

Curriculum Vitae
Richard Michael Clark

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EDUCATION

Stanford University, Stanford, CA, USA. **PhD** in Developmental Biology (1994-2001)
Kenyon College, Gambier, OH, USA. **BA** in Biology (1990-1994)

RESEARCH EXPERIENCE & APPOINTMENTS

Associate Director for Graduate Programs: School of Biological Sciences, University of Utah, Salt Lake City, Utah. 2020-2021.

Director of Graduate Studies: School of Biological Sciences, University of Utah, Salt Lake City, Utah. 2018-2021.

Professor: School of Biological Sciences, University of Utah, Salt Lake City, Utah. **Genetics and genomics**. 2018-present.

Associate Professor: Department of Biology, University of Utah, Salt Lake City, Utah. **Evolutionary genetics and plant-herbivore interactions**. 2014-2018.

Assistant Professor: Department of Biology, University of Utah, Salt Lake City, Utah. **Evolutionary genetics, association mapping, and plant-herbivore interactions**. 2008-2014.

Postdoctoral Fellow: Max Planck Institute for Developmental Biology, Tübingen, Germany. **Evolutionary genetics and genomics of *Arabidopsis thaliana* and its congeners**. 2004-2008. (Research advisor: Dr. Detlef Weigel)

Postdoctoral Fellow: Laboratory of Genetics, University of Wisconsin, Madison, WI, USA. **Genetics of maize domestication**. 2001-2004. (Research advisor: Dr. John F. Doebley)

Doctoral Student: Department of Developmental Biology, Stanford University, Stanford, CA, USA. **Molecular genetics of vertebrate limb formation**. 1994-2001. (Research advisor: Dr. David M. Kingsley)

AWARDS & HONORS

A Showcase of Extraordinary Faculty Achievements, J. Willard Marriott Library & Vice President of Research (2016)

Selected as an AAAS Fellow (November 2013)

Selected to Faculty of 1000 (Plant Genomes & Evolution Section) (2011-2015)

Ruth L. Kirschstein NRSA Postdoctoral Fellowship, NIH (2002-2004)

National Science Foundation Graduate Fellowship (1994-1997)
Graduated 2nd in class with Highest Honors, Kenyon College, Gambier, OH (1994)
Maxwell Elliot Power Prize for Biology, Kenyon College, Gambier, OH (1994)
Robert Bowan Brown, Jr. Prize in Biology, Kenyon College, Gambier, OH (1994)
Barry M. Goldwater Science Scholarship (1993-1994)

PUBLICATIONS

* — co-first authorship; ** — corresponding or co-corresponding author

Under review:

2023

Ji, M., Vandenhole, M., De Beer, B., De Rouck, S., Villacis-Perez, E., Feyereisen, R., **Clark, R. M.****, and Van Leeuwen, T. 2023. A nuclear receptor HR96-related gene underlies large *trans*-driven differences in detoxification gene expression in a generalist herbivore. Under review at *Nature Communications* as of Jan 16, 2023.

Published:

2022

Gill, G. S., Bui, H., **Clark, R. M.**, and Ramirez, R. A. 2022. Spider mite resistant maize lines, B75 and B96, maintain resistance under water-stress. *Journal of Pest Science*. Advanced online publication available at: doi.org/10.1007/s10340-022-01584-3.

Kurlovs, A. H., De Beer, B., Ji, M., Vandenhole, M., De Meyer, T., Feyereisen, **Clark, R. M.****, and Van Leeuwen, T. 2022. *Trans*-driven variation in expression is common among detoxification genes in the extreme generalist herbivore *Tetranychus urticae*. *PLoS Genetics* 18:e1010333. doi: 10.1371/journal.pgen.1010333. (PMCID: PMC9704763)

Ji, M., Bui, H., Ramirez, R. A., and **Clark, R. M.**** 2022. Concerted *cis* and *trans* effects underpin heightened defense gene expression in multi-herbivore-resistant maize lines. *The Plant Journal* 111:508-528. doi: 10.1111/tpj.15812. (PMID: 35575017)

2021

Fotoukiai, S. M., Wybouw, N., Kurlovs, A. H., Tsakireli, D., Pergantis, S. A., **Clark, R. M.**, Vontas, J., and Van Leeuwen, T. 2021. High-resolution genetic mapping reveals *cis*-regulatory and copy number variation in loci associated with cytochrome P450-mediated detoxification in a generalist arthropod pest. *PLoS Genetics* 17:e1009422. doi: 10.1371/journal.pgen.1009422. (PMCID: PMC8248744)

Bui, H., Greenhalgh, R., Gill, G. S., Ji, M., Kurlovs, A. H., Ronnow, C., Lee, S., Ramirez, R. A., and **Clark, R. M.**** 2021. Maize inbred line B96 is the source of large-effect loci for resistance to generalist but not specialist spider mites. *Frontiers in Plant Science* 12:693088. doi: 10.3389/fpls.2021.693088. (PMCID: PMC8256171)

Villacis-Perez, E., Snoeck, S., Kurlovs, A. H., **Clark, R. M.**, Breeuwer, J. A. J., and Van Leeuwen, T. 2021. Adaptive divergence and post-zygotic barriers to gene flow between sympatric populations of a herbivorous mite. *Communications Biology* 4:853. doi: 10.1038/s42003-021-02380-y. (PMCID: PMC8270941)

2020

Greenhalgh, R., Dermauw, W., Glas, J. J., Rombauts, S., Wybouw, N., Thomas, J., Alba, J. M., Pritham, E. J., Legarrea, S., Feyereisen, R., Van de Peer, Y., Van Leeuwen, T., **Clark, R. M.****, and Kant, M. R. 2020. Genome streamlining in a minute herbivore that manipulates its host plant. *Elife* 9:e56689. doi: 10.7554/eLife.56689. (PMID: 33095158)

Gill, G. S., Bui, H., **Clark, R. M.**, and Ramirez, R. A. 2020. Varying responses to combined water-stress and herbivory in maize for spider mite species that differ in host specialization. *Environmental & Experimental Botany* 177:104131. doi: 10.1016/j.envexpbot.2020.104131.

2019

Clark, R. M.** and Ragland, G. J. 2019. Editorial overview: Tapping arthropod diversity to elaborate the genotype-to-phenotype map. *Curr Opin Insect Sci.* 36:v-viii. doi: 10.1016/j.cois.2019.10.003. (PMID: 31732447)

Kurlovs, A. H., Snoeck, S., Kosterlitz, O., Van Leeuwen, T., and **Clark, R. M.**** 2019. Trait mapping in diverse arthropods by bulked segregant analysis. *Curr Opin Insect Sci.* 36:57-65. doi: 10.1016/j.cois.2019.08.004. (PMID: 31499416)

Wybouw, N., Kurlovs, A. H., Greenhalgh, R., Bryon, A., Kosterlitz, O., Manabe, Y., Osakabe, M., Vontas, J., **Clark, R. M.****, and Van Leeuwen, T. 2019. Convergent evolution of cytochrome P450s underlies independent origins of keto-carotenoid pigmentation in animals. *Proceedings of the Royal Society B* 286:20191039. doi: 10.1098/rspb.2019.1039. (PMCID: PMC6661338)

Snoeck, S., Kurlovs, A. H., Bajda, S., Feyereisen, R., Greenhalgh, R., Villacis-Perez, E., Kosterlitz, O., Dermauw, W., **Clark, R. M.****, and Van Leeuwen, T. 2019. High-resolution QTL mapping in *Tetranychus urticae* reveals acaricide-specific responses and common target-site resistance after selection by different METI-I acaricides. *Insect Biochem Mol Biol.* 110:19-33. doi: 10.1016/j.ibmb.2019.04.011. (PMID: 31022513)

Wybouw, N., Kosterlitz, O., Kurlovs, A. H., Bajda, S., Greenhalgh, R., Snoeck, S., Bui, H., Bryon, A., Dermauw, W., Van Leeuwen, T., and **Clark, R. M.**** 2019. Long-Term Population Studies Uncover the Genome Structure and Genetic Basis of Xenobiotic and Host Plant Adaptation in the Herbivore *Tetranychus urticae*. *GENETICS* 211:1409-1427. doi: 10.1534/genetics.118.301803. (PMCID: PMC6456322)

Simma, E. A., Dermauw, W., Balabanidou, V., Snoeck, S., Bryon, A., **Clark, R. M.**, Yewhalaw, D., Vontas, J., Duchateau, L., and Van Leeuwen, T. 2019. Genome-wide gene expression profiling reveals that cuticle alterations and P450 detoxification are associated with deltamethrin and DDT resistance in *Anopheles arabiensis* populations from Ethiopia. *Pest Management Science* 75:1808-1818. doi: 10.1002/ps.5374. (PMID: 30740870)

2018

Bui, H., Greenhalgh, R., Ruckert, A., Gill, G. S., Lee, S., Ramirez, R. A., and **Clark, R. M.**** 2018. Generalist and specialist mite herbivores induce similar defense responses in maize and barley but differ in susceptibility to benzoxazinoids. *Frontiers in Plant Sciences* 9:1222. doi: 10.3389/fpls.2018.01222. (PMCID: PMC6110934)

2017

Snoeck, S., Greenhalgh, R., Tirry, L., **Clark, R. M.**, Van Leeuwen, T., and Dermauw, W. 2017. The effect of insecticide synergist treatment on genome-wide gene expression in a polyphagous pest. *Scientific Reports* 7:13440. (PMCID: PMC5647426)

Bryon, A., Kurlovs, A. H., Dermauw, W., Greenhalgh, R., Riga, M., Grbic, M., Tirry, L., Osakabe, M., Vontas, J., **Clark, R. M.****, and Van Leeuwen, T. 2017. Disruption of a horizontally transferred phytoene desaturase abolishes carotenoid accumulation and diapause in *Tetranychus urticae*. *PNAS* 114: E5871-E5880. (PMCID: PMC5530703)

Bryon, A., Kurlovs, A. H., Van Leeuwen, T., and **Clark, R. M.**** 2017. A molecular-genetic understanding of diapause in spider mites: current knowledge and future directions. *Physiological Entomology* 42:211-224. (Special issue on “Photoperiodic Induction of Diapause and Seasonal Morphs”; <http://onlinelibrary.wiley.com/doi/10.1111/phen.12201/full>)

Rabanal, F.A., Mandáková, T., Soto-Jiménez, L. M., Greenhalgh, R., Parrott, D.L., Lutzmayer, S., Steffen, J. G., Nizhynska, V., Mott, R., Lysak, M. A., **Clark, R. M.**, and Nordborg, M. 2017. Epistatic and allelic interactions control expression of ribosomal RNA gene clusters in *Arabidopsis thaliana*. *Genome Biol.* 18:75. (PMCID: PMC5414317)

Imprialou, M., Kahles, A., Steffen, J. G., Osborne, E. J., Gan, X., Lempe, J., Bhomra, A., Belfield, E., Visscher, A., Greenhalgh, R., Harberd, N. P., Goram, R., Hein, J., Robert-Seilaniantz, A., Jones, J., Stegle, O., Kover, P., Tsiantis, M., Nordborg, M., Rättsch, G., **Clark, R. M.**, and Mott R. 2017. Genomic Rearrangements in *Arabidopsis* Considered as Quantitative Traits. *GENETICS* 205: 1425-1441. (PMCID: PMC5378104)

2016

Ngoc, P. C., Greenhalgh, R., Dermauw, W., Rombauts, S., Bajda, S., Zhurov, V., Grbić, M., Van de Peer, Y., Van Leeuwen, T., Rouzé, P., and **Clark, R. M.**** 2016. Complex Evolutionary Dynamics of Massively Expanded Chemosensory Receptor Families in an Extreme Generalist Chelicerate Herbivore. *Genome Biology & Evolution* 8:3323-3339. (PMCID: PMC5203786)

Jonckheere, W., Dermauw, W., Zhurov, V., Wybouw, N., Van den Bulcke, J., Villarroel, C. A., Greenhalgh, R., Grbić, M., Schuurink, R. C., Tirry, L., Baggerman, G., **Clark, R. M.**, Kant, M. R., Vanholme, B., Menschaert, G., and Van Leeuwen, T. 2016. The Salivary Protein Repertoire of the Polyphagous Spider Mite *Tetranychus urticae*: A Quest for Effectors. *Molecular & Cellular Proteomics* 15:3594-3613. (PMCID: PMC5141274).

