

Maren L. Friesen

Assistant Professor

Department of Plant Biology, Michigan State University

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Appointments

Jan 2013—present

Assistant Professor, Department of Plant Biology, Michigan State University

Genetics Graduate Program

Ecology Evolutionary Biology and Behavior Graduate Program

Sept 2008—Dec 2012

Post-Doctoral Research Associate

Section of Molecular and Computational Biology

University of Southern California

Degrees

September 2008

PhD Population Biology

University of California, Davis

May 2003

BSc Combined Honors Mathematics and Biology

(Ecology and Environmental Biology)

University of British Columbia

Publications

Friesen lab members are in bold

SUBMITTED / IN REVISION

30. Vu, W., Moriuchi, K.S., von Wettberg, E.J., **Friesen, M.L.**, Strauss, S.Y., Nuzhdin, S.V. Divergent Selection Shapes Microgeographic Divergence and the Maintenance of Specialist and Generalist in a Marginal Population of *M. truncatula*. *In submission at Nature Ecology & Evolution*
29. Clark, T.J., **Friel, C.A.**, Grman, E., Shachar-Hill, Y., **Friesen, M.L.** Modeling mutualisms: challenges and opportunities for data integration. *In submission at Ecology Letters*.
28. **Jack, C.J.**, **Friesen, M.L.**, Sheneman, L., Hintze, A. Third-party mutualists have contrasting effects on host invasion under the enemy-release and biotic-resistance hypotheses. *In submission at Evolutionary Ecology*
27. **Norman, J.S.**, King, G., **Friesen, M.L.** Rubrobacter spartanus HPK2-2T sp. nov., a moderately-thermophilic oligotrophic bacterium isolated from volcanic soil. *In submission at International Journal of Systematic and Evolutionary Microbiology*
26. **Jack, C.J.**, **Friesen M.L.** Familiarity breeds contempt: Rapid evolution of *Medicago polymorpha* during invasion shifts Soybean looper herbivore preference. *In submission at Journal of Evolutionary Biology*
25. Fu S., Chang P.L., **Friesen M.L.**, Teakle N.L., Tarone A.M., Sze S.H. Identifying similar transcripts in a related organism from de Bruijn graphs of RNA-Seq data, with applications to the study of salt and waterlogging tolerance in *Melilotus*. *In submission at Nucleic Acids Research after revision*
24. Andrew Siefert, Kenneth W. Zillig, **Maren L. Friesen**, and Sharon Y. Strauss. The roles of soil microbes, plant-plant interactions and soil feedbacks in local coexistence by congeneric legumes. *In revision for New Phytologist*

PUBLISHED & IN PRESS

23. **Bowsher, A.**, Siefert, A., **Shetty, P.**, Anacker, B.A., Strauss, S.Y., **Friesen, M.L.** Transcriptomic responses to conspecific and congeneric competition in co-occurring *Trifolium*. *In press at J. of Ecology*

22. **Norman, J.S., Hare, J.R., Friesen, M.L.** Comment: Isolation and screening of bacteria for their diazotrophic potential and their influence on growth promotion of Maize seedlings in greenhouses. *In press at Frontiers in Plant Science*
21. Busby, P.E, Soman, C., Wagner, M.R., **Friesen, M.L.**, Kremer, J., Bennett, A., Morsy, M, Eisen, J.A., Leach, J.E., Dangl, J.L. Research priorities for harnessing plant microbiomes in sustainable agriculture. *In press at PLoS Biology*
20. Barker, Jessica; Bronstein, Judy; **Friesen, Maren L.**; Jones, Emily; Reeve, Hudson; Zink, Andrew; Frederickson, Megan. Synthesizing perspectives on the evolution of cooperation within and between species. *In press at Evolution*
19. **Norman, J.S., Friesen, M.L.** (2017) Recalcitrant N acquisition by soil diazotrophs: How the ability to release exoenzymes affects N fixation by terrestrial free-living diazotrophs **ISME** doi: 10.1038/ismej.2016.127 [online 2016]
18. Porter, S.S., Chang, P.L., Conow, C.A., Dunham, J.P., **Friesen, M.L.** (2017) Biogeographic patterns and adaptive variation in the pangenome of symbiotic *Mesorhizobia* adapted to serpentine soils **ISME** 11(1), 248-262. doi: doi:10.1038/ismej.2016.88 [online 2016]
17. Moriuchi, K., **Friesen M.L.**, Cordeiro, M.A., Badri, M., Vu, W., Main, B., Aouani, M.E., Nuzhdin, S.V., Strauss, S.Y., von Wettberg, E.J. (2016) Salinity adaptation and the contribution of parental environmental effects in *Medicago truncatula*. *PLOS ONE* 4;11(3):e0150350. doi: 10.1371/journal.pone.0150350
16. MacKellar, D., Lieber, L., **Norman, J.S.**, Bolger, A., Tobin, C., Murray, J.W., Oksaksin, M., Chang, R., Ford, T., Nguyen, P., **Woodward, J.E.**, Permingeat, H., Joshi, N., Silver, P., Usadel, B., Rutherford, A.W., **Friesen, M.L.**, Prell, J. (2016) *Streptomyces thermoautotrophicus* does not fix nitrogen. *Scientific Reports* Feb 1;6:20086. doi: 10.1038/srep20086

