KEVIN ANDREW BIRD

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RESEARCH INTERESTS

Dissecting complex evolutionary phenomena like phenotypic plasticity, convergent evolution, secondary metabolites, and polyploidy using the strategies and methodology of systems biology, such as large-scale, multi-omic datasets and computational modeling.

EDUCATION

2017-Present **Ph.D** Horticulture and Ecology, Evolutionary Biology and Behavior, Michigan State University advisors: Patrick Edger and Robert VanBuren

2012-2016 **B.S**. Biological Sciences (*Cum laude* with University Honors) University of Missouri
B.A. Philosophy (*Cum laude* with University Honors) University of Missouri

RESEARCH EXPERIENCE

2017-Present **Graduate Research Assistant:** Michigan State University, Department of Horticulture and Ecology, Evolutionary Biology, and Behavior Program. Advisors: Patrick Edger and Robert VanBuren

2016-2017 **Fulbright fellow/visiting researcher**: VIB/Ghent University, Department of Plant Systems Biology. Advisor: Steven Maere
-Utilized novel techniques in computational systems biology to model evolution of gene regulatory network in the presence and absence of gen(om)e duplications

2015 (summer) **Research Assistant**: Cornell University, Plant Breeding and Genetics Section. Advisor: Michael Allen Gore
-*Brassica rapa* field trial and training in quantitative genetic techniques to perform Genome-Wide Association for glucosinolate and mineral nutrient traits

2013-2016 **Undergraduate Research Assistant**: University of Missouri Division of Biological Sciences. Advisor: J Chris Pires
- Led collaboration with Cornell University and USDA to investigate population structure and genetic diversity of a global diversity panel of *Brassica rapa*
- Performed bioinformatic analysis to probe utility of ITS genes for phylogenetic inference

2012-2013 **Lab Technician**: University of Missouri, Turf Grass Pathology Lab. Supervisor: Lee Miller
- Responsible for fungal tissue culture, DNA isolation, gel electrophoresis

PUBLICATIONS

10. **Bird KA**, Niederhuth C, Ou S, Gehan M, Pires JC, Xiong Z, VanBuren R, Edger PP (2019) Replaying the evolutionary tape to investigate subgenome dominance in allopolyploid *Brassica napus. bioRxiv,* 814491; doi: https://doi.org/10.1101/814491

9. Turner-Hissong SD, **Bird KA**, Lipka AE, King EG, Beissinger TM, & Angelovici R (2019). Genomic prediction informed by biological processes expands our understanding of the genetic

architecture underlying free amino acid traits in dry Arabidopsis seeds. *bioRxiv*, 272047. https://doi.org/10.1101/272047

8. Barbey, C, Lee, S, Verma, S, **Bird, KA**, Yocca, A E, Edger, PP, & Knapp SJ, Whitaker VM, Folta, K M (2019). Disease Resistance Genetics and Genomics in Octoploid Strawberry. *G3: Genes|Genomes|Genetics* volume 9, 3315-3332.

7. Edger PP, Poorten TJ, VanBuren R, Hardigan MA, Colle M, McKain MR, Smith RD, Teresi SJ, Nelson ADL, Wai CM, Alger EI, **Bird KA**, Yocca AE, Pumplin N, Ou S, Ben-Zvi G, Brodt A, Baruch K, Swale T, Shiue L, Acharya CB, Cole GS, Mower JP, Childs KL, Jiang N, Lyons E, Freeling M, Puzey JR & Knapp SJ. (2019) Origin and evolution of the octoploid strawberry genome *Nature Genetics* volume 51, 541–547

6. Colle M, Leisner CP, Wai CM, Ou S, **Bird KA**, Wang J, Wisecaver JH, Yocca AE, Alger EI, Tang H, Xiong Z, Callow P, Ben-Zvi G, Brodt A, Baruch K, Swale T, Shiue L, Song G, Childs KL, Schilmiller A, Vorsa N,Buell CR, VanBuren R, Jiang N, Edger PP. (2019) Haplotype-phased genome and evolution of phytonutrient pathways of tetraploid blueberry, *GigaScience*, , giz012, https://doi.org/10.1093/gigascience/giz012