Meng, D., Dubin, M., Zhang, P., Osborne, E. J., Stegle, O., **Clark, R. M.**, and Nordborg, M. 2016. Limited Contribution of DNA Methylation Variation to Expression Regulation in *Arabidopsis thaliana*. *PLoS Genetics* 12:e1006141. (PMCID: PMC4939946)

2015

Bajda, S., Dermauw, W., Greenhalgh, R., Nauen, R., Tirry, L., **Clark, R. M.**, and Van Leeuwen T. 2015. Transcriptome profiling of a spirodiclofen susceptible and resistant strain of the European red mite *Panonychus ulmi* using strand-specific RNA-seq. *BMC Genomics* 16:974. (PMCID: PMC4652392)

Dubin, M. J., Zhang, P., Meng, D., Remigereau, M. S., Osborne, E. J., Paolo Casale, F., Drewe, P., Kahles, A., Jean, G., Vilhjálmsson, B., Jagoda, J., Irez, S., Voronin, V., Song, Q., Long, Q., Rättsch, G., Stegle, O., **Clark, R. M.**, and Nordborg, M. 2015. DNA methylation in *Arabidopsis* has a genetic basis and shows evidence of local adaptation. *Elife* 4:e05255. (PMCID: PMC4413256)

2014

Thakare, D., Yang, R., Steffen, J.G., Zhan, J., Wang, D., **Clark, R. M.**, Wang, X., and Yadegari, R. 2014. RNA-Seq analysis of laser-capture microdissected cells of the developing central starchy endosperm of maize. *Genomics Data* 2:242-5. (PMCID: PMC4535972)

Demaeght, P., Osborne, E. J., Odman-Naresh, J., Grbić, M., Nauen, R., Merzendorfer, H., **Clark, R. M.****, and Van Leeuwen, T. 2014. High resolution genetic mapping uncovers chitin synthase-1 as the target-site of the structurally diverse mite growth inhibitors clofentezine, hexythiazox and etoxazole in *Tetranychus urticae*. *Insect Biochem Mol Biol.* 51:52-61. (PMCID: PMC4124130)

Jali, S. S., Rosloski, S. M., Janakirama, P., Steffen, J. G., Zhurov, V., Berleth, T., **Clark, R. M.****, and Grbić V. 2014. A plant-specific *HUA2-LIKE* (*HULK*) gene family in *Arabidopsis thaliana* is essential for development. *Plant J.* 80:242-54. (PMCID: PMC4283595)

Zhurov, V., Navarro, M., Bruinsma, K. A., Arbona, V., Santamaria, M. E., Cazaux, M., Wybouw, N., Osborne, E. J., Ens, C., Rioja, C., Vermeirssen, V., Rubio-Somoza, I., Krishna, P., Diaz, I., Schmid, M., Gómez-Cadenas, A., Van de Peer, Y., Grbic, M., **Clark, R. M.**, Van Leeuwen, T., and Grbic, V. 2014. Reciprocal responses in the interaction between *Arabidopsis* and the cell-content-feeding chelicerate herbivore spider mite. *Plant Physiology* 164:384-99. (PMCID: PMC3875816)

2013

Slotte, T., Hazzouri, K. M., Agren, J. A., Koenig, D., Maumus, F., Guo, Y. L., Steige, K., Platts, A. E., Escobar, J. S., Newman, L. K., Wang, W., Mandáková, T., Vello, E., Smith, L. M., Henz, S. R., Steffen, J., Takuno, S., Brandvain, Y., Coop, G., Andolfatto, P., Hu, T. T., Blanchette, M., **Clark, R. M.**, Quesneville, H., Nordborg, M., Gaut, B. S., Lysak, M. A., Jenkins, J., Grimwood, J., Chapman, J., Prochnik, S., Shu, S., Rokhsar, D., Schmutz, J., Weigel, D., and Wright, S. I. 2013. The *Capsella rubella* genome and the genomic consequences of rapid mating system evolution. *Nature Genetics* 45:831-835. (PMID: 23749190)

Dermauw, W., Osborne, E. J., **Clark, R. M.**, Grbić, M., Tirry, L., and Van Leeuwen, T. 2013. A burst of ABC genes in the genome of the polyphagous spider mite *Tetranychus urticae*. *BMC Genomics* 14:317. (PMID: 23663308)

Kopischke, M., Westphal, L., Schneeberger, K., **Clark, R. M.**, Ossowski, S., Wewer, V., Fuchs, R., Landtag, J., Hause, G., Dörmann, P., Lipka, V., Weigel, D., Schulze-Lefert, P., Scheel, D., and Rosahl, S. 2013. Impaired sterol ester synthesis alters the response of *Arabidopsis thaliana* to *Phytophthora infestans*. *Plant Journal* 73:456-68. (PMID: 23072470)

Dermauw, W., Wybouw, N., Rombauts, S., Menten, B., Vontas, J., Grbić, M., **Clark, R. M.**, Feyereisen, R., and Van Leeuwen, T. 2013. A link between host plant adaptation and pesticide resistance in the polyphagous spider mite *Tetranychus urticae*. *Proc Natl Acad Sci USA* 110:E113-22. (PMID: 23248300)

2012

Van Leeuwen, T., Demaeght, P., Osborne, E. J., Dermauw, W., Gohlkec, S., Nauend, R., Grbić, M., Tirrya, L., Merzendorfer, H., and **Clark, R. M.**** 2012. Population bulk segregant mapping uncovers resistance mutations and the mode of action of a chitin synthesis inhibitor in arthropods. *Proc Natl Acad Sci USA* 109:4407-4412. (PMID: 22393009)

2011

Grbić, M.*, Van Leeuwen, T.*, **Clark, R. M.***, Rombauts, S., Rouzé, P., Grbić, V., Osborne, E. J., Dermauw, W., Ngoc, P. C., Ortego, F., Hernández-Crespo, P., Diaz, I., Martinez, M., Navajas, M., Sucena, E., Magalhães, S., Nagy, L., Pace, R. M., Djuranović, S., Smagghe, G., Iga, M., Christiaens, O., Veenstra, J. A., Ewer, J., Villalobos, R. M., Hutter, J. L., Hudson, S. D., Velez, M., Yi, S. V., Zeng, J., Pires-daSilva, A., Roch, F., Cazaux, M., Navarro, M., Zhurov, V., Acevedo, G., Bjelica, A., Fawcett, J. A., Bonnet, E., Martens, C., Baele, G., Wissler, L., Sanchez-Rodriguez, A., Tirry, L., Blais, C., Demeestere, K., Henz, S. R., Gregory, T. R., Mathieu, J., Verdon, L., Farinelli, L., Schmutz, J., Lindquist, E., Feyereisen, R., and Van de Peer, Y. 2011. The genome of *Tetranychus urticae* reveals herbivorous pest adaptations. *Nature* 479:487-492. (PMID: 22113690)

Gan, X., Stegle, O., Behr, J., Steffen, J. G., Drewe, P., Hildebrand, K. L., Lyngsoe, R., Schultheiss, S. J., Osborne, E. J., Sreedharan, V. T., Kahles, A., Bohnert, R., Jean, G., Derwent, P., Kersey, P., Belfield, E., Harberd, N., Kemen, E., Kover, P., Toomajian, C., **Clark, R. M.****, Rätsch, M., and Mott, R. 2011. Multiple reference genomes and transcriptomes for *Arabidopsis thaliana*. *Nature* 477:419-423. (PMID: 21874022)

Hu, T. T., Pattyn, P., Bakker, E. G., Cao, J., Cheng, J. F., **Clark, R. M.**, Fahlgren, N., Fawcett, J. A., Grimwood, J., Gundlach, H., Haberer, G., Hollister, J. D., Ossowski, S., Ottillar, R. P., Salamov, A. A., Schneeberger, K., Spannagl, M., Wang, X., Yang, L., Nasrallah, M. E., Bergelson, J., Carrington, J. C., Gaut, B. S., Schmutz, J., Mayer, K. F., Van de Peer, Y., Grigoriev, I. V., Nordborg, M., Weigel, D., and Guo, Y. L. 2011. The *Arabidopsis lyrata* genome sequence and the basis of rapid genome size change. *Nature Genetics* 43:476-481 (PMID: 21478890)

2010

Clark, R. M.** 2010. Genome-wide association studies coming of age in rice. *Nature Genetics* 42:926-927. (PMID: 20972439)

Ossowski, S., Schneeberger, K., Lucas-Lledó, J. I., Warthmann, N., **Clark, R. M.**, Shaw, R. G., Weigel, D., and Lynch, M. 2010. The rate and molecular spectrum of spontaneous mutations in *Arabidopsis thaliana*. *Science* 327:92-94. (PMID: 20044577)

2009

McNally, K. L., Childs, K. L., Bohnert, R., Davidson, R. M., Zhao, K., Ulat, V. J., Zeller, G., **Clark, R. M.**, Hoen, D. R., Bureau, T. E., Stokowski, R., Ballinger, D. G., Frazer, K. A., Cox, D. R.,

Padhukasahasram, B., Bustamante, C. D., Weigel, D., Mackill, D. J., Bruskiewich, R. M., Ratsch, G., Buell, C. R., Leung, H., and Leach, J. E. 2009. Genomewide SNP variation reveals relationships among landraces and modern varieties of rice. *Proc Natl Acad Sci USA* 106:12273-12278. (PMID: 19597147)

2008

Ossowski, S., Schneeberger, K., **Clark, R. M.**, Lanz, C., Warthmann, N., and Weigel, D. 2008. Sequencing of natural strains of *Arabidopsis thaliana* with short reads. *Genome Research* 18:2024-2033 (PMID: 18818371).

