

Nicholas A. Johnson

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Education

Michigan State University , Ph.D., <i>dual major</i> , Genetics and Genome Sciences; Ecology, Evolution, and Behavior	Aug 2021 – Current
University of Minnesota, Twin-Cities , B.S., Plant Science (Breeding and Genetics)	Aug 2018 – May 2020
Normandale Community College , A.A., Liberal Arts	Aug 2012 – Dec 2017

Research Experience

Biological Science Technician (GS-7) , United States Department of Agriculture (U.S.D.A.) – Logan, UT	July 2024 – Current
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Principal Investigator: Dr. Matthew D. Robins

- Assembling and annotating the genome of *Penstemon fruticosus*, a model genus for floral morphology evolution
- Re-sequencing five additional *Penstemon* species
- Investigating evolutionary relationships of floral morphology among *Penstemon* spp. with comparative genomics

Graduate Research Assistant , Michigan State University – East Lansing, MI	Aug 2021 – Current
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Principal Investigator: Dr. Eric L. Patterson

- Investigating genomic patterns associated with adaptation in weedy plants through comparative genomics
- Developing assorted genomic and evolutionary analysis tools to reduce barriers of analysis for non-computational biologists
- Revealed genomic structural variation associated with herbicide resistance evolution in the agronomic weed *Eleusine indica* using comparative genomics approaches
- Automated a computational gene annotation pipeline with BASH wrapper scripts

Undergraduate Researcher , University of Minnesota – St. Paul, MN	Dec 2018 – May 2020
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Principal Investigator: Dr. Alan G. Smith

- Independently researched abiotic stress and intraspecific competition of *Nicotiana tabacum* (tobacco) pollen
- Developed a Nanodrop Spectrophotometer method for quantifying pollen in a liquid solution
- Propagated, crossed, tissue cultured, regenerated, and transformed tobacco plants
- Collected and tissue cultured invasive plant samples and discussed management techniques with landowners
- Communicated results through an undergraduate thesis and symposia presentations

Teaching and Mentoring Experience

Graduate Teaching Assistant , Michigan State University – East Lansing, MI	Jan 2024 – May 2024
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IBIO 341 Fundamental Genetics – Instructor: Dr. Jeanette McGuire

- Guided students through course content with two recitation sections and open office hours weekly
- Graded assignments, quizzes, and exams
- Contributed to course refinement through weekly meetings with the instructor and teaching assistants

Mentor , Michigan State University – East Lansing, MI	May 2023 – July 2023
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Research Experience for Undergraduates in Plant Genomics

- Guided a visiting student exploring subgenome evolution in a genus of agronomic weeds and crops
- Helped students develop programming, computational analysis, and presentation skills

Lead Trainer , International Weed Genomics Consortium Meeting, Washington, D.C.	Jan 30 2023
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Introductory Bioinformatics Workshop

- Led a conference workshop for primarily non-computational or early career scientists

- Guided participants through a full RNA-Seq pipeline using public data
- Helped organize event and develop workshop scripts

Trainer, Michigan State University – East Lansing, MI

Oct 15 2022

Ecotek Lab Youth Scientists Visit

- Taught visiting junior scientists about genetics
- Helped junior scientists run P.C.R. and subsequent gel electrophoresis

Mentor, Michigan State University – East Lansing, MI

June 2022 – Present

Graduate Recruitment Initiative Team

- Guiding first-year Ph.D. students (assigned one student annually) through professional and general graduate student life decisions to help them acclimate
- Attending group-sponsored meetings to recruit and retain graduate students

Mentor, Michigan State University – East Lansing, MI

May 2022 – July 2022

Research Experience for Undergraduates in Plant Genomics

- Guided a visiting student through comparative genomics of agronomic weeds and crops to find genomic patterns associated with domestication
- Helped students develop programming, computational analysis, and presentation skills

Graduate Teaching Assistant, Michigan State University – East Lansing, MI

May 2022 – July 2022

CSS 126 Introduction to Weed Management – Instructor: Dr. Erin Hill

- Graded and provided feedback on a semester-long project on agronomic weed identification, biology, and management throughout the course

Select Fellowships and Awards

Agricultural Genome to Phenome Initiative Travel Award, United States

July 2024

Department of Agriculture and Iowa State University

NSF Research Trainee Travel Award, National Science Foundation and Michigan

July 2024

State University

NSF Integrated Training Model in Computational Plant Sciences Fellowship,

Aug 2022 – Aug 2023

National Science Foundation and Michigan State University

Plant Biotechnology for Health and Sustainability Fellowship, National Institutes of Health and Michigan State University

