

Manisha Munasinghe

University of Minnesota, Twin Cities
Department of Plant and Microbial Biology
1445 Gortner Ave, Falcon Heights, MN 55108

mmunasin@umn.edu
mam737.github.io
248.840.4710

Professional Appointments and Education

Postdoctoral Fellow: University of Minnesota, Twin Cities Sept 2024 —
Department of Plant and Microbial Biology
Candice Hirsch Lab

NSF Postdoctoral Fellow: University of Minnesota, Twin Cities 2021 — 2024
Department of Plant and Microbial Biology
Yaniv Brandvain and Nathan Springer Labs

Ph.D. Computational Biology: Cornell University 2015 — 2020
Computational and Experimental Analysis on the Consequences of Sexually Asymmetric Transmission with Mitochondrial-Nuclear Interactions
Advisor: Andrew G. Clark
Committee: Philipp Messer, Charles Aquadro

B.S. Mathematics: Michigan State University 2011 — 2015

Publications (Peer Reviewed and Preprints)

* denotes equal contribution

9. Catlin N et al. 2024. "Structural variants contribute to phenotypic variation in maize." *Mol. Ecol.* <https://doi.org/10.1101/2024.06.14.599082> (In Review)

8. **Munasinghe M** and Yaniv Brandvain. 2024. "Together Inbreeding and Reproductive Compensation Favor Lethal *t*-Haplotypes." *J. Hered.* esae030. <https://doi.org/10.1093/jhered/esae030>.

7. **Munasinghe M** et al. 2023. "Combined analysis of transposable elements and structural variation in maize genomes reveals genome contraction outpaces

expansion." *PLoS Genet.* 19(12):e1011086. <https://doi.org/10.1371/journal.pgen.1011086>.

6. **Munasinghe M** and J Arvid Ågren. 2023. "When and why are mitochondria paternally inherited?". *Curr. Open. Genet. Dev.*, 80: 102053. <https://doi.org/10.1016/j.gde.2023.102053>.

5. **Munasinghe M**, Nathan Springer, and Yaniv Brandvain. 2023. "Critical Role of Insertion Preference for Invasion Trajectory of Transposons." *Evol., qpad128*. <https://doi.org/10.1093/evolut/qpad128>.

4. **Munasinghe M**, Ben C. Haller, and Andrew G. Clark. 2021. "Migration Restores Hybrid Incompatibility Driven by Nuclear-Mitochondrial Sexual Conflict." *Proc. R. Soc. B.*, 289 (1967): 20212561. <https://doi.org/10.1098/rspb.2021.2561>.

3. Holman A, **Manisha Munasinghe**, and Andrew G. Clark. 2020. "Natural Polymorphisms in Second-site Modifiers of *Drosophila C9orf72* Model for Amyotrophic Lateral Sclerosis." *Genetics*. (In Revision).

2. Ågren JA*, **Manisha Munasinghe***, and Andrew G. Clark. 2020. "Mitochondrial-Y Chromosome Epistasis in *Drosophila melanogaster*." *Proc. R. Soc. B.*, 287 (1937): 20200469. <https://doi.org/10.1098/rspb.2020.0469>.

1. Ågren JA*, **Manisha Munasinghe***, and Andrew G. Clark. 2019. "Sexual Conflict through Mother's Curse and Father's Curse." *Theoretical Population Biology*, 129 (10): 9-17. <https://doi.org/10.1016/j.tpb.2018.12.007>.

