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Dept. of Organismic and Evolutionary Biology
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PROFESSIONAL POSITIONS

Interim Director, Harvard University Herbaria, 2019-present.

Bussey Professor of Organismic and Evolutionary Biology, Department of Organismic and Evolutionary Biology. Harvard University. 2012-present.

Chair, Dept. of Organismic and Evolutionary Biology, 2016-2022.

Harvard College Professor, Harvard University. 2015-2020.

Professor of Biology, Department of Organismic and Evolutionary Biology. Harvard University. 2007-2012.

John L. Loeb Associate Professor. Department of Organismic and Evolutionary Biology. Harvard University. 2004-2007.

Assistant Professor. Department of Organismic and Evolutionary Biology. Harvard University. 2000-2004.

EDUCATION

Yale University. Department of Molecular, Cellular and Developmental Biology 1993-1999. Ph.D. Nov. 1999.

Brandeis University. 1989-1993. Phi Beta Kappa 1992. B.A. with Highest Honors in Biology. Graduated *summa cum laude* May 1993.

FELLOWSHIPS

National Science Foundation Graduate Fellowship, 1993-97
Nathan and Bertha Richter Award for Undergraduate Research, 1992

RESEARCH

Yale University. Department of Ecology and Evolutionary Biology. Post-Doctoral Advisor: Dr. Gunter Wagner, 1999-2000.

Yale University. Department of Molecular, Cellular and Developmental Biology. Graduate research advisor: Dr. Vivian F. Irish. 1994-1999. Thesis title: Evolution of genetic mechanisms underlying petal and stamen development.

Brandeis University. Department of Biology. Undergraduate research advisor: Dr. Jeffrey C. Hall. 1991-1993. Senior Thesis: Phenotypic characterization of the courtship mutant *cacophony* and interacting genetic variants in *Drosophila melanogaster*.

PUBLICATIONS (PUBLISHED OR IN PRESS)

67. Edwards, M. B., E. S. Ballerini, **E. M. Kramer.** (2022) Complex developmental and transcriptional dynamics underlie pollinator-driven evolutionary transitions in nectar spur morphology in *Aquilegia* (columbine). *American Journal of Botany*, 10.1002/ajb2.16046.
66. Min, Y., E. S. Ballerini, M. B. Edwards, S. A. Hodges, **E. M. Kramer.** (2022) Genetic architecture underlying variation in floral meristem termination in *Aquilegia*. *Journal of Experimental Botany*, DOI: erac277.
65. Min, Y., S. J. Conway, **E. M. Kramer.** (2022) Quantitative live confocal imaging in *Aquilegia* floral meristems. *Bio-protocols*, <https://bio-protocol.org/e4449>.
64. Min, Y., S. J. Conway, **E. M. Kramer.** (2022) Quantitative live imaging of floral organ initiation and floral meristem termination in *Aquilegia*. *Development*, 149, dev200256. doi:10.1242/dev.200256.
63. Conway, S. J., C. L. Walcher-Chevillet, K. S. Barbour, **E. M. Kramer.** (2021) Brassinosteroids regulate petal spur length in *Aquilegia* by controlling cell elongation. *Annals of Botany*, [10.1093/aob/mcab116](https://doi.org/10.1093/aob/mcab116).
62. Edwards, M. B., G. P. T. Choi, N. J. Dereig, Y. Min, A. C. Diana, S. A. Hodges, L. Mahadevan, **E. M. Kramer**, E. S. Ballerini. (2021) Genetic architecture of floral traits in bee- and hummingbird-pollinated sister species of *Aquilegia* (columbine). *Evolution*, 75: 2197–2216; <https://doi.org/10.1111/evo.14313>.
61. Min, Y., **E. M. Kramer.** (2020) Transcriptome profiling and weighted gene co-expression network analysis of early floral development in *Aquilegia coerulea*. *Scientific Reports*, 10:19637; <https://doi.org/10.1038/s41598-020-76750-7>.
60. Ballerini, E. S., Y. Min, M. B. Edwards, **E. M. Kramer**, S. A. Hodges. (2020) *POPOVICH*, encoding a C2H2-zinc finger transcription factor, plays a central role in the development of a key innovation, floral nectar spurs, in *Aquilegia*. *Proceedings of the National Academy of Science, USA*, 117: 22552-22560; <https://doi.org/10.1073/pnas.2006912117>.
59. Zhang, R., X. Fu, C. Zhao, J. Chang, H. Liao, P. Wang, X. Yao, X. Dian, Y. Yuan, G. Xu, **E. M. Kramer**, H. Shan, H. Kong. (2020) Identification of the key regulatory genes involved in elaborate petal development and specialized character formation in *Nigella damascena* (Ranunculaceae). *Plant Cell*, tpc.00330.2020; DOI: <https://doi.org/10.1105/tpc.20.00330>.
58. Meaders, C., Y. Min, K. J. Freedberg, **E. M. Kramer.** (2020) Developmental and molecular characterization of novel staminodes in *Aquilegia*. *Annals of Botany*, 126: 231-243.
57. Zhang, R., Y. Min, L. D. Holappa, C. L. Walcher-Chevillet, X. Dian, E. Donaldson, H.-Z. Kong, **E. M. Kramer.** (2020) A role for the Auxin Response Factors *ARF6* and *ARF8* homologs in petal spur elongation and nectary maturation in *Aquilegia*. *New Phytologist*, 227:1392-1405.

