

Dr. Miranda J. Haus

Michigan State University

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[Google Scholar](#)

EDUCATION

- 2015 **Ph.D. Degree**, University of Illinois- Champaign Urbana, Plant Biology, Dissertation Title: “Investigating the influence of CO₂ on leaf epidermal development in *Arabidopsis thaliana*.”
- 2007 **B.S. Degree**, University of Illinois- Champaign Urbana, with Distinction, Molecular and Cellular Biology, Thesis title: “Natural variation of stomatal development regulation by carbon dioxide.”

RESEARCH AND PROFESSIONAL EXPERIENCE

- 2019-present USDA Postdoctoral Fellow, “Effect of Root and Shoot Architecture on Seed Nutrition in Dry Bean,” Michigan State University, Department of Plant Biology
Advisors: C. Robin Buell and Karen Cichy
- 2018-2019 Visiting Research Associate, “*Phaseolus vulgaris* root development across diversity panels,” Michigan State University, Department of Plant Biology and Department of Plant and Soil Sciences
Advisors: C. Robin Buell and Karen Cichy
- 2016-2018 Visiting Research Associate, “Role of climate change and pathogen infection on plant root development,” Michigan State University, Department of Plant Soil and Microbial Sciences
Advisor: Brad Day
- 2016 Research Assistant, “Effect of drought stress on growth and seed nutrient content in maize.” Donald Danforth Plant Science Center
Advisor: Todd Mockler
- 2008-2015 Graduate Research Assistant, Dissertation Title: “Investigating the influence of CO₂ on leaf epidermal development in *Arabidopsis thaliana*.” University of Illinois, Urbana-Champaign
Advisor: Tom Jacobs
- 2005-2007 Undergraduate Research Assistant, “Natural variation of stomatal development regulation by carbon dioxide.” University of Illinois, Urbana-Champaign
Advisor: Tom Jacobs

M. J. Haus, PhD

2003-2005 Undergraduate Research Assistant, “Long-term environmental resource monitoring of the Illinois and Mississippi Rivers.” Illinois Natural History Survey
Advisor: John Chick

AWARDS AND HONORS

2018 Postdoctoral Teaching Scholar, “Pathways to Scientific Teaching,” Michigan State University College of Natural Science, Department of Plant Biology

2017 International Botanical Congress Excellent Scholar Award

2015 Campus Award for Excellence in Undergraduate Teaching Assistants (University of Illinois)

2015 College of Liberal Arts and Sciences Excellence in Undergraduate Teaching for Graduate Teaching Assistant Award (University of Illinois)

2012 Department of Plant Biology Teaching Award (University of Illinois)

2010 Center for Teaching Excellence: Graduate Teacher Certificate, voluntary extracurricular teaching module that promotes development of teaching skills through workshops and one-on-one mentoring (University of Illinois)

2009-2013 Center for Teaching Excellence: “Teachers Ranked as Excellent” (University of Illinois, received greater than 4.5/5 from student evaluations)

PUBLICATIONS

1. Haus, M. J., Wang, W., Kim, M., Jacobs, J., Chilvers, Cichy, K., and Day, B. Exploring Common Bean Seedling Response to *Fusarium brasiliense* in an Andean x Mesoamerican population. *In preparation: target submission: Plant, Cell, & Environment. April 2020.*
2. Haus, M. J., Wiersma, A. T., Jacobs, J. L., Chilvers, M. I., Buell, C. R., and Cichy, K. Wild *Phaseolus vulgaris* germplasm screen to *Fusarium cuneirostrum* and *Fusarium oxysporum*. *In revision: Crop Science. 2020.*
3. **Haus, M. J.**, Wang, W., Jacobs, J. L., Peplinski, H., Chilvers, M. I., Buell, C. R., and Cichy, K. (2020) Root Crown Response to Fungal Root Rot in *Phaseolus vulgaris* Middle American x Andean lines. *Plant Disease*. **104**(12), 3135-3142.
4. **Haus, M. J.**, Li, M., Chitwood, D., and Jacobs, T. W. (2018) Long-distance and trans-generational regulation of stomatal patterning by CO₂ across *Arabidopsis* tissues. *Frontiers Plant Science*. **9**(1714).
5. Wang, W., **Haus, M. J.**, Day, B., Jacobs, J. L., Chilvers, M. I., Mukankusi, C. M., Kelly, J. D., and Cichy, K. A. (2017) Analysis of *Fusarium* root rot resistance in an Andean x Middle American common bean RIL population. Bean Improvement Cooperative Annual Report **60**.