Fellowships and Awards

2023 MidWest PopGen Best Postdoctoral Talk Award

2020 NSF Postdoctoral Research Fellowship in Biology

2018 — 2019 Joe and Rita Calvo Teaching Award

2015 NSF Graduate Research Fellowship Program Honorable Mention

Teaching and Mentorship

Teaching Assistant Appointment

Fall 2018, Cornell University: BIOMG 4870 Human Genomics

Spring 2018, Cornell University: BTRY 4830 Quantitative Genetics and Genomics

Fall 2017, Cornell University: BIOMG 4870 Human Genomics

Spring 2015, Michigan State University: LB 119 Calculus II

Fall 2014, Michigan State University: LB 220 Calculus III

Spring 2014, Michigan State University: LB 119 Calculus II

Fall 2013, Michigan State University: LB 118 Calculus I

Spring 2013, Michigan State University: LB 119 Calculus II

Fall 2012, Michigan State University: LB 220 Calculus III

Guest Lecture

Fall 2018, Cornell University: Personalized Genomics and Direct-to-Consumer Testing, BIOMG 4870 Human Genomics, Cornell University - Ithaca, NY

Workshops

2023: Instructor — Intro to R, Python, and the Unix Shell (Based on Software and Data Carpentry Lessons), University of Minnesota

2022: Instructor — Intro to R, Python, the Unix Shell, and Git (Based on Software and Data Carpentry Lessons), University of Minnesota

2021: Instructor — Intro to R, Python, the Unix Shell, and Git (Based on Software and Data Carpentry Lessons), University of Minnesota

2021: Instructor — Software Carpentry Workshop, United States Department of Agriculture Online

2020: Obtained Certification as a Carpentries Instructor to teach Software Carpentry, Library Carpentry, and Data Carpentry Workshops

Invited Presentations/Symposia

2024 Poster Presentation: Genetic Determinants of Hybrid Decay in Backcross Populations of Teosinte with Maize. 2024 Maize Genetics Meeting — Raleigh, NC.

2023 Poster Presentation: Genetic Determinants of Hybrid Decay in Backcross Populations of Teosinte with Maize. NSF Plant Genome Research Program Award Postdoctoral Meeting — Washington D.C.

2023 Oral Presentation: Together Inbreeding and Reproductive Compensation Jointly Facilitate Lethal t-Haplotype Evolution. 2023 MidWest PopGen Meeting — Ann Arbor, MI

2023 Oral Presentation: Analysis of Transposable Elements and Structural Variation in Maize Genomes Reveals Genome Contraction Outpaces Expansion. 2023 Maize Genetics Meeting — St. Louis, MO

2023 Oral Presentation: Analysis of Transposable Elements and Structural Variation in Maize Genomes Reveals Genome Contraction Outpaces Expansion. 2023 Iowa State Promising Scientist Seminar Series — Ames, IA

2023 Oral Presentation: Transposable Element Copy Number Evolution Contributes to Dynamic Genome Variation in Maize. 2023 Plant and Animal Genome Conference — San Diego, CA

2022 Oral Presentation: Insertions and Deletions of Transposable Elements Create Dynamic Genome Variation in Maize. Zeaevolution Seminar — Virtual

2022 Oral Presentation: Genetic Determinants of Hybrid Decay in Backcross Populations of Teosinte with Maize. NSF Plant Genome Research Program Award Postdoctoral Meeting — Washington D.C.

2022 Oral Presentation: Critical Role of Insertion Preference for Invasion Trajectory of Transposons. Population, Evolutionary, and Quantitative Genetics (PEQG) Conference — Asilomar Conference Grounds

2022 Oral Presentation: Critical Role of Insertion Preference for Invasion Trajectory of Transposons. Plant and Microbial Biology Departmental Retreat, University of Minnesota — St. Paul, Minnesota

2022 Oral Presentation: Critical Role of Insertion Preference for Invasion Trajectory of Transposons. Zeaevolution Seminar — Virtual

2022 Oral Presentation: Critical Role of Insertion Preference for Invasion Trajectory of Transposons. Plant and Microbial Biology Departmental Seminar, University of Minnesota — St. Paul, Minnesota

2021 Oral Presentation: Critical Role of Insertion Preference for Invasion Trajectory of Transposons. NSF Plant Genome Research Program Award Meeting — Virtual

2020 Poster Presentation: Hybrid Incompatibility Driven By Nuclear-Mitochondrial Sexual Conflicts. Co-authors: AG Clark. Population, Evolutionary, and Quantitative Genetics Meeting 2020 (PEQG 2020) — Virtual