News: <http://phys.org/news/2016-02-scientists-unicorns.html>
<http://www.technology.org/2016/02/04/why-do-scientists-chase-unicorns/>
<http://www.futurity.org/myth-bacteria-unicorn-1100122-2/>
<http://msutoday.msu.edu/news/2016/why-do-scientists-chase-unicorns/>

Radio: <http://michiganradio.org/post/stateside-monday-march-7-2016>

15. A.P. Alivisatos, M.J. Blaser, E.L. Brodie, M. Chun, J.L. Dangl, T.J. Donohue, J.A. Eisen, J.A. Gilbert, J.L. Green, J.K. Jansson, R. Knight, M.E. Maxon, M.J. McFall-Ngai, J.F. Miller, K.S. Pollard, E.G. Ruby, S.A. Taha, Unified Microbiome Initiative Consortium [**M.L. Friesen** Consortium author] (2015) Harnessing the Earth's Microbiomes: A call for a Unified Microbiome Initiative *Science*, 350(6260): 507-508.
14. Jones, E.I.; **Afkhami, M.E.**; Akcay, E.; Bronstein, J.L.; Bshary, R.; Frederickson, M.E.; Heath, K.D.; Hoeksema, J.; Ness, J.; Pankey, M.S.; Porter, S.S.; Sachs, J.L.; Scharnagl, K.; **Friesen, M.L.** (2015) Cheaters must prosper: Reconciling theoretical and empirical perspectives on cheating in mutualism. *Ecology Letters* 18(11):1270-1284 DOI: 10.1111/ele.12507

News: <http://www.futurity.org/cheating-mutualism-ecology-1010082-2/>
<http://www.medicalnewstoday.com/releases/299841.php>
<http://www.sciencenewsline.com/news/2015092203330028.html>
<http://www.bignewsnetwork.com/news/236936593/study-little-evidence-of-cheating-among-mutualist-species>
<http://www.alphagalileo.org/ViewItem.aspx?ItemId=156509&CultureCode=en>
<http://phys.org/news/2015-09-species.html>
http://www.eurekalert.org/pub_releases/2015-09/ru-sin092115.php

13. Vu, W.T., Chang, P.L., Moriuchi, K.S., **Friesen, M.L.** (2015) Genetic variation in transgenerational plasticity of the seed transcriptome and offspring response to salinity stress in *Medicago truncatula*. *BMC Evolutionary Biology* 15.1 (2015): 59 DOI: 10.1186/s12862-015-0322-4 [Highly Accessed]

