Sharbrough J**. 2018. Correction of persistent errors in *Arabidopsis Col-0* reference mitochondrial genome sequence. *The Plant Cell*. 30: 525-527. DOI: <https://doi.org/10.1105/tpc.18.00024>
5. **Sharbrough J**[†], Havird JC[†], Noe GR, Warren JW, Sloan DB. 2017. The mitonuclear dimension of Neanderthal and Denisovan ancestry in modern human genomes. *Genome Biology and Evolution*. 9: 1567-1581. DOI: <https://doi.org/10.1093/gbe/evx114> [† – **Authors contributed equally to this work.**]
6. **Sharbrough J**[†], Cruise JL, Beetch M, Enright NM*, Neiman M. 2017. Genetic variation for mitochondrial function in the New Zealand freshwater snail *Potamopyrgus antipodarum*. *Journal of Heredity*. 108: 759-768. DOI: <https://doi.org/10.1093/jhered/esx041> [** – **Featured cover article.**]
7. McElroy KE, Denton RD, **Sharbrough J**, Bankers L, Neiman M, Gibbs HL. 2017. Genome expression balance in a triploid trihybrid vertebrate. *Genome Biology and Evolution*. 9: 968-980. DOI: <https://doi.org/10.1093/gbe/evx059>
8. Beck EA, Thompson AC, **Sharbrough J**, Brud E, Llopart A. 2015. Gene flow between *Drosophila yakuba* and *D. santomea* in subunit V of cytochrome c oxidase: A potential case of cytonuclear co-introgression. *Evolution*. 69: 1973-1986. DOI: <https://doi.org/10.1111/evo.12718>

Peer-Reviewed Review Articles and Perspectives

9. Sloan DB, Broz AK, **Sharbrough J**, Wu Z. 2018. Detecting rare mutations and DNA damage with sequencing-based methods. *Trends in Biotechnology*. 36: 729-740. DOI: <https://doi.org/10.1016/j.tibtech.2018.02.009>
10. **Sharbrough J**[†], Conover JL, Tate JA, Wendel JF, Sloan DB. 2017. Cytonuclear responses to genome doubling. *American Journal of Botany*. 104: 1277-1280. DOI: <https://doi.org/10.3732/ajb.1700293>
11. Sloan DB, Havird JC, **Sharbrough J**. 2017. The on-again, off-again relationship between mitochondrial genomes and species boundaries. *Molecular Ecology*. 26: 2212-2236. DOI: <https://doi.org/10.1111/mec.13959>

INVITED SEMINARS AND CONFERENCE PRESENTATIONS

* – Supervised Undergraduate Researcher; § – Supervised High School Intern

Invited

1. **Sharbrough J**, Conover JL, Grover CE, Gyorfy M*, Wendel JF, Sloan SB. Cytonuclear coevolution in allopolyploid wheat. Genetics Society of America Early Career Seminar Series. September 20th, 2018.
2. **Sharbrough J**, Conover JL, Grover CE, Wendel JF, Sloan DB. Cytonuclear coevolution in allopolyploid wheat. Biology Department, Colorado State University. April 4th, 2018.
3. **Sharbrough J**, Conover JL, Grover CE, Wendel JF, Sloan DB. Cytonuclear coordination and coevolution in polyploid wheat. Plant Super Group, Colorado State University. February 23rd, 2018.
4. **Sharbrough J**, Neiman M. Comparing radical and conservative amino acid substitutions in mitochondrial genomes of sexual and asexual lineages of *Potamopyrgus antipodarum*. 3rd Annual Bioinformatics Retreat, University of Iowa, August 2013.