6. **Haus, M. J.**, Kelsch, R., and Jacobs, T. W. (2015) Application of Optical Topometry to Analysis of the Plant Epidermis. *Plant Physiology*. **169**(2), 946-959.
7. Heath, K. D., Bagley, E., Birlenbach, D. M., Crawford, J. W... **Haus, M. J.**, *et al.*, (2014). Amplify the Signal: Graduate training in broader impacts. *BioScience*. **64**(6), 517-523.
8. Nabity, P. D., **Haus, M. J.**, Bernebaum, M., and Delucia, E. H. (2013). Leaf-galling phylloxera on grapes reprogram host metabolism and morphology. *PNAS*. **110**(41), 16663-16668.
9. Ming, R., VanBuren R., Liu Y., Yang M... **Haus, M. J.**, *et al.* (2013). The genome of the long-living sacred lotus (*Nelumbo nucifera* Gaertn.). *Genome Biology*. **14**:R41.

TEACHING EXPERIENCE

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| 2019 | Plant Physiology: Growth, Development, and the Environment, senior level, majors course; 30 student enrollment; Volunteered a developmental module including five lectures on principles of plant development. (Michigan State University) |
| 2018 | Plant Physiology: Growth, Development, and the Environment, senior level, majors course; 30 student enrollment; Volunteered three guest lectures on principles of plant development. (Michigan State University) |
| 2008,
2010-2011,
2014-2015 | Introduction to Biology, freshman level, non-majors course; 40-120 student enrollment; Taught as a discussion Teaching Assistant in three classroom formats: face-to-face, blended (alternated online and face-to-face), and online classroom. (University of Illinois, Urbana-Champaign) |
| 2009,
2011-2014 | Introduction to Plant Biology, sophomore level, related majors course; 60-100 student enrollment; Taught as a lab Teaching Assistant, course coordinator, and lecturer, designed seven new lab lessons, wrote course lab notebook, led semester long James' Scholar Honor's Projects for seven undergraduate students in a research setting. (University of Illinois, Urbana-Champaign) |
| 2013-2014 | Introduction to Genetics, sophomore level, majors course; 20 student enrollment; Taught as Laboratory Teaching Assistant, designed laboratory curriculum. (University of Illinois, Urbana-Champaign) |
| 2013 | Introduction to Genetics: Merit, sophomore level, majors course for students from underprivileged backgrounds, 20 student enrollment; Taught as discussion Teaching Assistant and designed discussion activities. (University of Illinois, Urbana-Champaign) |
| 2012-2014 | Undergraduate Research and Distinction Series, sophomore to senior level, research course, 12 student enrollment, 5 graduated with distinction in their |

- respective majors; Taught as research lab supervisor. (University of Illinois, Urbana-Champaign)
- 2011 TA Training Module, graduate level, online training program for TAs, 30 student enrollment; Designed and led online course for graduate students. (University of Illinois, Urbana-Champaign)
- 2010 Introduction to Research, freshman level, majors course for successful AP Exam students, 4 student enrollment; Taught as research lab supervisor. (University of Illinois, Urbana-Champaign)
- 2009 Evolution of Molecules (sophomore level, honors majors course), 20 student enrollment; Taught as Laboratory Teaching Assistant, Compiled course lab notebook. (University of Illinois, Urbana-Champaign)