12. **Friesen, M.L.***, von Wettberg, E.J.B.*, Badri, M.*, Moriuchi, K.S., Barhoumi, F., Cuellar-Ortiz, S., Chang, P.L., Cordeiro, M.A., Vu, W.T., Arraouadi, S., Djébal, N., Zribi, K., Badri, Y., Porter, S.S., Aouani, M.E., Cook, D.R., Strauss, S.Y., and Nuzhdin, S.V. (2014) The Ecological Genomic Basis of Salinity Adaptation in Tunisian *Medicago truncatula*. *BMC Genomics* 15.1: 1160. DOI:10.1186/1471-2164-15-1160 PMID: 25534372
11. Castro, B., Moriuchi, K.S., **Friesen, M.L.**, Badri, M., Nuzhdin, S.V., Strauss, S.Y., Cook, D.R., von Wettberg, E.J. (2013) Parental environments and interactions with conspecifics alter salinity tolerance of offspring in the annual *Medicago truncatula*. *Journal of Ecology* 101.5: 1281-1287.
10. Dunham, J.P., & **Friesen, M.L.** (2013) A cost-effective method for high-throughput construction of Illumina sequencing libraries. *Cold Spring Harbor Protocols* 2013.9: pdb-prot074187. PMID: 24003196
9. **Friesen, M. L.**, & Heath, K. D. (2013) One hundred years of solitude: integrating single-strain inoculations with community perspectives in the legume–rhizobium symbiosis. *New Phytologist*. 198(1), 7-9. DOI: 10.1111/nph.12173 PMID: 23363490
8. Nuzhdin, S. V., **Friesen, M.L.**, McIntyre, L.L. (2012) Genotype-phenotype mapping in a post GWAS world. *Trends in Genetics* DOI: 10.1016/j.tig.2012.06.003. PMID: 22818580
7. **Friesen, M.L.** (2012) Widespread fitness alignment in the rhizobia-legume symbiosis. *New Phytologist* 194(4): 1096-1111 DOI: 10.1111/j.1469-8137.2012.04099.x PMID: 22404688
6. Jung, S. *, Menda, N. *, Redmond, S., Buels, R.M., **Friesen, M.L.**, Bendana, Y., Sanderson, L., Lapp, H., Lee, T., MacCallum, B., Mueller, L.A., Main, D., Cain, S., Clements, D. (2011) The Chado Natural Diversity module. A new generic schema for large-scale phenotyping and genotyping data. *Database*. DOI: 10.1093/database/bar051 PMID: 22120662
5. **Friesen M.L.**, Sachs J.L., Porter S.S., von Wettberg E.J., Stark S.C., Martinez-Romero E. (2011) Microbially Mediated Plant Functional Traits. *Annual Review of Ecology, Evolution, and Systematics* vol. 42:23-36 DOI: 10.1146/annurev-ecolsys-102710-145039.
4. **Friesen, M.L.**, Cordeiro, M.A., Penmetsa, R.V., Badri, M., Huguet, T., Aouani, M.E., Cook, D.R., Nuzhdin, S.V. (2010) Population genomic analysis of Tunisian *Medicago truncatula* reveals candidates for local adaptation. *The Plant Journal* 63(4): 623-635. DOI:10.1111/j.1365-3113.2010.04267.x PMID: 20545888
3. **Friesen M.L.** and von Wettberg E.J. (2010) Adapting genomics to study the evolution and ecology of agricultural systems. *Current Opinion in Plant Biology* 13(2): 119-125. DOI:10.1016/j.pbi.2009.11.003 PMID: 20022289
2. **Friesen, M.L.** and Mathias, A. (2010) Mixed infections may promote diversification of mutualistic symbionts: why are there ineffective rhizobia? *Journal of Evolutionary Biology* 23(2): 323-334. DOI:10.1111/j.1420-9101.2009.01902.x PMID: 20002933
1. **Friesen, M.L.**, Saxer, G. Travisano, M., Doebeli, M. (2004) Experimental evidence for sympatric ecological diversification due to frequency-dependent competition in *Escherichia coli*. *Evolution* 58(2): 245-260. DOI:10.1111/j.0014-3820.2004.tb01642.x PMID: 15068343

Book Chapters

contributed box to: Baskett, C.A., and D.W. Schemske. (2015) Evolution and Genetics of Mutualism. in Mutualism, *editor J. L. Bronstein*, Oxford University Press.

Friesen, M.L. (2013) Microbially Mediated Plant Functional Traits. in Molecular Microbial Ecology of the Rhizosphere, *editor Frans de Bruijn*. Wiley/Blackwell.

Friesen, M.L.* and Jones, E.I.* (2012) Modelling the Evolution of Mutualistic Symbioses. *contributed chapter to* Bacterial Molecular Networks: Methods and Protocols (editors: Denis Thieffry; Jacques van Helden; Ariane Toussaint). Springer.