Zeller, G., **Clark, R. M.**, Schneeberger, K., Bohlen, A., Weigel, D., and Ratsch, G. 2008. Detecting polymorphic regions in *Arabidopsis thaliana* with resequencing microarrays. *Genome Research* 18:918-29. (PMID: 18323538)

2007

Weber, A., **Clark, R. M.**, Vaughn, L., Sanchez-Gonzalez, J. J., Yu, J., Yandell, B. S., Bradbury, P., and Doebley, J. 2007. Major regulatory genes in maize contribute to standing variation in teosinte (*Zea mays* ssp. *parviglumis*). *Genetics* 177:2349-59. (PMID: 17947410)

Clark, R. M., Schweikert, G., Toomajian, C., Ossowski, S., Zeller, G., Shinn, P., Warthmann, N., Hu, T. T., Fu, G., Hinds, D. A., Chen, H., Frazer, K. A., Huson, D. H., Scholkopf, B., Nordborg, M., Ratsch, G., Ecker, J. R., and Weigel, D. 2007. Common sequence polymorphisms shaping genetic diversity in *Arabidopsis thaliana*. *Science* 317:338-342. (PMID: 17641193)

Kim, S., Plagnol, V., Hu, T. T., Toomajian, C., **Clark R. M.**, Ossowski, S., Ecker, J. R., Weigel, D., and Nordborg, M. 2007. Recombination and linkage disequilibrium in *Arabidopsis thaliana*. *Nature Genetics* 3:1151-1155. (PMID: 17676040)

Tang, C., Toomajian, C., Sherman-Broyles, S., Plagnol, V., Guo, Y. L., Hu, T. T., **Clark, R. M.**, Nasrallah, J. B., Weigel, D., and Nordborg, M. 2007. The evolution of selfing in *Arabidopsis thaliana*. *Science* 317:1070-1072. (PMID: 17656687)

2006

Clark, R. M., Wagler, T. N., Quijada, P., and Doebley, J. 2006. A distant upstream enhancer at the maize domestication gene *tb1* has pleiotropic effects on plant and inflorescent architecture. *Nature Genetics* 38:594-597. (PMID: 16642024)

Balasubramanian, S., Sureshkumar, S., Agrawal, M., Michael, T. P., Wessinger, C., Maloof, J., **Clark, R.**, Warthmann, N., Chory, J., and Weigel, D. 2006. The *PHYTOCHROME C* photoreceptor gene mediates natural variation in flowering and growth responses of *Arabidopsis thaliana*. *Nature Genetics* 38:711-715. (PMID: 16732287)

2005

Clark, R. M., Tavare, S., and Doebley, J. F. 2005. Estimating a nucleotide substitution rate for maize from polymorphism at a major domestication locus. *Molecular Biology & Evolution* 22:2304-2312. (PMID: 16079248)

2004

Clark, R. M., Linton, E., Messing, J., and Doebley, J. F. 2004. Pattern of diversity in the genomic region near the maize domestication gene *tb1*. *Proc. Natl. Acad. Sci. USA* 101:700-707. (PMID: 14701910)

2001

Clark, R. M., Marker, P.C., Roessler, E., Dutra, A., Schimenti, J.C., Muenke, M., and Kingsley, D.M. 2001. Reciprocal mouse and human limb phenotypes caused by gain- and loss-of-function mutations affecting *Lmbr1*. *Genetics* 159:715-726. (PMID:11606546)

2000

Clark, R. M.*, Marker, P. C.*, and Kingsley, D.M. 2000. A novel candidate gene for mouse and human preaxial polydactyly with altered expression in limbs of *Hemimelic extra-toes* mutant mice. *Genomics* 67:19-27. (PMID: 10945466)

ORAL PRESENTATIONS (partial list)

2022

Clark, R. M., Ji, M., Bui, H., and Ramirez, R. Multi-herbivore resistance and genetic regulation of defense pathways in maize. *Brigham Young University, Provo, Utah (October 27, 2022)*. (**Invited Speaker**)

Clark, R. M., Ji, M., Bui, H., and Ramirez, R. Multi-herbivore resistance and genetic regulation of defense pathways in maize. *12th Spider Mite Genome Meeting, Logrono, La Rioja, Spain (October 17-20, 2022)*. (**Invited Speaker**)

2021

Clark, R. M. Genic architecture at the lower limits of metazoan genome size: lessons from mite herbivores of varying host breadth. *University College London, London, United Kingdom (April 21, 2021)*. (**Invited Speaker**)

2020

Clark, R. M., Bui, H., Greenhalgh, R., Ji, M., Hawks, H., Gross, S., Gill, G. S., and Ramirez, R. A. Molecular-genetic basis of maize resistance to spider mite herbivores. *Plant Biology 2020, American Society of Plant Biologists, Washington DC, USA (July 27-31, 2020)*.

2018

Bui, H., Greenhalgh, R., Gill, G. S., Ronnow, C., Lee, S., Kurlovs, A., Ramirez, R. A., and **Clark, R. M.** The genetic architecture of resistance to a generalist spider mite herbivore in maize. *10th Spider Mite Genome Meeting, Logrono, La Rioja, Spain (November 5-8, 2018)*. (**Invited Speaker**)

Clark, R. M. Learning from long haplotypes: Selection and genetic diversity in an extreme generalist herbivore. *2018 Arthropod Genomics Symposium, University of Illinois Champaign–Urbana, Illinois, USA (June 7-9, 2018)*. (**Invited Speaker**)

Clark, R. M. Genetics of diapause and carotenoid metabolism in spider mites. *Chemical Ecology Symposium of Natural Products*. University of Utah, Salt Lake City, Utah, USA (May 17, 2018). **(Invited Speaker)**

2017

Clark, R. M., Kurlovs, A., Greenhalgh, R., Bui, H., Kosterlitz, O., Dermauw, W., Bryon, A., Bajda, S., Van Leeuwen, T. Genomes of *Tetranychus urticae* strains reveal multiple selective sweeps in a global population sample. *Member Symposium: Genomics of Adaptation: Linking the Next Generation of Genome-Wide Analysis to Understand and Manage Complex Traits*, Entomology 2017, Denver, Colorado, USA (November 5-8, 2017).

2016

Clark, R. M., Kurlovs, A., Greenhalgh, R., Bui, H., Steffen, J., Dermauw, W., Bryon, A., Bajda, S., and Van Leeuwen, T. Microevolutionary patterns in the generalist herbivore *Tetranychus urticae* as revealed by large-scale strain sequencing. *Arthropod Population Genomics Symposium, XXV International Congress of Entomology*, Orlando, Florida, USA (September 25-30, 2016). **(Invited Speaker)**

Clark, R. M., Huyen, B., Greenhalgh, R., Ruckert, A., Ramirez, R. Cereal Defense Responses to Agriculturally Important Generalist and Specialist Mite Herbivores. *American Society of Plant Biologists – Western Section Meeting*, Brigham Young University, Provo, Utah (May 19-20, 2016). **(Invited Speaker)**

2013

Kurlovs, A., Greenhalgh, R., Osborne, E.J., and **Clark, R. M.** Genes and gene regulatory pathways underlying plant-herbivore interactions. *Evolution 2013, EDEN symposium: The Evolution of Gene Regulatory Networks*, Snowbird, Utah (June 21-25, 2013). **(Invited Speaker)**

2012

Clark, R. M. Understanding ecologically and agriculturally relevant traits in *Arabidopsis* and mites. *The Gregor Mendel Institute*, Vienna, Austria (April 12, 2012). **(Invited Speaker)**

Clark, R. M. Understanding ecologically and agriculturally relevant traits in *Arabidopsis* and mites. *The Donald Danforth Plant Sciences Center*, St. Louis, Missouri (March 14, 2012). **(Invited Speaker)**

Clark, R. M. Small pests, large losses: genomic studies reveal why mites can eat so much. *The University of Utah, NAKAMA presentation*, Salt Lake City, Utah (February 3, 2012). **(Invited Speaker)**

2011

Clark, R. M. Reference genomes and transcriptomes for functional and evolutionary studies in *Arabidopsis*. *USC Center of Excellence in Genomic Science (CEGS) annual retreat*, University of Southern California, Los Angeles, California (March 22, 2011).

2010

Clark, R. M. Characterizing genotype to phenotype relationships in plants and mites. *School of Biology, Georgia Tech, Atlanta, Georgia (October 14, 2010). (Invited Speaker)*

Clark, R. M., and Osborne, E. J. Genetic polymorphisms in spider mite populations: discovery and patterns. *Second Spider Mite Genome Meeting, Tivat, Montenegro (September 20-23, 2010).*

2009

Clark, R. M. High-throughput genomic approaches to describe genome evolution and the genotype-phenotype map. *College of Agriculture & Life Sciences, Interdisciplinary Plant Biology Seminar Program, University of Arizona School of Plant Sciences (December 1, 2009). (Invited Speaker).*

Clark, R. M. Genomic approaches for understanding genome evolution and the genotype-phenotype map. “*Genomics, Evolution, and Association Mapping*” seminar series, *University of Minnesota Microbial and Plant Genomics Institute (MPGI) (November 17, 2009). (Invited Speaker).*

Clark, R. M. Towards understanding the impact of natural variation on plant development. 25th *Symposium in Plant Biology: “The Evolution of Development” at the University of California Riverside (January 29-31, 2009). (Invited Speaker)*

2008

Clark, R. M. Massive variation in the *Arabidopsis thaliana* genome revealed by “next-generation” sequencing.” *University of Queensland, Australia (May 26, 2008). (Invited Speaker)*

2006

Clark, R. M., Ossowski, S., Schweikert, G., Zeller, G., Shinn, P., Rätsch, G., Warthmann, N., Fu, G., Hinds, D., Chen, H.-M., Frazer K., Toomajian, C., Hu, T., Huson, D. H., Schölkopf, B., Nordborg, M., Ecker, J. R., and Weigel, D. Natural variation in *Arabidopsis* and its close relations. *ESF-WellcomeTrust Conference: Crop Genomics, Trait analysis and Breeding (November 8-11, 2006). (Invited Speaker)*

Clark, R. M., Ossowski, S., Schweikert, G., Zeller, G., Shinn, P., Rätsch, G., Warthmann, N., Fu, G., Hinds, D., Chen, H.-M., Frazer K., Toomajian, C., Hu, T., Huson, D. H., Schölkopf, B., Nordborg, M., Ecker, J. R., and Weigel, D. The common sequence variation of *Arabidopsis thaliana* as revealed by whole genome resequencing arrays. *Plant Genomics European Meeting, #5 (October 11-14, 2006).*

Clark, R. M., Ossowski, S., Schweikert, G., Zeller, G., Shinn, P., Rätsch, G., Warthmann, N., Fu, G., Hinds, D., Chen, H.-M., Frazer K., Toomajian, C., Hu, T., Huson, D. H., Schölkopf, B., Nordborg, M., Ecker, J. R., and Weigel, D. Genome inventory of sequence polymorphisms in *Arabidopsis thaliana*. *Ludwig-Maximilians-University, Munich, Germany (July 18, 2006). (Invited Speaker)*

2005

Clark, R. M. Long-distance regulatory control of the *tb1* gene and the evolution of plant architecture in maize. *Society for Experimental Biology Annual Main Meeting (July 11-15, 2005). (Invited Speaker)*

Clark, R. M., Warthmann, N., Fu, G., Frazer K., and Weigel, D. Genome inventory of sequence polymorphisms for *Arabidopsis thaliana*. *16th International Conference on Arabidopsis Research (June 15-19, 2005)*.

Bergelson, J., Borevitz, J., **Clark, R. M.**, Gaut, B., Hall, A., Langley, C., Neuffer, B., Mayer, K., Nordborg, M., Savolainen, O., Peer, Y. V. D, Weigel, D., and Wright., S. Sequencing the *Arabidopsis lyrata* and *Capsella rubella* genomes: what lessons will *A. thaliana*'s near relatives teach? *16th International Conference on Arabidopsis Research, Relatives Workshop (June 15-19, 2005)*.

2004

Clark, R. M. Morphological adaptation in response to strong selection: lessons from the maize domestication locus, *teosinte branched 1 (tb1)*. *Montana State University, Bozeman, Montana, USA. (November 9, 2004). (Invited Speaker)*

2003

Clark, R. M., Doebley, J. Defining sequences at the *teosinte branched1* locus selected during maize domestication. *American Society of Plant Biologists--Plant Genetics 2003: Mechanisms of Genetic Variation (October 22-26, 2003). (Invited Speaker)*

Clark, R. M. The complexity of selection at a major effect QTL in maize, *teosinte branched1 (tb1)*. *Regulation of Inflorescence morphology—Insights from Genetics and Genomics, The Banbury Center, Cold Spring Harbor Laboratory (September 21-24, 2003). (Invited Speaker)*

POSTERS/ABSTRACTS (partial list)

2023

Ji, M., De Beer, B., Vandenhole, M., Feyereisen, R., **Clark, R. M.**, and Van Leeuwen, T. A *trans*-eQTL hotspot underlies large differences in detoxification gene expression in the generalist herbivore *Tetranychus urticae*. *Plant and Animal Genome Conference (PAG) 30, San Diego, California, USA (Jan 13-18, 2023)*

2022

Vandenhole, M., Kurlavs, A., Snoeck, S., Dermauw, W., Wybouw, N., **Clark, R. M.**, and Van Leeuwen, T. Mapping of resistance traits in mites by bulked segregant analysis. *2022 XXVI International Congress of Entomology (Helsinki, Finland, July 17-22, 2022)*.