FUNDING

- 2019 NPGS Horticultural Germplasm Evaluation Grant, \$25,264
- 2019 USDA-NIFA Post-Doctoral Fellowship, \$156,910
- 2013 University of Illinois Department of Plant Biology Laughnan Travel Award, \$580
- 2012 University of Illinois Integrative Biology Clark Research Award, \$1,000
- 2012 University of Illinois Department of Plant Biology Graduate Student Enhancement Fund, \$500
- 2011 American Society of Plant Biologists Education Foundation Grant (co-authored) \$20,000
- 2011 University of Illinois Office of Public Engagement Grant (co-authored) \$20,000
- 2010 University of Illinois Integrative Biology Lebus Award Summer 2010 \$1,000
- 2009, 2012 Plant Biology Departmental Summer Support Summer, \$3,000

OUTREACH

- 2020 Beet & Bean Symposium, Saginaw County, Michigan. Presented a poster to growers and stakeholders outlining our strategy for improving root rot resistance in dry beans.
- 2019 Fascination of Plants Day, East Lansing, Lead a booth titled “Where the Wild Things Are, Were, and Will Be...” which communicated the role of breeders in everyday life, highlighted changes in common crops, and encouraged people to think creatively about future crop needs in changing climates.

- 2018-2019 R-Ladies East Lansing Chapter, Group dedicated to promoting women in R-coding leadership roles, Volunteer and Event Leader. Presented talks on using R for univariate statistics, principal component analyses, and quantitative trait loci mapping. (Michigan State University, Fall and Spring Semesters)
- 2017 The Pub Club Coordinator, HHMI funded organization that promoted “soft” skill development in the science. Developed and lead weekly career training modules for graduate students and postdocs. Updated and maintained website with relevant content. (Michigan State University, Spring semester)
- 2016 MSU’s The Pub Club Blogspot, Authored two articles: “PI Perspective: TPC’s Critical Evaluation of CVs” and “[Pursuing Alternative Careers in Plant Biology / The 2016 PBHS Symposium.](#)” (Michigan State University, Fall semester)
- 2016 Weekly Volunteer at Missouri Botanical Garden, Cataloged and measured morphology phenotypes for newly acquired specimen in the seed collection bank. (Six months)
- 2016 Donald Danforth Plant Science Center’s Public Open House Volunteer; Talked with general public and private donors about current research and impact, personally featured in [KMOX CBS News](#) and Illinois AgriNews printed paper.
- 2015 Donald Danforth Plant Science Center’s Maker Night Volunteer, Encouraged children and parents to “make their own” tools by demonstrating uses of raspberry pi computers in the home.
- 2013 Illinois Junior Academy of Science, State Science Fair Judge. Discussed and assessed the use of the scientific method with middle-school student finalists.
- 2013-2014 Plant Biology Association of Graduate Students Advisory Committee Chair, Participated in hiring committees for research faculty. (University of Illinois, Urbana-Champaign)
- 2012 “[Science Politely: Plants Don’t Breathe Easy.](#)” Authored a news article and radio spot for the general public featured on SmilePolitely.com, a cultural online magazine.
- 2012 Biodiversity Day at the Orpheum Children’s Museum Volunteer. Designed and lead a video green-screen activity in which children learned the efficacy of camouflage in variable environments. (University of Illinois, Urbana-Champaign)
- 2012 Frank Hall Middle School Science Night Volunteer. Designed and lead multiple activities for grade school students. (University of Illinois, Urbana-Champaign)
- 2011-2014 [Plants iView](#), After school program for middle school students; Co-authored awarded grant; Designed and lead 5 of 10 lesson plans; Coordinated outreach

activities for all graduate students in the department; Volunteered as a lesson participant. (University of Illinois, Urbana-Champaign)

2010-2012 Plant Biology Association of Graduate Students Instructional Chair, Coordinated with faculty to determine graduate student curriculum; Lead outreach activities; Participated in hiring committees for teaching faculty. (University of Illinois, Urbana-Champaign)