Funding

Total external funding to Friesen since starting faculty position: \$3,156,684

Current, all while at MSU

NSF DEB EAGER "Exploring recalcitrant N regulation of free-living nitrogen fixation in terrestrial ecosystems" (PI: M.L. Friesen, coPI J.S. Norman [a postdoc in Friesen's lab])

September 2015 – August 2017

\$168,417 to Friesen

DOE "Connecting Nitrogen Transformations Mediated by the Rhizosphere Microbiome to Perennial Cropping System Productivity in Marginal Lands" (PI: S. Evans, coPIs: M. Friesen, L. Tiemann, J. Cole; all at MSU)

September 2015 – August 2021

\$5.7M to MSU (Friesen 1.1M)

NSF DEB "Collaborative Research: Ecological and Evolutionary Forces Reshaping Mutualism During Species Introductions" (PI: M.L. Friesen)

Collaborative proposal with PI: S.S. Porter UC Riverside; coPI E.J. von Wettberg FIU

August 2014 - July 2018

\$345,226 to Friesen

NSF Dimensions of Biodiversity "Dimensions: Collaborative Research: Symbiont and Transcriptomic Niche Dimensions of Long-term Coexistence in Trifolium Communities" (PI: M.L. Friesen)

Collaborative proposal with PI: S.Y. Strauss UC Davis

Jan 2014 - Dec 2017

\$943,929 to Friesen

NSF IOS NITROGEN: Improving on Nature "Oxygen-Tolerant Nitrogenase" (PI: M.L. Friesen)

Collaborative proposal with UK partners funded separately: A.W. Rutherford, M. Buck Imperial College, London

September 2013-August 2016 (in no-cost extension)

\$599,112 to Friesen

Concluded: Prior to MSU

NSF Plant Genome Research Program "GEPR: Community Genomics of Local Adaptation in *Medicago truncatula*" (PI: Sergey Nuzhdin, coPIs: Doug Cook, Sharon Strauss, Eric von Wettberg) DBI 0820846

September 2008-August 2011

\$3.2M

Listed as senior personnel, collected preliminary data, spearheaded/co-wrote proposal.

NSF Office of International Science and Engineering, "US-Tunisia Planning Visit: The Genomics of Salinity Adaptation in the *Medicago truncatula*-*Sinorhizobium* Symbiosis" (PI: Sergey Nuzhdin, coPI: Sharon Strauss)

Award Number 0751073

January 2009-March 2009

\$19.5K

Listed as senior personnel, spearheaded proposal.

NSF DDIG, "DISSERTATION RESEARCH: The Genomic Basis of Adaptation in Experimentally Evolved Rhizobia"

April 2008-Sept 2008

\$10.5K

Honors & Awards

INFEWS N cycle workshop, November 9-10 2015, NSF headquarters Arlington VA

Washington DC Microbiome Roundtable Participant: White House OSTP & Kavli Foundation

White House Microbiome Roundtable (Dec 18, 2014)

Kavli Futures Symposium (Jan 21, 2015)

Microbiome Innovation: Roadmap to the Future (Sept 25, 2015)

International Conference on Nitrogen Fixation, Best Overall Poster, October 2015

Ideas Lab "Nitrogen: Improving on Nature" (NSF-BBSRC) November 2012

Graduate Student Travel Award, June 2008

Philanthropic Educational Organization Scholar Award, Sept 2007-May 2008

National Science & Engineering Research Council, Canada, Post-Grad Scholarship D, Jun3 2006-May '08

UC Davis GSA Travel Award, August 2005

National Science & Engineering Research Council, Canada, Post-Grad Scholarship A, Sept 2003-June '05

Center for Population Biology (UC Davis) Research Awards, 2003-2005

Teaching

<i>Spring 2017</i>	PLB 809 graduate seminar: "Communicating Science" (co-designed and co-led seminar with post-doc Aaron Garoutte and MSU affiliate Sheril Kirshenbaum)
<i>Spring 2017</i>	PLB 498 (Independent Research) <i>Wyatt Larcinese</i>
<i>Fall 2016</i>	MMG 498 (Independent Research) a) <i>Madison Rabbitt</i> b) <i>Jake Hare</i> c) <i>Melanie Aravelo</i>
<i>Fall 2016</i>	IBIO445 (Evolution; Sole instructor) <i>3 credits, 70 students, Tier 2 writing requirement</i>
<i>Spring 2015</i>	MMG 498 (Independent Research, Madalyn Gildea)
<i>Fall 2014</i>	ZOL 445 (Evolution; Sole instructor) <i>3 credits, 97 students, Tier 2 writing requirement</i>
<i>Spring 2014</i>	PLB 809 graduate seminar "Meta-analysis of beneficial plant-microbe interactions" (designed and led the seminar) <i>1 credit, 6 students</i>
<i>Fall 2013</i>	ZOL 445 (Evolution; Co-instructor w/ Jeanette McGuire) <i>3 credits, 102 students, Tier 2 writing requirement</i>
<i>Summer 2013</i>	PLB 498 (Independent Research, Paul Helling)
<i>Spring 2012</i>	USC BISC 499 (Advanced Evolution, 2 R hands-on sessions and 2 lectures)
<i>Spring 2010</i>	USC BISC 509 (Independent Research)
<i>Winter 2006</i>	UC Davis TA: PBG 298 (Graduate BioStatistics)
<i>Winter 2005</i>	UC Davis TA: EVE 100 (Evolution)
<i>January 2000–April 2003</i>	Undergraduate TA at UBC (Mathematics)