Ji, M., Bui, H., Greenhalgh, R., Gill, G. S., Ramirez, R. A., and **Clark, R. M.** Molecular-genetic basis of high-level resistance of maize line B96 to the two-spotted spider mite, *Tetranychus urticae*. *Plant and Animal Genome Conference (PAG) XXIX, San Diego, California, USA (Jan 8-12, 2022)*

2021

Dermauw, W., Greenhalgh, R., Glas, J., Wybouw, N., Van Leeuwen, T., **Clark, R. M.**, and Kant, M. Extreme gene and intron loss in the miniature genome of the tomato russet mite. *Symposium on*

Insect-Plant Interactions 2021, session “Genomics of plant-insect interactions,” Leiden, Netherlands, held online because of the COVID-19 pandemic (July 25-30, 2021)

Ji, M., Bui, H., Quist, A. J., Ramirez, R. A., and **Clark, R. M.** Transcriptional underpinnings of high-level resistance to the generalist spider mite *Tetranychus urticae* in maize. *Plant Biology 2021, American Society of Plant Biologists (July 19-23, 2021)*.

2019

Kurlovs, A., De Beer, B., Vandenhole, M., Njiru, C., **Clark, R. M.** and Van Leeuwen, T. The molecular genetic mechanisms of extreme adaptation in the spider mite *Tetranychus urticae*. *11th Spider Mite Genome Meeting, Logrono, La Rioja, Spain (November 4-6, 2019)*.

Gill, G., Lu, H., Price, S., Bui, H., **Clark, R. M.** and Ramirez, R. Generalist spider mites behave on resistant maize while specialists do not. *Entomology 2019, St. Louis, Missouri, USA (November 17-20, 2019)*.

Gill, G., Bui, H., **Clark, R. M.** and Ramirez, R. Understanding how water stress affects spider mite resistance in maize. *Entomological Society of America, 2019 Pacific Branch Meeting San Diego, California, USA (March 31 – April 3, 2019)*.

Greenhalgh, R., Bui, H., Kosterlitz, O., Wybouw, N., Kurlovs, A., Bajda, S., Snoeck, S., Bryon, A., Dermauw, W., Van Leeuwen, T. and **Clark, R. M.** An improved *Tetranychus urticae* genome facilitates identification of loci associated with adaptation to agriculture. *The Plant and Animal Genome XXVII Conference (PAG), San Diego, California, USA (January 12-16, 2019)*.

2018

Gill, G., Bui, H., **Clark, R. M.**, and Ramirez, R. Understanding how water stress affects spider mite resistance in maize. *Entomology 2018, Vancouver, British Columbia, Canada (November 11-14, 2018)*.

Dermauw, W., Greenhalgh, R., Van Leeuwen, T., **Clark, R. M.**, and Kant, M. R. Extreme genome reduction in the specialist eriophyid mite herbivore *Aculops lycopersici*. *Entomology 2018, Vancouver, British Columbia, Canada (November 11-14, 2018)*.

Van Leeuwen, T., Wybouw, N., Kosterlitz, O., Kurlovs, A., Bajda, S., Greenhalgh, R., Snoeck, S., Bui, H., Bryon, A., Villacis-Pérez, E., Dermauw, W., and **Clark, R. M.** Experimental evolution followed by genome resequencing using a chromosome-level assembly reveals the complex genetic architecture of xenobiotic adaptation in *Tetranychus urticae*. *Entomology 2018, Vancouver, British Columbia, Canada (November 11-14, 2018)*.

Snoeck, S., Kurlovs, A., Bajda, S., Greenhalgh, R., Feyereisen, R., Villacis-Pérez, E., Wybouw, N., Dermauw, W., **Clark, R. M.**, and Van Leeuwen, T. High resolution QTL mapping reveals parallel and divergent selection responses to different METI-I acaricides in *Tetranychus urticae*. *Entomology 2018, Vancouver, British Columbia, Canada (November 11-14, 2018)*.

Wybouw, N., Kurlovs, A., Tsakireli, D., Bryon, A., Osakabe, M., Vontas, J., **Clark, R. M.**, and Van Leeuwen, T. 2018. Convergent evolution within the cytochrome P450 family underlies independent origins of red coloration in animals. *10th Spider Mite Genome Meeting, Logrono, La Rioja, Spain (November 5-8, 2018)*.

Kurlovs, A., Kosterlitz, O., Wybouw, N., Bui, H., Greenhalgh, R., Bajda, S., Snoeck, S., Bryon, A., Damaeght, P., Dermauw, W., Van Leeuwen, T., and **Clark, R. M.** A chromosome-level assembly and strain sequencing data reveal striking patterns of genetic variation in a global *Tetranychus urticae* population sample. *10th Spider Mite Genome Meeting, Logrono, La Rioja, Spain (November 5-8, 2018).*

Kurlovs, A., Kosterlitz, O., Bui, H., Greenhalgh, R., Bryon, A., Bajda, S., Van Leeuwen, T., and **Clark, R. M.** Forces shaping genetic diversity in the globally distributed generalist herbivore, *Tetranychus urticae*. *Society for Molecular Biology and Evolution Satellite Meeting: Molecular Evolution and the Cell, Park City, Utah, USA (May 9-12, 2018).*

2017

Gill, G. S., Bui, H., **Clark, R. M.**, and Ramirez, R. A. Water-stress alters plant defense responses toward generalist and specialist spider mites in maize. *Entomology 2017, Denver, Colorado, USA (November 5-8, 2017).*

Bui, H., Greenhalgh, R., Ruckert, A., Lee, S., Gill, G. S., Ramirez, R., and **Clark, R. M.** The genetic basis of variation in monocot resistance to spider mite herbivores. *Plant Biology 2017, Annual Meeting of the American Society of Plant Biologists, Honolulu, Hawaii, USA (June 24-28, 2017).*

Gill, G. S., Ruckert, A., Bui, H., **Clark, R. M.**, and Ramirez, R. A. Plant defense responses to generalist and specialist spider mites in maize. *101st Annual Meeting of the Pacific Branch of the Entomological Society of America, Portland, Oregon, USA (April 2-5, 2017).*

Bui, H., Greenhalgh, R., Ruckert, A., Lee, S., Gill, G. S., Ramirez, R., and **Clark, R. M.** Differential impact of benzoxazinoids on generalist and grass-specialist spider mite herbivores. *Plant-Herbivore Interaction Gordon Research Conference, Ventura, CA, USA (February 12-17, 2017).*

2016

Bui, H., Greenhalgh, R., Lee, S., Ruckert, A., Ramirez, R. A., and **Clark, R. M.** Defense responses of maize and barley to generalist and specialist spider mite herbivores. *Genetics & Genomics of Crop Improvement, 18th Annual Fall Symposium, Donald Danforth Plant Science Center, Saint Louis, Missouri, USA (September 28-30, 2016).*

Dermauw, W., Wybouw, N., Feyereisen, R., **Clark, R. M.**, and Van Leeuwen, T. A link between host plant adaptation and pesticide resistance in the polyphagous spider mite *Tetranychus urticae*. *XXV International Congress of Entomology, Orlando, Florida, USA (September 25-30, 2016).*

Bryon, A., Kurlovs, A., Tirry, L., **Clark, R. M.**, and Van Leeuwen, T. Carotenoids and diapause in the two-spotted spider mite: Lessons from an albino mutant. *XXV International Congress of Entomology, Orlando, Florida, USA (September 25-30, 2016).*

Van Leeuwen, T., and **Clark, R. M.** Mutations in chitin synthase-1 (CHS-1) confer resistance to a range of structurally diverse acaricides and insecticides. *XXV International Congress of Entomology, Orlando, Florida, USA (September 25-30, 2016).*

Greenhalgh, R., Bui, H., Ruckert, A., Ramirez, R., and **Clark, R. M.** Shared and species-specific transcriptional responses of barley (*Hordeum vulgare* L.) to generalist and specialist spider mite herbivores. *The Allied Genetics Conference 2016, Orlando, Florida, USA (July 13-17, 2016)*.

Bui, H., Greenhalgh, R., Ruckert, A., Ramirez, R., and **Clark, R. M.** Dynamic yet Correlated Responses of Barley (*Hordeum vulgare* L.) to Generalist and Specialist Spider Mite Herbivores. *Plant Biology 2016, Annual meeting of the American Society of Plant Biologists, Austin, Texas, USA (July 9-13, 2016)*.

2013

Osborne, E. J., and **Clark, R. M.** Genetic and environmental contributions to gene expression variation in *Arabidopsis thaliana*. *Evolution 2013, Snowbird, Utah (June 21-25, 2013)*.

Kurlovs, A., and **Clark, R. M.** *Arabidopsis* intraspecific variation affects fitness of a generalist mite herbivore. *Evolution 2013, Snowbird, Utah (June 21-25, 2013)*.

Greenhalgh, R., and **Clark, R. M.** Patterns of gene expression variation in *Arabidopsis thaliana* as revealed by allele-specific transcriptome sequencing. *Evolution 2013, Snowbird, Utah (June 21-25, 2013)*.

Stegle, O., Drewe, P., Kahles, A., Zhon, Y., Steffen, J., Greenhalgh, R., Toomajian, C., Gan, X., Mott, R., **Clark, R. M.**, and Rättsch, G. Advanced intercross genetic design reveals extensive genetic control of the transcriptional landscape in *Arabidopsis thaliana*. *The Biology of Genomes, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York (May 7-11, 2013)*.

Osborne, E. J., Stegle, O., Remigereau, M. S., Vilhjalmsón, B., Zhang, P., Drewe, P., Kahles, A., Korte, A., Rättsch, G., Nordborg, M., and **Clark, R. M.** Genetic and environmental influences on gene expression in *Arabidopsis thaliana*. *The Biology of Genomes, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York (May 7-11, 2013)*.

2012

Osborne, E. J., Remigereau, M. S., Zhang, P., Vilhjalmsón, B., Stegle, O., Drewe, P., Quan, L., Umit, S., Kahles, A., Song, Q., Korte, A., Nordborg, M., Smith, A., Rättsch, G., and **Clark, R. M.** Transcriptome variation across environments in Swedish *Arabidopsis thaliana*. *Plant Biology 2012: The Annual Meeting of the American Society of Plant Biologists, Austin, Texas (July 20-24, 2012)*.

Greenhalgh, R., Steffen, J., Stegel, O., Drewe, P., Gan, X., Imprialou, M., Behr, J., Osborne, E., Toomajian, C., Kover, P., Rättsch, G., Mott, R., and **Clark, R. M.** Pervasive genomic and gene expression variation in the magic population of recombinant inbred lines. *Plant Biology 2012: The Annual Meeting of the American Society of Plant Biologists, Austin, Texas (July 20-24, 2012)*.

2011

Steffen, J. J., Osborne, E. J., Stegle, O., Behr, J., Drewe, P., Gan, X., Hildebrand, K. L., Remigereau, M. S., Zhang, P., Long, Q., Vilhjalmsón, B., Greenhalgh, R., Nordborg, M., Toomajian, C., Mott, R., Rättsch, G., and **Clark, R. M.** Genomewide variation in sense and antisense transcription across 19 *Arabidopsis thaliana* strains. *Plant Genomes & Biotechnology: From Genes to Networks, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York (Nov 30 – Dec 3, 2011)*.

Remigereau, M. S., Zhang, P., Osborne, E. J., Long, Q., Vilhjalmsón, B., **Clark, R. M.**, and Nordborg, M. Integrating the transcriptome layer to the genotype-phenotype map in *A. thaliana*. *Plant Genomes & Biotechnology: From Genes to Networks*, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York (Nov 30 – Dec 3, 2011).

