Blake C. Meyers

Donald Danforth Plant Science Center
University of Missouri, Division of Plant Sciences
Telephone: (314) 587-1422
Email: bmeyers@danforthcenter.org

Professional Preparation.

University of Chicago	Biology	B.A. (honors)	1992
University of California, Davis	Genetics	M.S.	1995
University of California, Davis	Genetics	Ph.D.	1998
DuPont Crop Genetics	Plant Genomics	Post-doc	1998 – 2000
University of California, Davis	Genomics	Post-doc	2000 – 2002

Appointments.

2016 – Member, The Donald Danforth Plant Science Center, St. Louis, MO
Professor, University of Missouri, Division of Plant Sciences, Columbia, MO
Adjunct Professor, Department of Biology, Washington University, St. Louis
2010 – 2015 Edward F. & Elizabeth Goodman Rosenberg Professor
2009 – 2015 Professor, Dept. of Plant and Soil Sciences, University of Delaware.
Secondary Appointments:
Dept. of Computer and Information Sciences, College of Engineering (since 2006)
Dept. of Biological Sciences, College of Arts & Sciences (since 2014)
2009 – 2015 Department Chair, Dept. of Plant and Soil Sciences, University of Delaware.
2002 – 2006 Assistant Professor, *2006 – 2009* Associate Professor
Dept. of Plant and Soil Sciences, University of Delaware.
2001 – 2002 Assistant Research Geneticist (adjunct faculty). University of California, Davis.

Awards and Honors

Elected Fellow, American Society of Plant Biologists (ASPB), 2017
Charles Albert Shull Award, American Society of Plant Biologists (ASPB), 2017
ISI Highly Cited Researcher: 2014, 2015, 2016 (Top 1% most-cited, for subject area)
Elected Fellow, American Association for the Advancement of Science (AAAS), 2012
Edward F. and Elizabeth Goodman Rosenberg Professor, 2010 – 2015
Elected member, North American Arabidopsis Steering Committee *(*NAASC), 2009 – 2013
President of NAASC, 2012 – 2013
National Science Foundation Pre-Doctoral Fellow, 1992 – 1995
Phi Beta Kappa honor society member, 1992

Selected significant publications. (*indicates co-corresponding authors.)

Total refereed publications, 170+
Google Scholar: total citations, 24,000+ (~13,000 in last 5 years); h-index, 71; i10-index, 154
ISI Researcher ID, B-6535-2012
ORCID: http://orcid.org/0000-0003-3436-6097

Patel P, Mathioni S, Kakrana A, Shatkay H, **Meyers BC**. Reproductive phasiRNAs in grasses are compositionally distinct from other classes of small RNAs. *New Phytologist,* 220: 851-864. DOI: 10.1111/nph.15349. *bioRxiv,* DOI: 10.1101/242727.

Tamim S, Cai Z, Mathioni S, Zhai J, Teng C, Zhang Q, **Meyers BC**. *Cis*-directed cleavage and nonstoichiometric abundances of 21-nt reproductive phasiRNAs in grasses. *New Phytologist,* 220: 865–877. DOI: 10.1111/nph.15181. *bioRxiv,* DOI: 10.1101/243907.

Kakrana A., Mathioni SM, Huang K, Hammond R, Vandivier L, Patel P, Arikit S, Shevchenko O, Harkess AE, Kingham B, Gregory BD, Leebens-Mack JH, **Meyers BC**. Plant 24-nt reproductive phasiRNAs from intramolecular duplex mRNAs in diverse monocots. *Genome Research*. 28: 1333-1344. DOI: 10.1101/gr.228163.117.

Fei Q, Yu Y, Liu L, Zhang Y, Baldrich P, Chen X, & **Meyers BC.** Biogenesis of a young, 22-nt microRNA in Phaseoleae species by precursor-programmed uridylation. *Proc Natl Acad Sci USA.* 115: 8037-8042. DOI: 10.1073/pnas.1807403115. On *bioRxiv* at DOI: 10.1101/310920

Bélanger S, Marchand S, Jacques P-E, **Meyers BC**, Belzile F. Differential expression profiling of microspores during the early stages of isolated microspore culture using the responsive barley cultivar Gobernadora. *G3,* 8: 1603-1614. DOI: 10.1534/g3.118.200208.