56. Wu, C.-C.*, F.W. Li, **E. M. Kramer**. (2019) Large-scale phylogenomic analysis suggests three ancient superclades of the WUSCHEL-RELATED HOMEODOMAIN transcription factor family in plants. PLoS One, Oct 11; 14: e0223521. doi: 10.1371/journal.pone.0223521. *corresponding author.
55. Sharma B., T. A. Batz, R. Kaundal, E. M. **Kramer**, U.R. Sanders, V. J. Mellano, N. Duhan, R. B. Larson. (2019) Developmental and molecular changes underlying the vernalization-induced transition to flowering in *Aquilegia coerulea* (James). Genes, 10:E734. doi: 10.3390/genes10100734.
54. Ballerini, E. S., **E. M. Kramer**, S. A. Hodges. (2019) Comparative transcriptomics of early petal development across four diverse species of *Aquilegia* reveal few genes consistently associated with nectar spur development. BMC Genomics, 20: 668. doi: 10.1186/s12864-019-6002-9.
53. Sharma, B., C. Meaders, D. Wolfe, L. Holappa, C. Walcher-Chevillet, **E. M. Kramer**. (2019) Homologs of *LEAFY* and *UNUSUAL FLORAL ORGANS* promote the transition from inflorescence to floral meristem identity in the cymose *Aquilegia coerulea*. Front Plant Sci, 10, 1218.
52. Min, Y., J.I. Bunn, **E. M. Kramer**. (2019) Homologs of the *STYLISH* gene family control nectary development in *Aquilegia*. New Phytologist, 221: 1090-1100.
51. Filiault, D. L., E. S. Ballerini, T. Mandáková, G. Aköz, N. J. Derieg, J. Schmutz, J. Jenkins, J. Grimwood, S. Shu, R. D. Hayes, U. Hellsten, K. Barry, J. Yan, S. Mihaltcheva, M. Karafiátová, V. Nizhynska, **E. M. Kramer**, M. A. Lysak, S. A. Hodges, M. Nordborg. (2018) The *Aquilegia* genome provides insight into adaptive radiation and reveals an extraordinarily polymorphic chromosome with a unique history. eLife, [10.7554/eLife.36426](https://doi.org/10.7554/eLife.36426).
50. Sharma, B., **E. M. Kramer**. (2017) *Aquilegia* B gene homologs promote petaloidy of the sepals and maintenance of the C domain boundary. EvoDevo, 8:22.
49. Qin, G., C. Xu, R. Ming, H. Tang, R. Guyot, **E. M. Kramer**, Y. Hu, X. Yi, Y. Qi, X. Xu, Z. Gao, H. Pan, J. Jian, Y. Tian, Z. Yue, Y. Xu. (2017) The pomegranate (*Punica granatum* L.) genome and the genomics of punicalagin biosynthesis. Plant Journal, 91:1108-1128.
48. Holappa, L. D., P.C. Ronald, **E. M. Kramer**. (2017) Evolutionary analysis of Snf1-Related Protein Kinase2 (SnRK2) and Calcium Sensor (SCS) gene lineages, and dimerization of rice homologs, suggest deep biochemical conservation across angiosperms. Frontiers in Plant Science, 8:395.
47. Min, Y., **E. M. Kramer**. (2017) The *Aquilegia* *JAGGED* homolog promotes proliferation of adaxial cell types in both leaves and stems. New Phytologist, 216:536-548.
46. Zhang, W., **E. M. Kramer**, C. C. Davis. (2016) Differential expression of *CYC2* genes and the elaboration of floral morphologies in *Hiptage*, an Old World genus of Malpighiaceae. International Journal of Plant Sciences, 177:551-558.
45. **Kramer, E. M.** (2015) Stranger in a strange land: The utility and interpretation of heterologous expression. Frontiers Plant Science, 6:734.
44. Yant, L., S. Collani, J. R. Puzey, C. Levy, and **E. M. Kramer**. (2015) Molecular basis for three-dimensional elaboration of the *Aquilegia* petal spur. Proceedings of the Royal Academy of Science, London, Series B, 282: 20142778, DOI: 10.1098/rspb.2014.2778.