Steffen, J., Behr, J., Drewe, P., Hillebrand, K., Kover, P., Lyngsoe, R., Mott, R., Osborne, E. J., Rättsch, G., Schultheiss, S., Sreedharan, V., Stegle, O., Toomajian, C., Xiangchao, G., and **Clark, R. M.** Extensive genomic and transcriptomic variation in the 19 founders of the *Arabidopsis* MAGIC lines. *The 22nd International Conference on Arabidopsis Research (ICAR)*, Madison, Wisconsin (June 22-25, 2011).

Gan, X., Behr, J., Steffen, J., Hildebrand, K., Allchin, L., Goodstadt, L., Stegle, O., Drewe, P., Lyngsoe, R., Sreedharan, V., Osborne, E. J., Toomajian, C., Kover, P., Rättsch, G., **Clark, R. M.**, and Mott, R. Accurate sequencing of 18 genomes of *Arabidopsis thaliana* and its use in imputing the genome sequences of over 600 MAGIC recombinant inbred lines. *The 22nd International Conference on Arabidopsis Research (ICAR)*, Madison, Wisconsin (June 22-25, 2011).

Cazaux, M., Poo, C., Navarro, M., **Clark, R. M.**, Grbić, M., and Grbić V. Genetic dissection of the plant/pest interaction: mapping of *Arabidopsis* resistance gene to *Tetranychus urticae* (two spotted spider mite) feeding. *The 22nd International Conference on Arabidopsis Research (ICAR)*, Madison, Wisconsin (June 22-25, 2011).

Hildebrand, K., Behr, J., Drewe, P., Xiangchao, G., Kahles, A., Lyngsoe, R., Osborne, E. J., Schultheiss, S., Sreedharan, V., Steffen, J., Stegle, O., **Clark, R. M.**, Kover, P., Mott, R., Rättsch, G., and Toomajian, C. Patterns of genome and transcriptome variation in *Arabidopsis thaliana*. *The Evolution Meeting*, Norman, Oklahoma (June 17-21, 2011).

2010

Osborne, E. J. and **Clark R. M.** The spider mite transcriptome: patterns by developmental stage and host species. *Second Spider Mite Genome Meeting*, Tivat, Montenegro (September 20-23, 2010).

2008

Vilhjalmsón, B., Atwell, S., Willems, G., Huang, Y., Jiang, R., Li, Y., Zhang, X., Hu, T., **Clark, R. M.**, Toomajian, C., Aranzana, M. J., Zhao, K., Tarone, A., Lee, R., Jung, C., Meng, D., Platt, A., Lister, C., Horton, M., Bergelson, J., Shindo, C., Dean, C., Ecker, J. R., Weigel, D., Borevitz, J., Marjoram, P., Nordborg, M. Genome-wide association mapping in *Arabidopsis thaliana*. *19th International Conference on Arabidopsis Research* (July 23-27, 2008).

Poo, C., Mathieu, J., **Clark, R. M.**, Schmid, M., Grbić, M., and Grbić, V. Interaction between plant and pest genomes: *Arabidopsis*-two spotted spider mite *Tetranychus urticae*, novel model for plant-herbivore interactions. *19th International Conference on Arabidopsis Research* (July 23-27, 2008).

Toomajian, T., Hu, T., Plagnol, V., **Clark, R. M.**, Li, Y., Pattyn, P., Schmutz, J., Bergelson, J., Borevitz, J., Ecker, J., Gaut, B., Kreitman, M., Marjoram, P., Rokhsar, D., Peer Y. V., Weigel, D., and Nordborg, M. Genome-wide patterns of recombination in *Arabidopsis thaliana* and their impact on the efficacy on natural selection. *Society for Molecular Biology and Evolution* (June 5-8, 2008).

2006

Zeller, G., Schweikert, G., **Clark, R.**, Ossowski, S., Warthmann, N., Shinn, P., Frazer, K., Ecker, J., Huson, D., Weigel, D., Schölkopf, B., and Rättsch, G. Machine Learning Algorithms for Polymorphism Detection. *14th Annual International Conference on Intelligent Systems for Molecular Biology (Aug. 6-10, 2006)*.

Hu, T., Kim, S., Plagnol, V., Toomajian, C., **Clark, R.**, Lister, C., Dean, C., Ecker, J., Weigel, D., and Nordborg, M. The genomic pattern of linkage disequilibrium in *Arabidopsis thaliana*. *17th International Conference on Arabidopsis Research, Relatives Workshop (June 28 - July 2, 2006)*.

Clark, R. M., Ossowski, S., Schweikert, G., Zeller, G., Shinn, P., Rättsch, G., Warthmann, N., Fu, G., Hinds, D., Chen, H.-M., Frazer K., Toomajian, C., Hu, T., Huson, D. H., Schölkopf, B., Nordborg, M., Ecker, J. R., and Weigel, D. An inventory of common sequence polymorphisms for *Arabidopsis*. *17th International Conference on Arabidopsis Research, Relatives Workshop (June 28 - July 2, 2006)*.

Kim, S., Plagnol, V., Hu, T., Toomajian, C., **Clark, R.**, Lister, C., Dean, C., Ecker, J., Weigel, D. and Nordborg, M. Recombination and linkage disequilibrium in *Arabidopsis thaliana*. *Beyond HapMap: 3rd Annual International HapMap Project Community Analysis Meeting (May 8-10, 2006)*.

Clark, R. M., Ossowski, S., Schweikert, G., Zeller, G., Shinn, P., Rättsch, G., Warthmann, N., Fu, G., Hinds, D., Chen, H.-M., Frazer K., Toomajian, C., Hu, T., Huson, D. H., Schölkopf, B., Nordborg, M., Ecker, J. R., and Weigel, D. An inventory of sequence polymorphisms for *Arabidopsis*. *The Biology of Genomes, Cold Spring Harbor Laboratory (May 10-14, 2006)*.

Clark, R. M., Guo, Y., Bergelson, J. M., Borevitz, J. O., Gaut, B. S., Hall, A. E., Langley, C. H., Neuffer, B., Mayer, K. F. X., Nordborg, M., Savolainen, O., Peer, Y. V. D., Wright, S., and Weigel, D. Sequencing *Arabidopsis lyrata* and *Capsella rubella*: what we can learn from the genomes of *A. thaliana*'s close relatives. *First Annual DOE Joint Genome Institute User Meeting (March 29 – April 1, 2006)*.

Clark, R. M., Wagler, T. N., Quijada, P., and Doebley, J. A distant upstream enhancer at the maize domestication gene, *tb1*, has pleiotropic effects on plant and inflorescent architecture. *48th Annual Maize Genetics Conference (March 9-12, 2006)*.

2003

Clark, R. M., Linton, E. W., Messing, J., Doebley, J. A large region upstream to the *teosinte branched1* (*tb1*) locus was selected during maize evolution. *45th Annual Maize Genetics Conference (March 13-16, 2003)*.

2002

Bombliès, K., **Clark, R. M.**, Doebley, J. Investigation of candidate genes for QTL involved in maize domestication. *FASEB Summer Research Conferences: Mechanisms in Plant Development (August 10-14, 2002)*.

Doebley, J., **Clark, R. M.** The evolution of plant form: An example from maize. *BSDB/Genetics Society Joint Spring Meeting on Evolution and Developmental Mechanisms*. (March 20-23, 2002).

Clark, R. M., Linton, E.W., Messing, J., Doebley, J. Functional and molecular characterization of selection at the maize domestication locus *teosinte branched1 (tb1)*. *44th Annual Maize Genetics Conference (March 14-17, 2002)*.

(continued on next page)

RESEARCH FUNDING

CURRENTLY FUNDED RESEARCH PROJECTS

NONE.

PENDING RESEARCH PROPOSALS

NONE.

COMPLETED FUNDING

NSF IOS 1444449, 08/15/2015 - 07/31/2021 (including no-cost extensions) \$1,069,975
Genomics of resistance to mite herbivores associated with drought stress in cereals
(Dr. Clark is the PI on this award; a co-PI, Dr. Ricardo Ramirez, is located at Utah State University – funds include direct + F&A for the entire award)

This study is investigating the genetic and genomic bases of plant defense responses to herbivory by two mite herbivores for which agricultural damage is associated with drought stress. Additionally, the study seeks an understanding of whether specialist and generalist mites elicit different plant defense responses.

NSF DEB 1457346, 04/15/2015 - 03/31/2019 (one year no cost extension) \$437,355
Evolutionary genetics of a cosmopolitan generalist herbivore
(Dr. Clark is the sole PI on this award – funds include direct + F&A.)

This study is generating dense genomic data (genomic and transcriptomic data) to understand the genetic basis of host plant adaptation by an extreme generalist herbivore (the two-spotted spider mite, which is also a significant agricultural pest). As part of this study, novel bulk segregant mapping methods are being developed that should be of broad applicability to diverse evolutionary genetic studies.

NIH 2P50HG002790, 09/01/2009 – 08/31/2015 \$619,323
Genomic Analysis of the Genotype-Phenotype Map
(The PI was Dr. Simon Tavaré at the University of Southern California; this was an NIH Center of Excellence in Genomic Science award; the award amount indicated was for Dr. Clark's subaward over all funding years, direct + F&A)

The study generated dense genomic data sets (transcriptome and epigenetic) of relevance to understanding ecologically relevant traits in plants. The study contributed to our understanding of the interaction between genetic and epigenetic mechanisms, which is of broad relevance in the life sciences, including for the study of human disease.

NSF IOS 0929262, 12/1/09 -11/31/13 (with one year no-cost extension) \$619,821
Arabidopsis 2010: Transcriptomes for functional and evolutionary studies
(Dr. Clark was the PI; a co-PI, Dr. Christopher Toomajian, was at Kansas State University; shown is the Utah appropriation only, including direct + F&A.)

The study generated transcriptome data for three developmental stages for the model plant Arabidopsis thaliana. As strains, the 19 parents of an advance genetic cross resource were used. Variation in gene expression was described with high precision, shedding light on both gene regulatory mechanisms and the evolution of gene expression in a plant species.

NSF DBI 0820985, 08/01/2008 – 07/31/2011 **\$484,395**

MRI: Acquisition of an Illumina/Solexa genome analyzer

(Note: \$484,395 was from the National Science Foundation, with a University of Utah cost share of \$207,598. The PI was Leslie Sieburth (University of Utah), with Dr. Clark as a co-PI along with two other members of the University of Utah Department of Biology)

Dr. Clark, who had extensive experience with the instrumentation, wrote the bulk of the proposal, and worked with other co-PIs and contributors in the Department of Biology to refine research ideas for the requested instrumentation. He was primarily responsible for the successful instrumentation purchase, installation, and for coordinating use by other faculty members.

University of Utah Funding Incentive Seed Grant Program, 3/1/2009 – 8/31/2010. **\$35,000**

Genomic characterization of the spider mite: towards sustainable control of an emerging agricultural pest.

Funds from this internal University of Utah award were used to initiate a research program that looks at plant-herbivore interactions, and chelicerate (tick, mite, scorpion & spider) genomics and biology more generally. In large part, this work ultimately resulted in two funded NSF proposals (awards NSF IOS 1444449 for \$1,069,975 and NSF DEB 1457346 for \$437,355).

UNFUNDED RESEARCH PROPOSALS

NSF DEB 1349687, 01/01/14 -12/31/18 (5 years; resubmission) **\$741,460**

CAREER: Genetics of Mite Herbivory

(Dr. Clark was the sole PI, requested funds included direct costs + F&A)

The proposed study would characterize the genetic basis of herbivory in the two-spotted spider mite (Tetranychus urticae). In particular, a focus would be on understanding how two-spotted spider mites can feed on diverse plants. This understanding is important because “generalist” herbivores such as the two-spotted spider mite cause disproportionately high agricultural losses every year, and it has been suggested that the generalist life history predisposes the evolution of rapid pesticide resistance (a pressing agricultural concern).