May 2022 – May 2025

Collegiate Scholars Award, American Society of Horticultural Science

May 2020

Undergraduate Research Opportunity Program, University of Minnesota, Twin-Cities

Jan 2019 – May 2019

Edward Hartwig Undergraduate Scholarship, University of Minnesota, Twin-Cities

Aug 2018 – May 2020

Dr. Laddie Elling Outstanding Achievement Scholarship, University of Minnesota, Twin-Cities

Aug 2018 – May 2020

Conference Presentations

Chromosome-level assembly of the allohexaploid *Chenopodium album* L. genome reveals selection pressures on genes associated with adaptation

June 2024

Johnson, N. A., Cutti, L., Abdollahi, F., Fengler, K., Nelson, D. R., Llaca, V., MacGregor, D. R., Maughan, P. J., Gaines, T. A., & Patterson, E. L.

Plant Biology 2024: Poster presentation

Subtelomeric *EPSPS* duplications confer glyphosate resistance in *Eleusine indica*

Jan 2024

Johnson, N. A., Hall, N., Zhang, C., Yu, Q., & Patterson, E. L.

<i>Weed Science Society of America Annual Meeting</i> : Single-slide oral presentation	
Subtelomeric 5-enolpyruvylshikimate-3-phosphate synthase copy number variation confers glyphosate resistance in <i>Eleusine indica</i>	Dec 2023
Johnson, N. A., Hall, N., Zhang, C., Yu, Q., & Patterson, E. L.	
<i>North Central Weed Science Society Annual Meeting</i> : Poster presentation	
Weeds, genomics, and evolution	Jan 2023
Johnson, N. A.	
<i>Weed Science Society of America Annual Meeting</i> : Three-minute thesis oral presentation	
FHY3/FAR1 transposable elements generate adaptive genetic variation in the <i>Bassia scoparia</i> genome	Jan 2023
Johnson, N. A.	
<i>Plant and Animal Genome Conference 30</i> : Oral presentation	
Subtelomeric 5-enolpyruvylshikimate-3-phosphate synthase copy number variation confers glyphosate resistance in <i>Eleusine indica</i>	Jan 2023
Johnson, N. A., Hall, N., Zhang, C., Yu, Q., & Patterson, E. L.	
<i>Plant and Animal Genome Conference 30</i> : Poster presentation	
Subtelomeric rearrangements cause glyphosate resistance in <i>Eleusine indica</i>	Dec 2022
Johnson, N. A., Hall, N., Zhang, C., Yu, Q., & Patterson, E. L.	
<i>North Central Weed Science Society Annual Meeting</i> : Oral presentation	

Certificates

Computational Plant Science Graduate Certificate, Michigan State University	May 2024
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Additional Volunteer Positions

Peer Reviewer, Plant Communications – One article	July 2024 – Present
Genetics and Genome Sciences Program Representative, Michigan State University	May 2024 – Present
Peer Reviewer, Plant Physiology – One article	Sept 2023 – Present

Publications

Expression-based machine learning models for predicting plant tissue identity Palande, S., <i>et al.</i> <i>bioRxiv</i> : 10.1101/2023.08.20.554029	Jan 2024
Subtelomeric 5-enolpyruvylshikimate-3-phosphate synthase copy number variation confers glyphosate resistance in <i>Eleusine indica</i> Zhang, C. & Johnson, N. A., Hall, N., Tian, X., Yu, Q., & Patterson, E. L. <i>Nature Communications</i> : 10.1038/s41467-023-40407-6	Aug 2023
Undergraduate Thesis: Intraspecific salt tolerance variation in <i>Nicotiana tabacum</i> pollen germination and pollen tube growth Johnson, N. A., Smith, K. P., & Smith, A. G. <i>UMN Digital Conservancy</i> : https://hdl.handle.net/11299/206480 (not peer-reviewed)	Aug 2019

Additional Employment History

Technical Sales Representative, TubeWriter – Fremont, CA	Dec 2020 – Aug 2021
In-House Sales Representative, Gardenworld, Inc. – Cottage Grove, MN	Aug 2020 – Dec 2020

Server , Simon & Seafort's – Anchorage, AK	May 2018 – Aug 2018
Server , Al Vento – Minneapolis, MN	Apr 2016 – May 2018
Wait Assistant/Food Runner , Al Vento – Minneapolis, MN	Apr 2015 – Apr 2016
Valet , Meritage – St. Paul, MN	Feb 2014 – Apr 2015
Valet/Bellman , Hotel Zetta – San Francisco, CA	May 2013 – Feb 2014
Valet , The W, Foshay Tower – Minneapolis, MN	Jan 2012 – May 2013
Package Handler , United Parcel Service – M.S.P. International Airport, MN	Nov 2011 – Feb 2013