Edger PA, Hall JC, Harkess A, Tang M, Coombs J, Mohammadin S, Schranz ME, Xiong Z, Leebens-Mack J, **Meyers BC,** Systma KJ, Koch M, Al-Shehbaz IA, & Pires JC. Brassicales phylogeny inferred from 72 plastid genes: a reanalysis of the phylogenetic localization of two paleopolyploid events and origin of novel chemical defenses. *American Journal of Botany.* 105: 463-469. DOI: 10.1002/ajb2.1040.

He J, Xu M, Willmann MR, McCormick K, Hu T, Yang L, Starker CG, Voytas DF, **Meyers BC**, Poethig RS. Threshold-dependent repression of *SPL* gene expression by miR156/miR157 controls vegetative phase change in *Arabidopsis thaliana*. *PLoS Genetics*, 14: e1007337. DOI: 10.1371/journal.pgen.1007337.

Van Der Linde K, Timofejeva L, Egger R, Ilau B, Hammond R, Teng C, **Meyers BC**, Doehlemann G, Walbot V. (2018) Pathogen Trojan horse delivers bioactive host protein to alter maize (*Zea mays*) anther cell behavior *in situ. The Plant Cell,* 30: 528-542. DOI: 10.1105/tpc.17.00238

Axtell MJ, **Meyers BC**. (2018) Revisiting criteria for plant miRNA annotation in the era of big data. *The Plant Cell,* 30:272-284. doi: 10.1105/tpc.17.00851 *bioRxiv,* DOI:10.1101/213314

Ma W, Chen C, Liu L, Zeng M, **Meyers BC**, Li, JG, Xia R. (2018) Coupling of microRNA-directed phasiRNA generation from long noncoding genes with alternative splicing and alternative polyadenylation in small RNA-mediated gene silencing. *New Phytologist,* 217:1535-1550. DOI: 10.1111/nph.14934

Wang PH, Wittmeyer K, Lee T-F, **Meyers BC** & Chopra S. (2017) Overlapping RdDM and non-RdDM mechanisms work together to maintain somatic repression of a paramutagenic epiallele of maize *pericarp color1*. *PLoS ONE,* 12:e0187157. DOI: 10.1371/journal.pone.0187157

Sidorenko LV*†, Lee TF*, Woosley A, Moskal WA, Bevan SA, Owens Merlo PA, Walsh TA, Wang X, Weaver S, Glancy T, Wang P, Yang X, Sriram S & **Meyers BC**†. (2017) GC-rich coding sequences reduce transposon-like, small RNA-mediated transgene silencing. *Nature Plants,* 3:875-884. DOI: 10.1038/s41477-017-0040-6 *equal contributions †co-corresponding authors

Huang K, Doyle F, Wurz ZE, Tenenbaum SA, Hammond R, Caplan JL* & **Meyers BC***. (2017) FASTmiR: An RNA-based sensor for *in vitro* and live-cell detection of small RNAs. *Nucleic Acids Research*. 45: e130. DOI: 10.1093/nar/gkx504

Xia R, Xu J, **Meyers BC**. The emergence, evolution, and diversification of the miR390-TAS3-ARF pathway in land plants. (2017) *The Plant Cell.* 29:1232-1247. DOI: 10.1105/tpc.17.00185

Fan Y, Yang J, Mathioni S, Yu J, Yang X, Wang L, Zhang Q, Shen J, Cai Z, Xu C, Li X, Xiao J, **Meyers BC** & Zhang Q (2016). PMS1T, producing phased small interfering RNAs, regulates photoperiod-sensitive male sterility in rice. *Proc. Natl. Acad. Sci. USA (PNAS),* 113(52): 15144-49.