Oral Presentations

* : *Invited presentations*

Presented by M.L. Friesen

- *38. Eastern Michigan University, March 2017, Ypsilanti MI
- *37. Washington State University, February 2017, Pullman WA
- *36. University of Wisconsin, Madison, November 2016, Madison WI
- *35. Medicago Workshop, Noble Foundation, April 2016, Aardmore OK
- *34. Noble Foundation, April 2016, Aardmore OK
- 33. ISME, August 2016, Montreal Canada
- 32. BEACON Center for Evolution in Action Symposium, August 2016, Michigan State University MMI
- *31. Plant and Animal Genome, Ecological Genomics workshop Jan 2016, San Diego CA
- *30. North American Conference on Symbiotic Nitrogen Fixation, December 2015, Ixtapa Mexico
- *29. University of Arizona, November 2015, Tucson AZ
- *28. Rice University, November 2015, Houston TX
- 27. BEACON Center for Evolution in Action Symposium, August 2015, Michigan State University
- 26. Ecological Society of America, August 2015, Baltimore MD
- *25. MSU-HHU iGrad retreat, July 2015, Dusseldorf, Germany
- *24. Chinese Academy of Agricultural Science, Oct 2014
- 23. BEACON Center for Evolution in Action Symposium, August 2014, Michigan State University
- *22. International Society for Behavioral Ecology Symposium: "Cooperation within and between species: what are the similarities and differences?", August 6 2014, New York, NY
- *21. International Congress on Legume Genetics & Genomics, July 7-11 2014, Saskatoon, Canada
- 20. University of California Davis, January 17, 2014, Davis CA
- *19. Gordon Research Conference on Ecological and Evolutionary Genomics, July 2013, U of New England, ME
- *18. MSU-HHU iGrad retreat, May 2013, Dusseldorf, GERMANY
- *17. Plant and Animal Genome, Legume workshop Jan 13, 2013, San Diego CA
- 16. University of California at Santa Barbara October 15th, 2012, Santa Barbara CA

15. Society for the Study of Evolution Meeting, July 2012, Ottawa, Canada
14. New Phytologist Symposium: Functions and Ecology of the Plant Microbiome, May 2012, Rhodes, Greece
- *13. University of North Carolina February 23rd, 2012
- *12. University of Kansas February 14th, 2012
- *11. Michigan State University January 18th, 2012
- *10. The Ohio State University November 21st, 2011
- *9. University of Michigan October 15th, 2011
8. Gordon Research Conference on Plant Molecular Biology, July 2010, Holderness NH USA
7. International Conference on Legume Genomics and Genetics, July 2010, Asilomar CA USA
6. Society for the Study of Evolution Meeting, June 2010, Portland OR USA
5. Society for the Study of Evolution Meeting, June 2008, Minneapolis MN USA
4. Society for the Study of Evolution Meeting, June 2006, Stonybrook NY USA
- *3. European Society for Evolutionary Biology, August 2005, Krakow Poland
2. Intl. Network for Social Network Analysis, February 2005, Redondo CA USA
1. Canadian Mathematical Society Meeting, December 2003, Vancouver CANADA

Presented by Friesen lab members

9. Shawna Rowe, BEACON Center for Evolution in Action Symposium, August 2016, Michigan State University
8. Katherine Wozniak, MI Branch of American Society Microbiology, U. Michigan, Oct 25, 2015 Ann Arbor MI
7. Katherine Wozniak, Gulf Coast Undergraduate Research Symposium, Rice U. Oct 17, 2015 Houston TX
6. Jeffrey Norman, European Nitrogen Cycle Meeting, September 2015 Aberdeen, Scotland
5. Prateek Shetty, BEACON Center for Evolution in Action Symposium, August 2015, Michigan State University
4. Jeffrey Norman, Ecological Society of America, August 2015 Baltimore MD
3. Chandra Jack, BEACON Center for Evolution in Action Symposium, August 2015, Michigan State University
2. Chandra Jack, European Society for Evolutionary Biology, August 2015, Lausanne Switzerland
1. Chandra Jack, Evolution, June 2015, Guarajá Brazil