NSF DEB 1252745, 01/01/13 -12/31/17 (5 years) **\$725,828**

CAREER: Genetics of Mite Herbivory

(Dr. Clark was the sole PI, requested funds included direct costs + F&A)

The proposed study would characterize the genetic basis of herbivory in the two-spotted spider mite (Tetranychus urticae). In particular, a focus would be on understanding how two-spotted spider mites can feed on diverse plants (including wild plants, and many major and minor crops). This understanding is important because “generalist” herbivores such as the two-spotted spider mites cause disproportionately high agricultural losses every year, and it has been suggested that the

generalist life history predisposes the evolution of rapid pesticide resistance (a pressing agricultural concern).

Sloan Research Fellowship Program, 09/01/2009 – 08/31/2011 **\$50,000**
The Phenotype-Genotype-Environment Map

This was an application for an early career award.

Searle Scholars Program, 06/01/2009-05/31/2012 **\$300,000**
Topologies of genotype-phenotype-environment maps: towards a systems level understanding

This was an application for an early career award.

NSF DBE 0823647 submitted 1/2008, declined 6/2008 **\$2,818,528**
Reference genomes for functional and evolutionary studies in *Arabidopsis*
[Dr. Clark was the PI, and co-PIs were Magnus Nordborg (University of Southern California) and Joseph Ecker (The Salk Institute for Biological Studies).]

*The PIs proposed to generate a dense set of “reference” genome sequences from many strains of the reference plant *Arabidopsis thaliana* to facilitate studies of genome evolution and quantitative trait mapping.*

(continued on next page)

MAJOR SCHOOL, UNIVERSITY AND OTHER SERVICE

2022:

- **School of Biological Sciences Roles / Committees —**
 - **Graduate Program Committee:** After completing my sabbatical in mid 2022, I joined the Graduate Program Committee with the special role of working to complete a major revision of the SBS Graduate Student Handbook.
 - **Greenhouse renovation working group:** Although I was on sabbatical during the first half of 2022, I was nevertheless an active member of the SBS and university working group to assess the feasibility and cost of renovating or replacing the SBS greenhouse facility.
- **University Committees —**
 - **High-Throughput Genomics and Bioinformatics Analysis Shared Resource Faculty Advisory Committee (GBA FAC):** I served on this committee (Katherine Varley, Chair) that oversees University of Utah campus-wide high-throughput sequencing resources and the associated bioinformatic core.
 - **Graduate Student Mentoring:** I mentored two graduate student members of my laboratory in 2022 (*Meiyuan Ji*, a Ph.D. student who joined the SBS via the EEOB admissions program, and *Sarah Gross*, who joined the SBS via the MCEB admissions program and who successfully defended a M.S. degree in fall of 2022).
 - **Graduate Student Supervisory Committees:** I served on the Supervisory Committees for SBS graduate students *Meiyuan Ji*, *Sarah Gross*, *Hunter Hill*, *Shelley Reich*, *Thomas King*, *Jessica Vincent*, *Attoosa Samani*, *Talia Backman*, *Aubrey Hawks*, *Elaine Tan*, and *Hyrum Diesen*.
 - **Genetics Training Grant:** I reviewed proposals for T32 predoctoral traineeships for the University of Utah Genetics Training Program (NIH, PI Gillian Stanfield, Department of Human Genetics).
 - **Ad hoc National Science Foundation reviewer.**
 - **Reviewer for scientific journals.**

2021:

- **School of Biological Sciences Roles / Committees —**
 - **Associate Director for Graduate Programs and Executive Committee (ExCo) member:** I joined the SBS leadership team (ExCo) in the capacity of an Associate Director in 2020, and I stepped down at the end of June of 2021 when my sabbatical began. A key duty was to serve as an intermediate between the co-Directors and other ExCo members and the SBS's Graduate Program.
 - **Director of Graduate Studies, School of Biological Sciences (Chair, Graduate Program Committee):** I chaired the Graduate Program Committee that oversees the SBS graduate program until I went on sabbatical in summer 2021.
- **University Committees —**
 - **Microarray / Sequencing and Bioinformatics Steering Committee:** I served on this committee (Katherine Varley, Chair) that oversees University of Utah campus-wide high-throughput sequencing resources.
 - **Graduate Student Mentoring:** I mentored two graduate student members of my laboratory in 2021 (*Meiyuan Ji*, who joined the SBS via the EEOB admissions program, and *Sarah Gross*, who joined the program via the MCEB admissions program).

- **Undergraduate Student Mentoring:** I mentored one undergraduate in the laboratory in 2021 (*Annika Joy Quist*).
- **Graduate Student Supervisory Committees:** I served on the Supervisory Committees for SBS graduate students *Meiyuan Ji, Sarah Gross, Hunter Hill, Shelley Reich, Thomas King, Jessica Vincent, Attoosa Samani, Talia Backman, Aubrey Hawks, and Elaine Tan*.
- **Participation in Graduate Programs:** I participated in interviewing and recruiting graduate students through two programs at the University of Utah: 1) the Graduate Program in Ecology, Evolution & Organismal Biology (EEOB, SBS), and 2) the Graduate Program in Molecular, Cellular & Evolutionary Biology (MCEB, SBS).
- **Panelist for the National Science Foundation.**
- **Reviewer for scientific journals.**

2020:

- **School of Biological Sciences Roles / Committees —**
 - **Associate Director for Graduate Programs and Executive Committee (ExCo) member:** Beginning in summer, I joined the SBS leadership team (ExCo) in the capacity of an Associate Director. A key duty of this position is to serve as an intermediate between the Directors and other ExCo members and the SBS's graduate programs.
 - **Director of Graduate Studies, School of Biological Sciences (Chair, Graduate Program Committee):** I am chairing the Graduate Program Committee that oversees the SBS graduate program. 2020 has been busy year on several fronts, including managing challenges imposed by the pandemic.
 - **Greenhouse Committee:** I served as a faculty member on this committee that sets policies for use of the SBS's greenhouses.
 - **School of Biological Sciences Director Search Committee:** Along with Julie Hollien and Bill Anderegg in the SBS, and Matt Sigmon (Chair of Chemistry) and Marjorie Chan (Geology & Geophysics), I served on this committee tasked to identify a new director for the SBS in an external search.
- **University Committees —**
 - **Microarray / Sequencing and Bioinformatics Steering Committee:** I served on this committee (Katherine Varley, Chair) that oversees University of Utah campus-wide high-throughput sequencing resources.
 - **Graduate Student Mentoring:** I mentored two graduate student members of my laboratory in 2020 (*Meiyuan Ji*, who joined the SBS via the EEOB admissions program, and *Sarah Gross*, who joined the program via the MCEB admissions program).
 - **Undergraduate Student Mentoring:** I mentored one undergraduate in the laboratory in 2020 prior to the Covid-19 disruption (*Nik Zarandona*).
 - **Prelim Exam and Thesis Committees:** Apart from my own students, I served on or am serving on the Supervisory Committees for SBS graduate students *Rebecca Bruders, Hunter Hill, Shelley Reich, Thomas King, Jessica Vincent and Attoosa Samani*.
 - **Participation in Graduate Programs:** I participated in interviewing and recruiting graduate students through two programs at the University of Utah: 1) the Graduate Program in Ecology, Evolution & Organismal Biology (EEOB, SBS), and 2) the Graduate Program in Molecular, Cellular & Evolutionary Biology (MCEB, SBS).
 - **Grant reviewer for the National Science Foundation.**
 - **Reviewer for scientific journals.**

2019:

- **School of Biological Sciences Committees —**
 - **Director of Graduate Studies, School of Biological Sciences (Chair, Graduate Program Committee):** I chaired the Graduate Program Committee that oversees the SBS graduate program. 2019 was a busy year on several fronts for the graduate program, and I took the initiative to reorganize first year course work for both tracts in the program (EEOB and MCEB tracks).
 - **Greenhouse Committee:** I served as a faculty member on this committee that sets policy for use of the departmental greenhouses.
 - **Transformative Excellence Program, Evolutionary Genetics Cluster Search:** Search committee member for this interdepartmental cluster hire (School of Biological Sciences and Department of Human Genetics).
 - **School of Biological Sciences Director Search Committee:** Along with Julie Hollien and Bill Anderegg in the SBS, and Matt Sigmon (Chair of Chemistry) and Marjorie Chan (Geology & Geophysics), I served on this committee tasked to identify a new director for the SBS from an external pool of applicants.
- **University Committees —**
 - **Microarray / Sequencing and Bioinformatics Steering Committee:** I served on this committee (Katherine Varley, Chair) that oversees University of Utah campus-wide high-throughput sequencing resources.
 - **Graduate Student Mentoring:** I mentored two graduate student members of my laboratory in 2019 (*Meiyuan Ji*, who joined the SBS via the EEOB admissions program, and *Sarah Gross*, who joined the program via the MCEB admissions program). I also hosted rotations for two students in the SBS MCEB graduate program (*Marlin Rice* and *Andy Sposato*).
 - **Undergraduate Student Mentoring:** I mentored two undergraduates in the laboratory in 2019 (*Sonresa R Ochoa Vidales* and *Nik Zarandona*).
 - **Postdoctoral scholar host:** I hosted two visiting postdoctoral scholars in 2019 for periods of ~1 to 3 months. Both scholars were from the University of Ghent, Belgium (*Nicky Wybouw* and *Andre Kurlovs*).
 - **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students (*Rebecca Bruders*, *Hunter Hill*, and *Shelly Reich*). I served on the first-year EEOB capstone exam committees for *Kirsten Meredith*, *Keaton Smith Tremble*, *Dylan Klure*, and *Kendra Autumn*, and on the first-year MCEB capstone exam committees for *Jasmine Phan*, *Katherine Piscopo*, and *Madison Schrock*.
 - **Participation in Graduate Programs:** I participated in interviewing and recruiting graduate students through three programs at the University of Utah: 1) the Molecular Biology Program (multi-departmental), 2) the Graduate Program in Ecology, Evolution & Organismal Biology (EEOB, SBS), and 3) the Graduate Program in Molecular, Cellular & Evolutionary Biology (MCEB, SBS).
 - **Development of materials for Learn Genetics:** I worked with staff at the Genetics Science Learning Center to develop materials related to plant-herbivore interactions. This multi-year effort culminated in 2019 with the release of a video on my laboratory's genetic studies of maize-mite interactions. Please see: <https://learn.genetics.utah.edu/content/herbivores/>.
 - **Reviewer for scientific journals.**

2018:

- **School of Biological Sciences Committees —**

- **Director of Graduate Studies, School of Biological Sciences**
- **Greenhouse Committee:** I served as a faculty member on this committee that sets policy for use of the departmental greenhouses.
- **Transformative Excellence Program, Evolutionary Genetics Cluster Search:** Search committee member for this interdepartmental cluster hire (School of Biological Sciences and Human Genetics).
- **University Committees —**
 - **Microarray / Sequencing and Bioinformatics Steering Committee:** I served on this committee (Dr. Brad Cairns, Chair) that oversees University of Utah campus-wide high-throughput sequencing resources.
 - **Training and Mentoring:** I mentored two graduate students (Robert Greenhalgh and Andre Kurlovs), a postdoctoral fellow (Dr. Huyen Bui), and one undergraduate.
 - **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students.
 - **Participation in Graduate Programs:** I participated in interviewing and recruiting graduate students through three programs at the University of Utah: the 1) Molecular Biology Program (multi-departmental), 2) Graduate Program in Ecology, Evolution & Organismal Biology (School of Biological Sciences), and 3) Graduate Program in Molecular, Cellular & Evolutionary Biology (School of Biological Sciences).
 - **Outreach via the CSME REFUGES Program:** I gave presentations in the after-school program to middle school and high school students participating in the University of Utah Refugees Exploring the Foundations of Undergraduate Education in Science (REFUGES) program.
 - **Development of materials for Learn Genetics:** I worked with staff at the Genetics Science Learning Center to develop materials (two modules) related to herbivores and plant-herbivore interactions. This is a continuing effort; as of the end of 2018, only one video module is still outstanding.
 - **Genetics Training Grant:** I served on the steering committee for the University of Utah's Genetics Training Grant (PI Dr. David Grunwald, NIH award T32GM007464).
 - **Reviewer for scientific journals.**
 - **NSF panelist**