Fei Q, Yang L, Liang W, Zhang D* & **Meyers BC** (2016). Dynamic changes of small RNAs in rice spikelet development reveal specialized reproductive phasiRNA pathways. *J. Exp. Botany,* 67(21): 6037-6049. DOI: 10.1093/jxb/erw361

Char SN, Neelakandan A, Nahampun H, Frame B, Main M, Spalding M, Becraft P, **Meyers BC**, Walbot V, Wang K, & Yang B (2016). An Agrobacterium-delivered CRISPR/Cas9 system for

high-frequency targeted mutagenesis in maize. *Plant Biotechnology Journal,* [epub]. DOI: 10.1111/pbi.12611

Zhang Y, Xia R, Kuang H, & **Meyers BC** (2016). The diversification of plant NBS-LRR defense genes directs the evolution of microRNAs that target them. *Mol Biol Evol,* 33: 2692-2705*.* DOI: 10.1093/molbev/msw154

Yang L, Qian X, Chen M, Fei Q, **Meyers BC**, Liang W, & Zhang D (2016). Regulatory role of a receptor-like kinase in specifying anther cell identity in rice. *Plant Physiol,* 171(3):2085-100*.* DOI: 10.1104/pp.16.00016.

Wendel JF, Jackson SA, **Meyers BC** & Wing RA (2016). Evolution of plant genome architecture. *Genome Biology.* 17:37. DOI: 10.1186/s13059-016-0908-1

Zhai, J., Bischof, S., Wang, H., Feng, S., Lee, T.-F., Teng, C., Chen, X., Park, S.Y., Liu, L., Gallego-Bartolome, J., Liu, W., Henderson, I.R., **Meyers, B.C.,** Ausin, I., and S.E. Jacobsen. (2015) A one precursor one siRNA model for Pol IV-dependent siRNA biogenesis. *Cell*. 163:445-455. DOI: 10.1016/j.cell.2015.09.032.

Xia, R., Xu, J., and **B.C. Meyers.** (2015) Extensive families of miRNAs and *PHAS* loci in Norway spruce demonstrate the origins of complex phasiRNA networks in seed plants. *Molecular Biology and Evolution.* 32: 2905-2918. DOI: 10.1093/molbev/msv164

Fei, Q., Li, P., Teng, C., and **B.C. Meyers.** (2015) Secondary siRNAs from Medicago *NB-LRRs* modulated via miRNA-target interactions and their abundances. *The Plant Journal.* 83: 451-465. DOI: 10.1111/tpj.12900

Zhai, J., H. Zhang, S. Arikit, K. Huang, G.L. Nan, V. Walbot, and **B.C. Meyers**. (2015). Spatiotemporally dynamic, cell-type dependent premeiotic and meiotic phasiRNAs in maize anthers. *Proc. Natl. Acad. Sci. USA (PNAS)*. 112: 3146-3151. DOI: 10.1073/pnas. 1418918112

Arikit, S., Xia, R., Kakrana, A., Huang, K., Zhai, J., Yan, Z., Valdés-López, O., Prince, S., Musket, T.A., Nguyen, H.T., Stacey, G., and **B.C. Meyers.** (2014) An atlas of soybean small RNAs demonstrates regulation by phased siRNAs of hundreds of coding genes. *Plant Cell.* 26: 4584-4601. DOI: 10.1105/tpc.114.131847

Wei, L., Gu, L., Song, X., Cui, X., Lu, Z., Zhou, M., Wang, L., Hu, F., Zhai, J., **Meyers, B.C.**, and X. Cao. (2014) Dicer-like 3 produces MITE-associated heterochromatic-siRNAs that control agricultural traits in rice. *Proc Natl Acad Sci USA.* 111: 3877-82.

Creasey, K.M., Zhai, J., Borges, F., Van Ex, F., **Meyers, B.C.**, and R.A. Martienssen. (2014) miRNAs trigger widespread epigenetically-activated siRNAs from transposons in Arabidopsis. *Nature.* 508: 411-415. DOI: 10.1038/nature13069.

Zhai, J., Zhao, Y., Simon, S.A., Huang, S., Petsch, K., Arikit, S., Pillay, M., Ji, L., Xie, M., Cao, X., Yu, B., Timmermans, M., Yang, B., Chen, X., and **B.C. Meyers**. (2013). Plant MicroRNAs display differential 3'- truncation and tailing, modifications which are ARGONAUTE1-dependent and conserved across species. *The Plant Cell.* 25: 2417-2428.