Poster Presentations

Presented by M.L. Friesen

10. International Conference on Nitrogen Fixation, October 4-9 2015, Asilomar CA USA
9. American Society of Plant Biologists, July 20, 2015 Minneapolis MN USA
8. International Congress on Legume Genetics & Genomics, October 2-8, 2012 Hyderabad INDIA
7. BEACON Center for Evolution in Action Symposium, July 2012, Michigan State University
6. Model Legume Congress, June 2011, St-Maxime, France
5. Plant and Animal Genome, January 2010, San Diego CA USA
4. Model Legume Congress, July 2009, Asilomar CA USA
3. Intl. Conference on Legume Genomics and Genetics, Dec. 2008, Puerto Vallarta, Mexico
2. Gordon Conference in Microbial Population Biology, July 2005, Andover NH USA
1. Society for the Study of Evolution Meeting, July 2003, CSU Chico CA USA

Presented by Friesen lab members

21. Colleen Friel, ISME, August 2016, Montreal Canada
20. Jeffrey Norman, ISME, August 2016, Montreal Canada
19. Shawna Rowe, ISME, August 2016, Montreal Canada
18. Eleanor Siler, ISME, August 2016, Montreal Canada
17. Kamyra Rodgers Mid-SURE, July 2015, Michigan State University
16. Ellen Garcia Mid-SURE, July 2015, Michigan State University
15. Lauren Smythe Mid-SURE, July 2015, Michigan State University
14. Brianna Benjamin-Dalrymple Mid-SURE, July 2015, Michigan State University
13. Colleen Friel, SMBE, July 2016, Australia
12. Chandra Jack, European Society for Evolutionary Biology, August 2015, Lausanne Switzerland
11. Eleanor Siler, Ecological Society of America, August 2015 Baltimore MD
10. Eleanor Siler, BEACON Center for Evolution in Action Symposium, August 2015, Michigan State University
9. Colleen Friel, BEACON Center for Evolution in Action Symposium, August 2015, Michigan State University

8. Colleen Friel, American Society of Plant Biologists, July 2015, Minneapolis, MN
7. Katherine Wozniak, American Society of Plant Biologists, July 2015, Minneapolis, MN
6. Nayeli Sanchez, Mid-SURE, July 2015, Michigan State University
5. Carla Jones, Mid-SURE, July 2015, Michigan State University
4. Eleanor Siler, American Society of Plant Biologists, July 2014 Portland OR
3. Katherine Wozniak, Mid-SURE, July 2014, Michigan State University
2. Shawna Rowe, Mid-SURE, July 2014, Michigan State University
1. Saarang Gopinath, Mid-SURE, July 2014, Michigan State University

Professional Membership

AAAS member

American Society of Plant Biologists member

Society for the Study of Evolution member

Ecological Society of America member

Professional Development

Workshops focused on science, I was a participant

Microbiomes in Sustainable Agriculture, March 2016 Asilomar, CA

Plant Predictive Phenomics Workshop at Plant & Animal Genome meeting, Jan 2016, San Diego CA

'The Nitrogen Crisis: What are the solutions?', September 2015, Oxford UK

NSF-BBSRC Ideas Lab 'Nitrogen: Improving on Nature', September 2015, Burnham Beeches UK

NSF-BBSRC Ideas Lab 'Nitrogen: Improving on Nature', December 2012, Crewe Hall UK

PIRE/PASI Field course, July 2011, Peru

GMOD Hackathon, November 2010, NESCent Durham NC USA

Medicago Bioinformatics Workshop, November 2009, JCVI Rockville MD USA

Bodega Phylogenetics Workshop, March 2005, Bodega Marine Lab CA USA

Field Ecology, May 2004, Bodega Marine Reserve, CA USA

Workshops and seminars focused on teaching

HHMI-LEVERS Gateway Summit, May 17, 2016 *Annual meeting of MSU STEM reform faculty involved in the HHMI-LEVERS grant on campus. One of the main thrusts of the HHMI-LEVERS grant is the implementation of Avida-ED in MSU Biology course offerings.*

Seminar "Assessing faculty professional development in STEM education: Are the outcomes sustainable?" Diane Ebert-May, Sept 28, 2015