Contributed

1. **Sharbrough J**, Conover JL, Grover CE, Wendel JF, Sloan SB. Cytonuclear coordination and evolution in allotetraploid wheat. May 2018. Population, Evolutionary, and Quantitative Genetics Conference. Genetics Society of America.
2. **Sharbrough J**, Sloan DB, Montooth KL, Neiman M, Bankers LA, Boore JL, Fields PD, Jalinsky J, Logsdon Jr. JM, McElroy KE, Wilton PR. Mitonuclear coevolution in the absence of sex. June 2017. Evolution Conference. Society for the Study of Evolution.
3. **Sharbrough J**, Luse M*, Cherukurri P^s, Greimann E*, Lin M*, Zhang M^s, Boore JL, Logsdon, Jr. JM, Neiman M. Effects of mutation-drift-equilibrium, purifying selection, and sex on mitochondrial mutation accumulation. June 2016. Evolution Conference. Society for the Study of Evolution.
4. **Sharbrough J**, Bankers LA, Boore JL, Fields PD, Logsdon Jr JM, McElroy KE, Larkin K, Rice C, Toll C, Wilton PR, Neiman M. STITCH: A tool for transcriptome-guided genome scaffolding for de novo genome assemblies. July 2016. Front Range Computational and Systems Biology Symposium.
5. **Sharbrough J**, Luse M*, Boore JL, Logsdon Jr. JM, Neiman M. Patterns of amino acid sequence evolution across various time scales in mtDNA of sexual and asexual lineages. June 2014. Evolution Conference. Society for the Study of Evolution.
6. **Sharbrough J**. Patterns of molecular evolution across mating systems and ploidy classes. March 2012. Midwest Ecology and Evolution Conference.

FELLOWSHIPS AND SCHOLARSHIPS

2015	Evelyn Hart Watson Summer Fellowship, University of Iowa (\$2,448)
2014	Graduate College Summer Fellowship, University of Iowa (\$3,000)
2013-2014	NIH Bioinformatics T32 Training Grant, University of Iowa (\$32,000)
2008	National Science Foundation Global Linkages of Biology, Environment, and Society Research Experience for Undergraduates Fellowship University of Notre Dame (\$4,500)

HONORS AND AWARDS

2015	Outstanding Teaching Assistant Award, Department of Biology, University of Iowa
2013	W.D. Hamilton Award Finalist, Society for the Study of Evolution, Evolution Conference

PROFESSIONAL DEVELOPMENT

2017-2018 Genetics Society of America Peer Reviewing Training Program
2017 Plant Genome Editing Conference, Colorado State University, Fort Collins, CO

PROFESSIONAL SOCIETIES

2019- Society for Integrative and Comparative Biology
2017- Genetics Society of America
2014- Society for the Study of Evolution
2013- Society for Molecular Biology and Evolution

PROGRAMMING LANGUAGES

1. Python
2. R
3. Bash
4. Perl

TEACHING AND MENTORING EXPERIENCE

Guest Lecturer

2015-2016 Genetic Analysis of Biological Systems – *Potamopyrgus antipodarum*
2015 Evolution – *Endosymbiotic origin of mitochondria*

Teaching Assistant

2012-2016 Evolution
2014-2015 Foundations of Biology I
2011 Principles of Biology I

High School Science Teacher

2010 Biology, Earth Sciences, Mishawaka High School, Mishawaka, IN 46544
2009-2010 Biology, Biology II, Mishawaka High School, Mishawaka, IN 46544

Supervised Undergraduate Researchers

2017- Matheus Gyorfy
2016-2018 Marissa Roseman
2015-2016 Emma Greimann
2014-2015 James D. Woodell
2013-2015 Nicole Enright
2013-2014 Michelle Sullivan
2013 Nikhil Puttagunta
2011-2014 Meagan Luse

Supervised High School Interns

2014 Michelle Zhang

2013 Praakruti Cherukuri

ACADEMIC SERVICE

Journal Reviewer for –

- 2019 *Evolution; Genetics; Molecular Biology and Evolution; Open Biology*
2018 *Canadian Journal of Zoology; Genetics (3); Heredity; Plant Biology; The Plant Journal; Proceedings of the Royal Society of London B*
2017 *BioEssays; Canadian Journal of Zoology; Current Biology; Proceedings of the Royal Society of London B*
2016 *Molecular Biology and Evolution (2)*
2014 *Journal of Experimental Zoology; Molecular Biology and Evolution*
2013 *Biological Journal of the Linnean Society*

COMMUNITY OUTREACH

- 2017- Co-organizer. Presentations for first-year “Key Communities” undergraduates at Colorado State University on career opportunities and educational resources in bioinformatics
2017 Colorado Science Education Foundation State Science Fair Judge
2014-2016 Organized and implemented evolutionary biology lab module at Taylor Elementary School, Cedar Rapids, IA
2010-2016 Designer and executer of Iowa City Darwin Day High School outreach program
2010-2015 Organizing Committee for Iowa City’s Darwin Day Celebration
2011-2012 Organized and implemented evolutionary biology lab module at Solon High School, Solon, IA
2011-2016 Solon High School Science Fair Judge
2012 St. Matthias Transfiguration School Science Fair Judge