Stroud, H., Ding, B., Simon, S.A., Feng, S., Pellegrini, M., Wang, G.-L., **Meyers, B.C.**, and S.E. Jacobsen. (2013) Aberrant loss of DNA methylation in transgenic rice. *eLife*. 2: e00354.

Nobuta, K., Lu, C., Shrivastava, R., Pillay, M., De Paoli, E., Accerbi, M., Arteaga-Vasquez, M., Sidorenko, L., Jeong, D.-H., Yen, Y., Chandler, V. *, Green, P.J., and **B.C. Meyers ***. (2008) A novel size distribution of endogeneous siRNAs in maize: evidence from deep sequencing in the *mop1-1* mutant. *Proc Natl Acad Sci USA.* 105:14958-63.

German, M.A., Pillay, M., Jeong, D.-H., Hetawal, A., Luo, S., Janardhanan, P., Kannan, V., Rymarquis, L., Nobuta, K., German, R., De Paoli, E., Lu, C., Schroth, G., **Meyers, B.C. *,** and P.J. Green *. (2008) Novel microRNA-target RNA pairs revealed by Parallel Analysis of RNA Ends (PARE). *Nature Biotechnology.* 26:941-946. * co-corresponding authors.

Lu, C., Tej, S.S., Luo, S., Haudenschild, C.D., **Meyers, B.C.***, and P.J. Green.* (2005) Elucidation of the small RNA component of the transcriptome. *Science*. 309: 1576-1569.

A full publication list is available on Google Scholar:
https://scholar.google.com/citations?user=5hd_tmMAAAAJ&hl=en

Synergistic Activities.

1. Active leadership roles in the scientific community:
   - North American *Arabidopsis* Steering Committee (NAASC), 2009-2013, including a term as president.
   - Director since 2011, International Arabidopsis Informatics Consortium (IAIC). Supported by an NSF Research Coordination Network (RCN) award.
   - Steering committee of "Epigenomics of Plants Consortium (EPIC)"
   - Scientific Advisory Board, Institute of Plant and Microbial Biology--IPMB, Academia Sinica, Taipei, Taiwan (2015 – 2019)
   - Organizer of numerous meetings, workshops, minisymposia, etc.
2. Editorial board member for four journals: *The Plant Cell* (since 2008; senior editor since 2017)*; Tropical Plant Biology; Rice, Current Opinion in Plant Biology.*
3. Consultant to numerous agricultural biotechnology companies.
4. Chair of my department for nearly seven years; a department with ~30 faculty, ~20 staff, 140 graduates and undergraduates, and a total portfolio of ~$28M in sponsored research. Hired six faculty in this time of which three have since been awarded NSF CAREER grants.

Invited seminars.

1. Seminars or presentations within the United States.
   - Over 150 invited talks in the US since 1998.
2. International seminars or presentations.
   - Over 90 invited talks at international meetings or institutions since 1998.

Teaching, mentoring, and advising (from 2002 to the present). *(Univ. of Delaware; Univ. of Missouri; Danforth Center)*

1. >20 postdoctoral scientists supervised.
2. >15 research associates or staff programmers supervised.
3. Graduate Student Major Advisor or Supervisor:
   a. Plant & Soil Sciences (UD) or Div. of Plant Sciences (MU): 6 Ph.D. students.
   b. Computer & Information Sciences, or Electrical & Computer Engineering (bioinformatics) at UD: 8 Ph.D. students, 27 M.S. students.
   c. Bioinformatics at UD: 4 Ph.D. students, 3 M.S. students.
   d. Visiting graduate students: 7 international Ph.D. students.
4. Awards received by graduate students or post-docs include NSF Postdoctoral Fellowships (2), IGERT scholarships (2), University of Delaware Fellowships, Thousand Talents Program Finalist – award offered (China) (two lab members), a Life Sciences Research Foundation Post-Doctoral Fellowship, a Ford Foundation Diversity Postdoctoral Fellowship, ASPB Travel Awards, and other awards.
5. Alumni of my lab are employed in a wide variety of positions including faculty appointments, in industry (from plant biotech to computer science, and microchip fabrication to satellites), and in the government.