Avida-ED Active LENS educator workshop, Michigan State University, June 4 - 5, 2015 *two-day intensive workshop on implementing Avida-ED into evolution teaching*

"What is Active Learning? Does it work? If so, how can I introduce some active learning exercises into my lecture without losing too much time (and my mind)?" March 18, 2015

National Center for Faculty Development and Diversity "Faculty Success Program" Fall 2014 *semester-long program with weekly calls, small group coaching, homework*

National Center for Faculty Development and Diversity "Teaching in No Time" Workshop (4 wks) July 24 - Aug 14, 2014

"Downsizing your classroom: Tips for making big classes seem small(er)" Nov 13, 2013

"Starting off on the Right Foot: Organizing the First Day of Class" Workshop Aug 22, 2013

Mentoring

Postdocs (5 total, 4 current)

Jeffrey S. Norman Jan 2014 - present

Oxygen-tolerant Nitrogenase

Chandra Jack Sept 2014 - present BEACON Distinguished Postdoctoral Fellow

Rapid evolution of tripartite mutualist-antagonist interactions during species invasion

Michelle E. Afkhami Sept 2014 – Dec 2015 Plant Genome Research Program Postdoctoral Fellow

Multiple Mutualist Effects: Linking Functional Genomics to the Ecology of Mutualist Diversity in Microbe-Medicago Symbioses; Faculty at U. Miami

Alan Bowsher June 2016 – present
Aaron Garoutte Sept 2016 – present

Graduate students (4 total, 3 current)

Prateek Shetty Aug 2013 – Aug 2016; M. Sc.
 “Exploring The Nodule Microbiome of Trifolium Species”
Colleen Friel May 2014 - present
Eleanor Siler Nov 2014 - present
Shawna Rowe Jan 2016 - present

Technicians (7 total, 2 current)

Cody Bekkering Jan 2017 – present
Emily McLachlan June 2016 – present
George Davis Sept 2015 – Nov 2016
Carissa Zielinski May 2014 – June 2016
Nicole Strubel July 2015 – February 2016
Roxanne Bantay June 2013 - August 2014 *currently in graduate school at UCSF*
Jimmy Woodward Nov 2012 - Jan 2015

Undergraduate students (39 total, 10 current)

2017 Madison Rabbitt: Spring
 Geena Bentz: Spring
 Jeff Bond: Spring
 Haley Gmutza: Spring
 Lakota Shehi: Spring
 Douglas Klimball: Spring
 Edward Fultz: Spring
 Jake Hare: Spring
 Wyatt Larcinese: Spring (PLB 498)
 Mia Swanton: Spring
2016 Katie Wozniak (MSU Dean's Research Scholar): Spring
 Duncan Radandt: Spring
 Zack Keith: Spring
 Thilani Jayakody: Spring
 Melanie Arevalo: Spring, Fall
 Amanda Wakefield: Spring
 Jeff Bond: Spring, Summer, Fall
 Emily McLachlan: Spring
 Jake Hare: Spring, Fall
 Evan Kurtz: Spring
 Xavier Brandon: Spring
 Kamyra Rodgers (Plant Genomics @ MSU REU): Summer
 Ellen Garcia (Plant Genomics @ MSU REU): Summer
 Briana Benjamin-Dalrymple (SROP): Summer
 Lauren Smyth (SROP): Summer
 Madison Rabbitt: Fall
 Geena Bentz: Spring, Fall
 Haley Gmutza: Fall
 Lakota Shehi: Fall
 Douglas Klimball: Summer, Fall
 Edward Fultz: Summer, Fall