2017:

- **Departmental Committees —**
 - **Executive Committee:** I served as a faculty member representing the Molecular, Cellular, and Evolutionary Biology (MCEB) division within the Department of Biology. During this time, I played a key role (along with other ExCo members) in the transition of governance to three Sections with dedicated Section Heads (Cell & Molecular Biology, Genetics & Evolution, and Ecology & Physiology).
 - **Greenhouse Committee:** I served as a faculty member on this committee that sets policy for use of the departmental greenhouses.
 - **Website Committee (Chair):** Beginning in fall 2017.
 - **Transformative Excellence Program, Evolutionary Genetics Cluster Search:** Search committee member for this interdepartmental cluster hire (Department of Biology and Human Genetics; beginning fall 2017).
 - **Research in Progress / Fusion organizer:** Faculty organizer for graduate student presentations in the Department of Biology.
- **University Committees —**

- **Microarray / Sequencing and Bioinformatics Steering Committee:** I served on this committee (Dr. Brad Cairns, Chair) that oversees critical University of Utah campus-wide sequencing resources.
- **Training and Mentoring:** I mentored two graduate students (Robert Greenhalgh and Andre Kurlovs), a postdoctoral fellow (Dr. Huyen Bui), and four undergraduates.
- **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students.
- **Participation in Graduate Programs:** I participated in interviewing and recruiting graduate students through three programs at the University of Utah: the 1) Molecular Biology Program (multi-departmental), 2) Graduate Program in Ecology, Evolution & Organismal Biology (Department of Biology), and 3) Graduate Program in Molecular, Cellular & Evolutionary Biology (Department of Biology).
- **Outreach via the CSME REFUGES Program:** I presented four presentations in the after-school program to middle school and high school students participating in the University of Utah Refugees Exploring the Foundations of Undergraduate Education in Science (REFUGES) program.
- **Development of materials for Learn Genetics:** I worked with staff at the Genetics Science Learning Center to develop materials (two modules) related to herbivores and plant-herbivore interactions. Release of the materials is anticipated for fall 2017.
- **Genetics Training Grant:** I served on the steering committee for the University of Utah's Genetics Training Grant (PI Dr. David Grunwald, NIH award T32GM007464).
- **Reviewer for scientific journals.**

2016:

- **Departmental Committees —**
 - **Executive Committee:** I served as a faculty member representing the Molecular, Cellular, and Evolutionary Biology (MCEB) division within the Department of Biology.
 - **Greenhouse Committee:** I served as a faculty member on this committee that sets policy for use of the departmental greenhouses.
 - **Outreach Committee:** I served on this committee based on my work to represent the department at the University of Utah's Science Day.
- **University Committees —**
 - **Microarray / Sequencing and Bioinformatics Steering Committee:** I served on this committee (Dr. Brad Cairns, Chair) that oversees critical University of Utah campus-wide sequencing resources.
 - **Training and Mentoring:** I mentored two graduate students (Robert Greenhalgh and Andre Kurlovs), a postdoctoral fellow (Dr. Huyen Bui), and two undergraduates.
 - **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students.
 - **Presentation at the University of Utah Science Day:** I presented a session on plant-herbivore interactions to high school students and educators.
 - **Participation in Graduate Programs:** I participated in interviewing and recruiting graduate students through three programs at the University of Utah: the 1) Molecular Biology Program (multi-departmental), 2) Graduate Program in Ecology, Evolution & Organismal Biology (Department of Biology), and 3) Graduate Program in Molecular, Cellular & Evolutionary Biology (Department of Biology).

- **Development of materials for Learn Genetics:** I worked with staff at the Genetics Science Learning Center to develop materials (two modules) related to herbivores and plant-herbivore interactions. Release of the materials is anticipated for fall 2017.
- **Genetics Training Grant:** I served on the steering committee for the University of Utah's Genetics Training Grant (PI Dr. David Grunwald, NIH award T32GM007464).
- **Reviewer for scientific journals.**

2015:

- **Departmental Committees —**
 - **Executive Committee:** I served as a faculty member representing the Molecular, Cellular, and Evolutionary Biology (MCEB) division within the Department of Biology.
 - **Greenhouse Committee:** I served as a faculty member on this committee that sets policy for use of the departmental greenhouses.
 - **Outreach Committee:** I served on this committee based on my work to represent the department at the University of Utah's Science Day.
- **University Committees —**
 - **Microarray / Sequencing and Bioinformatics Steering Committee:** I served on this committee (Dr. Brad Cairns, Chair) that oversees critical University of Utah campus-wide sequencing resources.
 - **Training and Mentoring:** I mentored two graduate students (Robert Greenhalgh and Andre Kurlovs), a postdoctoral fellow (Dr. Huyen Bui), and two undergraduates.
 - **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students.
 - **Faculty Representative for the University of Utah Science Day:** I organized Department of Biology faculty and graduate student presentations for high school students and educators and gave hands-on presentations.
 - **Participation in Graduate Programs:** I participated in interviewing and recruiting graduate students through three programs at the University of Utah: 1) the Molecular Biology Program (multi-departmental), 2) Graduate Program in Ecology, Evolution & Organismal Biology (Department of Biology), and 3) Graduate Program in Molecular, Cellular & Evolutionary Biology (Department of Biology).
 - **Outreach via the CSME REFUGES Program:** I gave eight after-school workshop presentations to middle school and high school students participating in the University of Utah Refugees Exploring the Foundations of Undergraduate Education in Science (REFUGES) program.
 - **Reviewer for scientific journals.**

2014:

- **Departmental Committees —**
 - **Sequencing Committee:** I continued to serve on the DNA sequencing committee within the Department of Biology.
 - **Outreach Committee:** I served on this committee tasked to facilitate departmental outreach.
- **University Committees —**

- **Microarray / Sequencing and Bioinformatics Steering Committee:** I served on this committee (Dr. Brad Cairns, Chair) that oversees critical University of Utah campus-wide sequencing resources.
- **Training and Mentoring:** I mentored three graduate students (Edward J. Osborne, Robert Greenhalgh, and Andre Kurlovs).
- **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students.
- **Faculty Representative for the University of Utah Science Day:** I organized Department of Biology faculty and graduate student presentations for high school students and educators.
- **Participation in Graduate Programs:** I participated in interviewing and recruiting graduate students through three programs at the University of Utah: 1) the Molecular Biology Program (multi-departmental), 2) Graduate Program in Ecology, Evolution & Organismal Biology (Department of Biology), and 3) Graduate Program in Molecular, Cellular & Evolutionary Biology (Department of Biology).
- **Reviewer for scientific journals.**
- **Contributor to Faculty of 1000.**

2013:

- **Departmental Committees —**
 - **Sequencing Committee:** I continued to serve on the DNA sequencing committee within the Department of Biology.
 - **Website Committee:** I served as a formal member of this committee tasked to maintain a vibrant departmental website.
 - **Outreach Committee:** I served on this committee tasked to facilitate departmental outreach.
- **University Committees —**
 - **Microarray / Sequencing and Bioinformatics Steering Committee:** I served on this committee (Dr. Brad Cairns, Chair) that oversees critical University of Utah campus-wide sequencing resources.
 - **Training and Mentoring:** I mentored three graduate students (Edward J. Osborne, Robert Greenhalgh, and Andre Kurlovs) and a laboratory specialist (Dr. Dave Parrot), along with one undergraduate.
 - **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students.
 - **Faculty Representative for the University of Utah's of Science Day:** I organized Department of Biology faculty and graduate student presentations for high school students and educators and gave hands-on presentations.
 - **Participation in Graduate Programs:** I actively participated in interviewing and recruiting graduate students through three programs at the University of Utah: 1) the Molecular Biology Program (multi-departmental), 2) Graduate Program in Ecology, Evolution & Organismal Biology (Department of Biology), and 3) Graduate Program in Molecular, Cellular & Evolutionary Biology (Department of Biology).
 - **High school student host:** I hosted a high school student in my laboratory during summer 2013 as part of the University of Utah sponsored Refugees Exploring the Foundations of Undergraduate Education in Science (REFUGES) program.
 - **Reviewer for scientific journals.**
 - **Contributor to Faculty of 1000.**

2012:

- **Departmental Committees —**
 - **Sequencing Committee:** I continued to serve on this committee within the Department of Biology.
 - **Website Committee:** I served as a formal member of this committee tasked to maintain a vibrant departmental website.
 - **Outreach Committee:** I served on this committee tasked to facilitate departmental outreach.
 - **Department of Biology Microbial Biology Search Committee:** I served on this search committee, chaired by Dr. David Blair, that was charged with recruiting a microbial biologist to join the Department of Biology faculty.
- **University Committees —**
 - **Microarray / Sequencing and Bioinformatics Steering Committee:** I served on this committee (Dr. Brad Cairns, Chair) that oversees critical University of Utah campus-wide sequencing resources.
 - **Training and Mentoring:** I mentored three graduate students (Edward J. Osborne, Robert Greenhalgh, and Andre Kurlovs) and a postdoctoral fellow (Dr. Joshua Steffen), along with two undergraduates.
 - **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students.
 - **Faculty Representative for the University of Utah's Science Day:** I organized Department of Biology faculty and graduate student presentations for high school students and educators and gave hands-on presentations.
 - **Science Overnight:** I presented research topics as part of Science Overnight (Red Butte Garden, June 14, 2012) to incoming University of Utah students with interests in the sciences.
 - **Participation in Graduate Programs:** I actively participated in interviewing and recruiting graduate students through three programs at the University of Utah: 1) the Molecular Biology Program (multi-departmental), 2) Graduate Program in Ecology, Evolution & Organismal Biology (Department of Biology), and 3) Graduate Program in Molecular, Cellular & Evolutionary Biology (Department of Biology).
 - **Panel Participation:** Participated in a federal grant review panel in spring of 2012.
 - **Middle school teacher host:** I hosted a middle school teacher in my laboratory during summer 2012 as part of the University of Utah Masters of Science for Secondary School Teachers program.
 - **Reviewer for scientific journals.**
 - **Contributor to Faculty of 1000.**

2011:

- **Departmental Committees —**
 - **Sequencing Committee:** I continued to serve on the DNA sequencing committee within the Department of Biology.
 - **Website Committee:** I served as a member of this committee tasked to maintain a vibrant departmental website.
 - **EEOB Graduate Admissions Committee:** I reviewed graduate applications for the Ecology, Evolution & Organismal Biology (EEOB) graduate program within the Department of

Biology, interviewed prospective students, and along with other committee members, decided on offers of admittance.