PRESENTATIONS

1. **Haus, M.J.**, Wang, W., and Cichy, K., Exploring Common Bean Root Response to *Fusarium brasiliense* in a Middle American x Andean population. Oral presentation at: Bean Improvement Cooperative Meeting. November, 2019.
2. **Haus, M. J.**, Wang, W., Cichy, K., and C. R. Buell. Using Root Architecture as a Means for Resilience in *Phaseolus vulgaris*, Poster presented at: Plant Resilience Institute Scientific Advisory Board Meeting, May, 2019; Emerging Opportunities for Pulse Production, June 2019.
3. Wang, W., **Haus, M. J.**, and Cichy, K. Exploring Root Architecture Traits in Response to *Fusarium* Root Rot (FRR) and Breeding for FRR Resistance in Common Bean, Poster presented at: Plant Resilience Institute Scientific Advisory Board Meeting, May, 2019, Emerging Opportunities for Pulse Production, June 2019.
4. Wang, W., **Haus, M. J.**, Day, B., Jacobs, J. L., Chilvers, M. I., Mukankusi, C. M., Kelly, J. D., and Cichy, K. A. Analysis of *Fusarium* root rot resistance in an Andean x Middle American common bean RIL population. Poster presented at: Bean Improvement Cooperative Meeting. October 2017.
5. **Haus, M. J.** and T. Jacobs. "Regulation of stomatal patterning by CO₂ across Arabidopsis tissues occurs during spacing divisions." **Oral presentation at:** International Botanical Congress, Shenzhen, China. July 2017.
6. **Haus, M. J.** and T. Jacobs. "Application of Optical Topometry to the Plant Epidermis." **Oral presentation at:** International Botanical Congress, Shenzhen, China. July 2017.
7. Farmer, A. J. and **Haus, M. J.** "Understanding the Genetic Regulation of Tricotyledonous Seedlings" Poster present at: The Annual Biomedical Research Conference for Minority Students. Summer 2017.
8. **Haus, M. J.**, R. Kelsch, and T. Jacobs. "High-throughput analysis of the plant epidermis." **Oral presentation at:** GEEB Symposium, University of Illinois, Champaign-Urbana, IL. January 2014.

9. **Haus, M. J. R.** Peery, J. Ossler, B. Hug, and A. Leakey. “Plants iView: Bringing Research to the Middle School Classroom.” **Oral presentation at:** ASPB Plant Biology 2013, Providence, RI. July 2013.
10. **Haus, M. J.**, R. Kelsch, and T. Jacobs. “High-throughput analysis of the plant epidermis.” Poster presented at: PhenoDays: Imaging and Robotics, Donald Danforth Center, St. Louis, MO. September 2013 and University of Illinois Department of Plant Biology Fall Welcome & Graduate Research Symposium. Oct. 2013. Urbana, IL.
11. **Haus, M. J. R.** Peery, J. Ossler, B. Hug, and A. Leakey. “Plants iView: Bringing Research to the Middle School Classroom.” Poster presented at: ASPB Plant Biology 2013, Providence, RI. July 2013.
12. Shaw, A., T. Jacobs, and **M. J. Haus.** “Directionality of carbon dioxide sensing mobile signal in *Pisum sativum*.” Poster presented at: ASPB Plant Biology 2013, Providence, RI. July 2013.
13. **Haus, M. J.**, and T. Jacobs. “Closing the gaps between genomes and phenomes: High-throughput analysis of the plant epidermis.” Poster presented at: New Phytologist 2012: Stomata, Manchester, UK and ASPB Plant Biology 2012, Austin, TX. July 2012.
14. Peery, R., **M. J. Haus**, C. Markelz, R. Kelly, S. Gray, C. Leisner, J. Han, B. Slattery, B. Hug and A. Leakey. “Plants iView: an outreach program in plant biology for middle school students.” Poster presented at: ASPB Plant Biology 2012, Austin, TX. July 2012.
15. Naby, P., **Haus, M. J.**, M. R. Berenbaum, and E. H. DeLucia. “Insect-induced stomata attenuate sink strength and enhance parasite fitness.” Poster presented at: New Phytologist 2012: Stomata, Manchester, UK.