- 2015 Katie Wozniak (MSU Dean's Research Scholar): Spring, Summer,
Fall (CNS Undergraduate Research Scholarship)
- Duncan Radandt: Spring, Summer, Fall
 Zack Keith: Spring, Summer, Fall
 Thilani Jayakody: Fall
 Melanie Arevalo: Fall
 Amanda Wakefield: Fall
 Jeff Bond: Fall
 Emily McLachlan: Fall
 Jake Hare: Fall
 Evan Kurtz: Fall
 Xavier Brandon: Fall
 Xiaoyi Wang: Fall
 James O'Neil: Spring, Fall
 Nayeli Sanchez (Plant Genomics @ MSU REU): Summer
 Carla Jones (SROP): Summer
 Madalyn Gildea: Spring (MMG 498)
 Megan Baxter: Spring, Summer
 Joe Tekieli: Spring
 Melissa Boland: Spring
- 2014 Katie Wozniak (Plant Genomics @ MSU REU): Summer, Fall
 Melissa Boland: Spring, Summer, Fall
 Shawna Rowe (SROP): Summer
 Madalyn Gildea: Fall
 Joe Tekieli: Fall
 Duncan Radandt: Summer, Fall
 Zack Keith: Summer, Fall
 Megan Baxter: Spring, Summer, Fall
 Saarang Gopinath: Summer
 Jake Lehman: Spring
 Alex Diedrich (CNS Undergraduate Research Scholarship): Spring
- 2013 Megan Baxter: Fall
 Alex Diedrich: Spring, Summer, Fall
 Jake Lehman: Summer, Fall
 Paul Helling (PLB 498): Summer
 Danielle Eppen: Spring
 Nikhil Ghandi: Spring
 Jon Weiss: Spring, Summer

High school students (8 total)

- 2016 Max Land
 Henry Rose
 Akash
 Olivia
- 2015 Amy Li
 Matthew Yeh (semi-finalist in Siemens Competition in Math, Science, and Technology, 2015)
- 2014 Miranda Vogt (now at Stanford)
- 2013 Alyssa Chen (now at Yale)

Service

Ad hoc Journal Reviews

- 2017 Ecology Letters (1), Phytobiomes (1)
 2016 AEM (3), Ecology Letters (1), Evolution (1), American Journal of Botany (1)

2015 Evolution (1), Molecular Ecology (1), The Plant Genome (1), Journal of Theoretical Biology (1), AEM (1)
2014 Molecular Ecology (1)
2013 New Phytologist (1), Journal of Theoretical Biology (1)

Funding Agencies

2017 Ad hoc reviewer: DOE (1)
2016 Ad hoc reviewer: NSF (4)
2015 Ad hoc reviewer: Fonds de recherche du (1), NSF Plant Genome (1)
2015 Panelist: NSF Dimensions of Biodiversity
2014 Ad hoc reviewer: NSF Dimensions of Biodiversity (1), NSF Population & Community Ecology (1)
2013 Panelist: NSF-BSF ICOB
2013 Ad hoc reviewer: NSF Plant Genome (1), France Genomique (1), NSF Dimensions of Biodiversity (1),
NSF Population & Community Ecology (1)

Workshops & Meetings Organized

5th Annual Plant Biotechnology for Health & Sustainability Symposium, October 2016, MSU
NCEAS Working group "When is a mutualist a cheater?", December 2012, Santa Barbara, CA USA

Graduate student committees

Mitch Roth (Genetics; Dr. Chilvers) *Genetics Chair of Committee*
Anna Huff (MMG; Dr. Gomez-Martinez) 2016 -
Bethany Moore (PLB; Dr. Shiu) 2014 - 2016
Teresa Clark (PLB; Dr. Shachar-Hill) 2014 -
Abhijna Parigi (Zoology; Dr. Rowe) 2013 - 2014
Kristi MacCready (PLB; Dr. Trail) 2013 - 2015
Tomomi Suwa (PLB; Dr. Lau) 2013 - 2015
Kelvin Kamfwa (PSM; Dr. Kelly) 2013 - 2015
Aaron Garoutte (MMG; Dr. Tiedje) 2013 - 2016

Michigan State University committees

EEBB Seminar Committee 2014 - present
Biology Initiative ZOL445 (Evolution) Committee 2015 - present
PLB Greenhouse Committee 2015 - present

Outreach & Broader Impacts

Mentored High School Honors Science Program students: Alyssa Chen (2013), Miranda Vogt (2014), Matthew Yeh & Amy Li (2015), Henry Rose & Max Land (2016)
Formal undergraduate mentoring: Shawna Rowe (MSU SROP 2014), Katie Wozniak (Plant Genomics REU 2014), Carla Jones (MSU SROP 2015), Nayeli Sanchez (Plant Genomics REU 2015), Brianna Benjamin-Dalrymple & Lauren Smyth (MSU SROP 2015), Ellen Garcia & Kamyra Rodgers (Plant Genomics REU 2016)
SROP Networking Lunch participant, June 24, 2014
Keynote speaker: Kellogg Biological Station Summer Institute for Michigan high-school science teachers, June 26, 2013
Invited speaker: Van Andel Career Day, May 13, 2013
Invited panelist: Plant Biotechnology Career Day (MSU), October 25, 2013