- **University Committees —**
 - **Microarray / Sequencing and Bioinformatics Steering Committee:** I was appointed to this committee that oversees critical University of Utah campus-wide core facilities.
- **Training and Mentoring:** I mentored a graduate student (Edward J. Osborne) and a postdoctoral fellow (Dr. Joshua Steffen) along with three undergraduates.
- **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students.
- **Faculty Representative for the University of Utah's Science Day:** I organized Department of Biology faculty and graduate student presentations for high school students and educators and gave hands-on presentations.
- **Participation in the Molecular Biology Program:** I participated in interviewing and recruiting graduate students through this university-wide program.
- **SEED Grant Reviewer:** I participated as a reviewer in the internal University of Utah SEED grant program to fund investigators in new lines of competitive research.
- **Reviewer for scientific journals.**

2010:

- **Departmental Committees —**
 - **Sequencing Committee:** I continued to serve on the DNA sequencing committee within the Department of Biology.
 - **MCEB Graduate Program Committee:** I continued to meet with faculty (organized by Dr. Gary Drews, ExCo representative) to formulate a graduate program for members of the MCEB division within the Department of Biology.
- **Training and Mentoring:** I mentored a graduate student (Edward J. Osborne) and a postdoctoral fellow (Dr. Joshua Steffen), along with an undergraduate.
- **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students.
- **Faculty Representative for the University of Utah's Science Day:** I organized Department of Biology faculty and graduate student presentations for high school students and educators and gave hands-on presentations.
- **Construction of a Revised Department of Biology Website:** I worked closely with a small group of faculty (Drs. Leslie Sieburth & Michael Shapiro) to develop a revised departmental website. Contributions included both design and content to raise the visibility of research and training possibilities in the department.
- **Molecular Biology Program recruiting:** I participated in interviewing and recruiting graduate students through this multi-department program.
- **SEED Grant Reviewer:** I participated as a reviewer in the internal University of Utah SEED grant program to fund investigators in new lines of competitive research.
- **Reviewer for scientific journals.**

2009:

- **Departmental Committees —**

- **Sequencing Committee:** I participated in formulating policy for DNA sequencing within the Department of Biology, especially as relates to high-throughput sequencing and management of the department's sequencing resources.
- **MCEB Graduate Program Committees:** As a member of the Molecular, Cellular and Evolutionary Biology (MCEB) division of the department, I participated in shaping a formal MCEB graduate program. Specifically:
 - **Preliminary PhD Exam Committee:** I chaired this working group that developed a recommendation for a PhD Preliminary (Qualifying) Exam for incoming MCEB Department of Biology graduate students.
 - **Curriculum Committee:** I served as member of this working group tasked to develop a curriculum for incoming MCEB students. Outlines for first year graduate courses were developed, and recommendations were shared with other MCEB faculty members.
- **Training and Mentoring:** I mentored a graduate student (Edward J. Osborne) and a postdoctoral fellow (Dr. Joshua Steffen), and served on thesis committees for other graduate students.
- **Participation in the Molecular Biology Program.** I served in Spring 2009 on the Molecular Biology Program admissions committee as the (sole) Department of Biology representative (this is a multi-department graduate admissions program).
- **Next-generation Sequencing Journal Club:** I continued in the same capacity as in year 2008.
- **Prelim Exam and Thesis Committees:** I served on prelim (qualifying) exam committees or thesis committees for departmental graduate students.
- **Reviewer for scientific journals.**

2008:

- **Departmental Committees —**
 - **Sequencing Committee:** I participated in formulating policy for DNA sequencing within the Department of Biology, especially as relates to high-throughput sequencing. Also, I oversaw the installation of an Illumina Genome Analyzer II instrument in the department.
- **Next-generation Sequencing Journal Club:** Along with Dr. David Nix (Huntsman Cancer Institute), I developed a campus-wide journal club to introduce students, postdocs and faculty to advances in the field of DNA sequencing that are revolutionizing genome science. The journal club was held monthly, excluding summer, and attracted a large audience from both College of Science and Medical School departments.
- **NSF Service:** I participated (by invitation) in the National Science Foundation funded iPLANT Workshop at Biosphere II, Arizona (Nov. 7-10, 2008). This NSF funded effort was aimed at identifying "Grand Challenges" in the plant sciences, particularly those of relevance to computational fields. Along with other participants, I specifically helped to identify challenges related to mechanistic modeling of biological processes.
- **Reviewer for scientific journals.**

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TEACHING

Courses taught by year:

2023:

BIOL 3150-001 (Spring): **Genomics & bioinformatics** (I am teaching this lecture/laboratory course, 3 credits with an L1 lab designation, for the first time; this is a new course that I developed)

2022:

Note: I was on sabbatical during spring of 2022, and therefore I did not teach my course Genome Biology (BIOL 5140) or contribute lectures to other courses during that time.

BIOL 2870-001 (Fall): **Faculty Research Sem** (I contributed a lecture to this undergraduate seminar course)

BIOL 7406-001 (Fall): **Critical Analysis** (I contributed a lecture to this graduate course)

BIOL 7970-059 (Spring): **Thesis Research – Phd** (graduate thesis research)

BIOL 7970-071 (Fall): **Thesis Research – Phd** (graduate thesis research)

2021:

BIOL 5140-001 (Spring): **Genome Biology** (I taught this upper division class as the sole instructor)

BIOL 2870-001 (Spring): **Faculty Research Sem** (I contributed a lecture to this undergraduate seminar course)

BIOL 7970-059 (Spring): **Thesis Research – Phd** (graduate thesis research)

BIOL 7970-071 (Fall): **Thesis Research – Phd** (graduate thesis research)

2020:

BIOL 5140-001 (Spring): **Genome Biology** (I taught this upper division class as the sole instructor)

BIOL 7962-001 (Spring): **Adv Tpcs:Cell/Devel/Gen** (sole organizer of this graduate course)

BIOL 7950-048 (Spring): **Independent Study** (graduate independent study)

BIOL 7970-059 (Spring): **Thesis Research – Phd** (graduate thesis research)

BIOL 7970-071 (Fall): **Thesis Research – Phd** (graduate thesis research)

BIOL 7406-001 (Fall): **Critical Analysis** (I contributed a lecture to this graduate course)

2019:

BIOL 5140 (Spring): **Genome Biology** (I taught this upper division class as the sole instructor).

BIOL 7964 (Spring): **Topics in Ecology and Evolution** (I contributed a lecture)

BIOL 2870 (Fall): **Faculty Research Seminar** (I contributed a lecture in this undergraduate course)

BIOL 7970-059 (Spring): **Thesis Research – Phd** (graduate thesis research)

BIOL 7970-071 (Fall): **Thesis Research – Phd** (graduate thesis research)

2018:

BIOL 5140 (Spring): **Genome Biology** (I taught this upper division class as the sole instructor).

BIOL 7964 (Spring): *Topics in Ecology and Evolution* (I contributed a lecture)
BIOL 3960 (Fall): *Special Topics: Faculty Research Seminar* (I contributed a lecture in this undergraduate course)
BIOL 7206 (Fall): *Intro to MCEB Research* (I contributed a lecture in this graduate course)
BIOL 7970-059 (Spring): *Thesis Research – Phd* (graduate thesis research)
BIOL 7970-071 (Fall): *Thesis Research – Phd* (graduate thesis research)

2017:

BIOL 5140 (Spring): *Genome Biology* (I taught this upper division class as the sole instructor).
BIOL 7964 (Spring): *Topics in Ecology and Evolution* (I contributed a lecture)
BIOL 4955 (Summer): *Independent Study* (individual research, 3 units for an undergraduate to perform research in my laboratory)
BIOL 3960 (Fall): *Special Topics: Faculty Research Seminar* (I contributed a lecture in this undergraduate course)
BIOL 7206 (Fall): *Intro to MCEB Research* (I contributed a lecture in this graduate course)
BIOL 7970-059 (Spring): *Thesis Research – Phd* (graduate thesis research)
BIOL 7970-071 (Fall): *Thesis Research – Phd* (graduate thesis research)

2016:

BIOL 5140 (Spring): *Genome Biology* (I taught this upper division class as the sole instructor).
PCTH 7777 (Spring): *Applied Genomics I* (I presented two week long modules in this team taught graduate course)
BIOL 7964 (Spring): *Topics in Ecology and Evolution* (I was the course organizer for this graduate course and gave three lectures)
BIOL 3960 (Fall): *Special Topics: Faculty Research Seminar* (I gave a lecture in this undergraduate course)
BIOL 7206 (Fall): *Intro to MCEB Research* (I presented a lecture in this graduate course)
BIOL 7970-059 (Spring): *Thesis Research – Phd* (graduate thesis research)
BIOL 7970-071 (Fall): *Thesis Research – Phd* (graduate thesis research)

2015:

Note: I was on sabbatical during spring of 2015, and therefore did not teach my typical classes during the spring semester (e.g., Genome Biology or modules in Applied Genomics I & II).

BIOL 7206 (Fall): *Intro to MCEB Research* (I presented a lecture in this graduate course)
BIOL 7970-059 (Spring): *Thesis Research – Phd* (graduate thesis research)
BIOL 7970-071 (Fall): *Thesis Research – Phd* (graduate thesis research)

2014:

BIOL 5140 (Spring): *Genome Biology* (I taught this upper division class as the sole instructor).
PCTH 7777 & 7778 (Spring): *Applied Genomics I & II* (I presented two week long modules in this team taught graduate course, one in each section)

BIOL 7962 (Spring): *Seminal Papers in Biology* (I contributed two weeks of instruction in graduate course)

BIOL 7206 (Fall): *Intro to MCEB Research* (I taught in and was the course organizer for this team-taught graduate course)

BIOL 7970-059 (Spring): *Thesis Research – Phd* (graduate thesis research)

BIOL 7970-071 (Fall): *Thesis Research – Phd* (graduate thesis research)

2013:

BIOL 5140 (Spring): *Genome Biology* (I taught this upper division class as the sole instructor)

PCTH 7777 & 7778 (Spring): *Applied Genomics I & II* (I presented two week long modules in this team taught graduate course, one in each section)

BIOL 7964 (Spring): *Topics in Ecology and Evolution* (I contributed a lecture to this graduate course)

BIOL 7970-059 (Spring): *Thesis Research – Phd* (graduate thesis research)

BIOL 7970-071 (Fall): *Thesis Research – Phd* (graduate thesis research)

2012:

BIOL 5140 (Spring): *Genome Biology* (I taught this upper division class as the sole instructor)

PCTH 7777 & 7778 (Spring): *Applied Genomics I & II* (I presented two week long modules in this team taught graduate course, one in each section)

BIOL 7962 (Spring): *Seminal Papers in Biology* (I contributed two weeks of instruction in this graduate course)

BIOL 7964 (Spring): *Topics in Ecology and Evolution* (I contributed a lecture to this graduate course)

BIOL 7970-059 (Spring): *Thesis Research – Phd* (graduate thesis research)

BIOL 7970-071 (Fall): *Thesis Research – Phd* (graduate thesis research)

2011:

BIOL 5140 (Spring): *Genome Biology* (I taught this upper division class as the sole instructor)

BIOL 7964 (Spring): *Topics in Ecology and Evolution* (I contributed a lecture to this graduate course)

BIOL 5510 (Fall): *Evolutionary-Developmental Biology* (I contributed a lecture to this upper division undergraduate course)

BIOL 7970-059 (Spring): *Thesis Research – Phd* (graduate thesis research)

BIOL 7970-071 (Fall): *Thesis Research – Phd* (graduate thesis research)

2010:

BIOL 5140 (Spring): *Genome Biology* (I taught this upper division class, which I developed on my own, as the sole instructor)

BIOL 7964 (Spring): *Topics in Ecology and Evolution* (I contributed a lecture to this graduate course)

HGEN 6092 (Spring): *Evolutionary Genetics and Genomics* (I contributed a lecture to this graduate course)

BIOL 7970-059 (Spring): *Thesis Research – Phd* (graduate thesis research)

BIOL 7970-071 (Fall): *Thesis Research – Phd* (graduate thesis research)

2009:

BIOL 7961 (Spring): *Adv Tpcs: Biochem/Molec* (With another instructor, Dr. Colin Dale, I co-taught this half-semester graduate course that explored the technologies, applications, and insights that are coming from the field of high-throughput genomic sequencing.)

BIOL 7970-071 (Fall): *Thesis Research – Phd* (graduate thesis research)