PERSONNEL MENTORED

2019- Present	Logan Pierz	Undergraduate Research Assistant (working on wild bean screens for pathogen resistance and root architecture).
2018-2019	Hannah Peplinski	Undergraduate Research Assistant, (project titles: “Where the Wild Things Are, Were, and Will Be”; “Assessing phenotypic traits of diverse wild Andean and Middle American <i>Phaseolus vulgaris</i> L. roots”), currently Environment and Food Security Educator for the United States Peace Corps.
2017-2018	Minjee Kim	Undergraduate Research Assistant, <i>co-author of manuscript in preparation</i> , (project title: “Exploring a Relationship between Root Architecture and Seed Nutrition.”), currently graduate student University of Buffalo- PharmD program.

2017	Ashleigh Farmer	NSF-REU Summer Fellow, <i>Best Poster Award Recipient in category at ABRCMS</i> , (project title: “Understanding the Genetic Regulation of Tricotyledonous Seedlings”)
2011-2014	Elle Meisner	Independent Undergraduate Researcher (project title: “Understanding the role of SCRM in stomatal development under cold stress”)
2011-2014	Elisabeth Sledz	Independent Undergraduate Researcher (thesis completed: “Response of <i>Arabidopsis thaliana</i> to Elevated and Ambient Carbon Dioxide Through Epicuticular Wax and Stomate Synthesis”), <i>Robert J. Graesser Award for Undergraduate Research in Plant Biology Recipient</i>
2014	Jaylynn Maxey	James Scholar Honor’s Semester Research Project (project completed: “QTL Mapping of Cotyledon Development in <i>Arabidopsis</i> ”)
2011-2013	Ryan Kelsch	Independent Undergraduate Researcher (thesis completed: “Exploration of Optical Topometry to Study the Epidermal Surface of <i>Arabidopsis thaliana</i> ”), <i>co-authored paper</i>
2011-2013	Katie Kwedar	Independent Undergraduate Researcher (thesis completed: Stomatal development across <i>Arabidopsis thaliana</i> accessions from different locations: a phenotypic and phylogenetic analysis”)
2011-2013	Alex Shaw	<i>ASPB-SURF Fellow</i> , Independent Undergraduate Researcher (thesis completed: “Directionality of carbon dioxide sensing mobile signal in <i>Pisum sativum</i> ”)
2012	Noreen Madden	James Scholar Honor’s Semester Research Project (“Comparison of traditional and modern taxonomy in Orchids”)
2012	Carly Norris	James Scholar Honor’s Semester Research Project (“Using stomatal index in <i>Welwitschia</i> to monitor climate change”)
2010	Katie DeMuro	James Scholar Honor’s Semester Research Project (“ <i>Arabidopsis thaliana</i> leaf development”)
2009	Xanat Sobrevilla	Independent Undergraduate Researcher (thesis completed: “ <i>In Ovulo</i> Adaptation of <i>Arabidopsis thaliana</i> to changes in CO ₂ Concentration”)
2008	Phoebe Mbuvi	Independent Undergraduate Researcher (thesis completed: “Stomatal Density in Cotyledons and First True Leaves Grown in Elevated [CO ₂]”)

M. J. Haus, PhD

AD HOC MANUSCRIPT AND GRANT REVIEWS

1. Journal of Experimental Botany
2. Physiological and Molecular Plant Pathology
3. NSF Plant Genome Research
4. Plant Disease
5. PLOS One

MEMBERSHIPS

American Society of Plant Biologists
Bean Improvement Cooperative
R-Ladies East Lansing Chapter