5. **Bird KA**, VanBuren R, Puzey JR, Edger PP. (2018) The causes and consequences of subgenome dominance in hybrids and recent polyploids. *New Phytologist* doi:10.1111/nph.15256

4. Edger PP, McKain M, **Bird KA,** VanBuren R. (2018) Investigating the evolutionary dynamics of subgenomes in ancient polyploids: challenges and future directions. *Current Opinion in Plant* Biology 42. https://doi.org/10.1016/j.pbi.2018.03.006.

3. **Bird KA**, An H, Gazave E, Gore MA, Pires JC, Robertson LD and Labate JA (2017). Population structure and phylogenetic relationships in a diverse panel of Brassica rapa L. *Frontiers in Plant Science*. 8:321. doi: 10.3389/fpls.2017.00321

2. Washburn JD, **Bird KA**, Conant G, Pires JC. 2016 Convergent Evolution and the Origin of Complex Phenotypes in the age of Systems Biology. *International Journal of Plant Sciences* 177 (4), 000-000

1. Edger PP*, Tang M*, **Bird KA**, Mayfield DR, Conant G, Mummenhoff K, Koch M, Pires JC. 2014 Secondary Structure Analyses of the Nuclear rRNA Internal Transcribed Spacers and Assessment of Its Phylogenetic Utility across the Brassicaceae (Mustards). *PLoS ONE* 9(7): e101341

*These authors contributed equally to this work

SCHOLARSHIPS AND AWARDS

2017-2022	**University Distinguished Fellowship,** Michigan State University, $80,000
2016-2021	**National Science Foundation Graduate Research Fellowship** National Science Foundation, $138,000
2016-2017	**Fulbright US Student Award**, Department of State Bureau of Educational and Cultural Affairs, $14,389
2016	**Young Botanist of the Year Award**, Botanical Society of America
2016	**Professor Stanley Zimmering Prize for Outstanding Senior in Biological Sciences**, University of Missouri, $500
2016	**Award for Academic Distinction**, University of Missouri

2015 **Barry Goldwater Excellence in Education Scholarship** Honorable Mention, Barry Goldwater Scholarship and Excellence in Education Foundation
2015 **American Society of Plant Biologists Summer Undergraduate Research Fellowship**, American Society of Plant Biologists, $4,000
2014-2015 **HHMI C3 Hughes Research Fellowship**, University of Missouri, $8,000
2013-2014 **Monsanto Undergraduate Research Fellowship**, University of Missouri, $2,800

GRANTS

2019 NRT-IMPACTS Travel Award, Michigan State University, $600
2018 Graduate Officer Fellowship, Michigan State University, $2,000
2015 Honors College Student Experiential Learning Award, University of Missouri, $500
2015 Douglas D. Randall Young Scientist Development Grant, University of Missouri, $500
2014 Mizzou Advantage Undergraduate Travel Grant, University of Missouri, $360
2014 Office of Undergraduate Research Travel Grant, University of Missouri, $250

TEACHING EXPERIENCE

2018/2019 Teaching Assistant, UGS 200: Molecular Phylogenetics & Evolution, Michigan State University
2016 (fall) Teaching Assistant, Phil 4400: Philosophy of Science. University of Missouri
2015 (spring) Teaching Assistant, GnHnrs2850: Finding the Story in Science. University of Missouri
2014-2015 Supplemental Instructor, BioSci 2200: General Genetics. University of Missouri
2014-2016 Tutor, BioSci 2200: General Genetics. University of Missouri

ORAL PRESENTATION

2019 5th Conference on Plant Genome Evolution, Elsevier, Sitges Spain
Title: Replaying the evolutionary tape with synthetic polyploids to investigate subgenome dominance

2019 Symposium on Evolution and Core Processes of Gene Expression, American Society for Biochemistry and Molecular Biology, East Lansing, MI
Title: Replaying the evolutionary tape in synthetic Brassica napus polyploids: How deterministic is subgenome dominance?