2019 Oral Presentation: Consequences of Sexually Asymmetric Genetic Transmission. Computational Biology Graduate Student Recruitment Research Presentation, Cornell University — Ithaca, NY USA

2019 Oral Presentation: Computational Analysis of the Consequences of Sexually Asymmetric Genetic Transmission. Computational Biology Graduate Field Seminar, Cornell University — Ithaca, NY USA

2018 Poster Presentation: Mother's Curse and Father's Curse as Manifestations of Sexual Conflict. Co-authors: JA Ågren, AG Clark. Population, Evolutionary, and Quantitative Genetics Meeting 2018 (PEQG 2018) — Madison, WI USA

2018 Poster Presentation: Mitochondrial-Y Interactions Influence Gene-Expression Profiles in *Drosophila melanogaster* males. Co-authors: JA Ågren, AG Clark. Society for Molecular Biology and Evolution 2017 (SMBE 2017) — Austin, TX USA

Service and Outreach

Diversity, Equity, and Inclusion (DEI)

- 2023** Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Research Abstract Reviewer
- 2022** Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Research Abstract Reviewer
- 2021** University of Minnesota Nature of Life (BIOL 1806) Gopher Equity Class Facilitation
- 2019** Cornell University NextGen Professor Program Cohort
- 2019** Cornell University Future Professors Institute: Advancing Diversity in the Academy
- 2019** Cornell University Intergroup Dialogue Project

Leadership Service

- 2022 — 2023** University of Minnesota Advisory Group for Faculty Behavior in Graduate Education
- 2021 — 2022** University of Minnesota Postdoctoral Association Steering Committee Policy and Advocacy Officer
- 2018 — 2020** Cornell University Graduate and Professional Student-Elected Trustee
- 2019 — 2020** Cornell University Internal Mental Health Review Committee, Grad Rep
- 2018 — 2019** Institute for Healthcare Improvement (IHI) 'Pursuing the Triple Am: A Learning and Action Collaborative' Cornell University Delegate
- 2018 — 2019** Cornell University's Coalition on Mental Health, Grad Rep
- 2018** Ivy+ Graduate and Professional Student Summit Organizing Committee, Co-Chair
- 2017 — 2018** Cornell University's Graduate and Professional Student Assembly, Executive Vice-President
- 2016 — 2017** Cornell University's Graduate and Professional Student Assembly, Vice-President for Communications
- 2016 — 2018** Cornell University's Computational Biology Graduate Student Association, President and Founder

Outreach

2023 North Community High School AVID (Advancement Via Individual Determination) Guest Speaker
2023 St. Paul High School AVID (Advancement Via Individual Determination) Guest Speaker
2021 University of Minnesota Nature of Life (BIOL 1806) Focus Scientist
2019 Cornell University Expanding Your Horizons Demo Lead: Flying Into the Gene Pool
2018 Cornell University Graduate Student Advocacy Day, Washington D.C., USA
2018 American Association for the Advancement of Science (AAAS) Catalyzing Advocacy in Science and Engineering (CASE) Workshop, Cornell University Delegate

Professional Memberships

2023 — Maize Genetics Cooperation, Inc (MGC), Member
2022 — Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS), Member
2020 — Edward A. Bouchet Graduate Honor Society, Member
2018 — Genetics Society of America (GSA), Member
2017 — Society for Molecular Biology and Evolution (SMBE), Member

Reference Contacts

Contact 1: Dr. Andrew G. Clark

Email: ac347@cornell.edu
Phone Number: 607-255-0527
Address: 227 Biotechnology Building
215 Tower Rd
Ithaca, NY 14853

Contact 2: Dr. Yaniv Brandvain

Email: ybrandva@umn.edu
Phone Number: 612-624-4375
Address: 446 Biological Sciences
1445 Gortner Avenue

St. Paul, MN 55108

Contact 3: Dr. Nathan Springer

Email: springer@umn.edu

Phone Number: 612-624-6241

Address: 418 Biological Sciences
1445 Gortner Avenue
St. Paul, MN 55108