2018 Botany 2018, Botanical Society of America, Rochester, MN
Title: The causes and consequences of subgenome dominance in hybrids and recent polyploids

2016 Botany 2016, Botanical Society of America, Savannah, GA
Title: Association Mapping and Population Genetics of the Vegetable Crop *Brassica rapa.*
2014 Saturday Morning Science, University of Missouri, Columbia MO
Title: Decoding Science: Talking Outside the Box.

POSTERS

2018 Plant Biology 2018, American Society of Plant Biologists, Montreal, Quebec

Title: Subset-based genomic prediction provides insights into the genetic architecture of free amino acid levels in dry Arabidopsis thaliana seeds

2016 Plant Biology 2016, American Society of Plant Biologists, Austin TX
Title: Population Genetics and Association Mapping of Nutritional Traits in the Vegetable Crop *Brassica rapa*.

2015 Life Sciences Week, University of Missouri, Columbia MO
Title: Building the Foundation for Biofortification of *Brassica rapa*.

2015 University of Missouri Undergraduate Research and Creative Achievements Forum, Columbia, MO
Title: Laws? Where We're Going We don't Need Laws: How Biology Explains. 2015

2015 Undergraduate Research Day at the Capitol, Jefferson City, MO
Title: Finding the Best Genes for Estimating Evolutionary Relationships of Cruciferous Vegetables

2014 Botany 2014, Botanical Society of America, Boise, ID
Title: Assessing the Phylogenetic Utility of the ITS Regions

2014 Evolution 2014, Raleigh, NC
Title: Assessing the Phylogenetic Utility of the ITS Regions

RELATED EXPERIENCE

2018 12/17-12/2 Genome Assembly Workshop, University of California Davis
2016 1/4-1/8 Tucson Plant Breeding Institute, University of Arizona
2014 5/19-5/30 HHMI Summer Biomedical Informatics Institute, University of Missouri

PROFESSIONAL SERVICE

2019-Present President, Graduate Employees Union, Michigan State University
2018-2019 Chief Information Officer, Graduate Employees Union, Michigan State University
2017-2019 NSF Graduate Research Fellowship reviewer, Michigan State University
2017-2018 Professional Development Co-Chair, Horticulture Organization of Graduate Students, Michigan State University
2014-2016 Undergraduate Research Ambassador, University of Missouri

OUTREACH, DIVERSITY & INCLUSION, ANTI-RACISM:

2019 Podcast appearance Ep. 109 *Embrace the Void* to talk about "Human biodiversity" and the abuse of science to defend racist beliefs
https://voidpod.com/podcasts/2019/9/25/ev-109-human-biodiversity-with-kevin-bird

2019 Fascination in Plants Day at Michigan State, public demonstration and lessons about plants and plant genetics to a general public audience in East Lansing

2019 Collaboration on video series *Race is not Real* where I did a literature review and wrote a script discussing the realities and misconceptions about race and genetics
Intro: https://www.youtube.com/watch?v=nWyoULD1JFo

Part 1: https://www.youtube.com/watch?v=J54OiDidcJs
Part 2: https://www.youtube.com/watch?v=8d8bnGTE8G8
Combined ~7000 views as of Oct 23th, 2019

2018 Consulted for New York Times story *Why White Supremacists Are Chugging Milk (and Why Geneticists Are Alarmed)* https://www.nytimes.com/2018/10/17/us/white-supremacists-science-dna.html also featured in https://www.nytimes.com/2018/10/18/insider/science-genetics-white-supremacy.html

2017-2018 Organized informal journal club, "Peer Rebrew" that focused on latest work in genomics and systems biology

MENTORING

2018 Plant Genomics REU Mentor, Edger Lab
Scott Teresi – Undergraduate student

MEMBERSHIPS

American Society of Plant Biologists
Botanical Society of America