43. Nikolov, L. A., P. B. Tomlinson, S. Manickam, P. K. Endress, **E. M. Kramer**, and C. C. Davis. (2014) Holoparasitic Rafflesiaceae possess the most reduced endophytes yet give rise to the world's largest flowers. *Annals of Botany*, 114:233-242.
42. Fei, Z., Y. Wang, R. Allen, **E. M. Kramer** and M. Tadege. (2014) STENOFOLIA recruits TOPLESS to repress *ASYMMETRIC LEAVES2* at the leaf margin and promote leaf blade outgrowth in *Medicago truncatula*. *Plant Cell*, 26:650-664.
41. Nikolov, L. A., Y. M. Staedler, S. Manickam, J. Schönenberger, P. K. Endress, **E. M. Kramer**, and C. C. Davis. (2014) Floral structure and development in Rafflesiaceae with emphasis on their exceptional gynoecea. *American Journal of Botany*, 101:225-243.
40. Gleason, E. J. and **E. M. Kramer**. (2013) Conserved roles for Polycomb Repressive Complex 2 in the regulation of lateral organ development in *Aquilegia x coerulea* 'Origami.' *BMC Plant Biology*, 13:185.
39. Nikolov, L. A., P. K. Endress, M. Sugumaran, S. Sasirat, S. Vessabutr, **E. M. Kramer**, and C. C. Davis. (2013) Developmental origins of the world's largest flowers, Rafflesiaceae. *Proceedings of the National Academy of Sciences, USA*, 110:18578-18583.
38. Zhang, W., V. W. Steinmann, L. Nikolov, **E. M. Kramer** and C. C. Davis. (2013) Divergent genetic mechanisms underlie reversals to radial symmetry from diverse zygomorphic flowered ancestors. *Frontiers in Plant Science*, 4:302.
37. Waters, M., A. M. M. Tiley, **E. M. Kramer**, A. W. Meerow, J. A. Langdale, and R. W. Scotland. (2013) The corona of the daffodil *Narcissus bulbocodium* shares stamen-like identity and is distinct from the orthodox floral whorls. *Plant Journal*, 74:615-625.
36. Zhang, R., C. Guo, W. Zhang, P. Wang, L. Li, X. Duan, Q. Du, L. Zhao, H. Shan, S. A. Hodges, **E. M. Kramer**, Y. Ren, and H. Kong. (2013) Disruption of the petal identity gene *APETALA3-3* is highly correlated with loss of petals within the buttercup family (Ranunculaceae). *Proceedings of the National Academy of Sciences, USA*, 110:5074-5079.
35. Pabón-Mora, N., B. Sharma, L. D. Holappa, **E. M. Kramer** and A. Litt. (2013) The *Aquilegia FRUITFULL-like* genes play key roles in leaf morphogenesis and inflorescence development. *Plant Journal*, 74:197-212.
34. Sharma, B. and **E. M. Kramer**. (2013) Sub- and neofunctionalization of *APETALA3* paralogs have contributed to the evolution of novel floral organ identity in *Aquilegia* (columbine, Ranunculaceae). *New Phytologist*, 197:949-957.
33. Avino, M., **E. M. Kramer**, K. Donohue, A. J. Hammel and J. C. Hall. (2012) Understanding the basis of a novel fruit type in Brassicaceae: conservation and deviation in expression patterns of six genes. *EvoDevo*, 3:20.
32. Gleason, E. J. and **E. M. Kramer**. (2012) Characterization of *Aquilegia* Polycomb Repressive Complex 2 homologs reveals absence of imprinting. *Gene*, 507:54-60.
31. Zhang, W., **E. M. Kramer** and C. C. Davis. (2012) Similar genetic mechanisms underlie the parallel evolution of floral phenotypes. *PLoS One*, 7:e36033. doi:10.1371/journal.pone.0036033.

30. Puzey, J., A. Karger, M. Axtell, and **E. M. Kramer**. (2012) Deep annotation of *Populus trichocarpa* miRNAs from diverse tissue sets. PLoS One, 7:e33034. doi:10.1371/journal.pone.0033034.
29. Puzey, J. P.*, S. Gerbode*, S. A. Hodges, **E. M. Kramer**¹, and L. Mahadevan¹. (2012) Evolution of spur length diversity in *Aquilegia* petals is achieved solely through cell shape anisotropy. Proceedings of the Royal Academy of Science, London, Series B, 279:1640-1645. *co-first authors, ¹joint corresponding authors.
28. Ballerini, E. S. and **E. M. Kramer**. (2011) In the light of evolution: A reevaluation of conservation in the CO-FT regulon and its role in photoperiodic regulation of flowering time. Frontiers in Plant Science, 2:81.
27. Hall, J. H., T. E. Tisdale, K. Donohue, A. Wheeler, M. A. Al-Yahya, and **E. M. Kramer**. (2011) Convergent evolution of a complex fruit structure in the tribe Brassiceae (Brassicaceae). American Journal of Botany, 98:1989-2003.
26. Sharma, B., C. Guo, H. Kong, **E. M. Kramer**. (2011) Petal-specific subfunctionalization of an *APETALA3* paralog in the Ranunculales and its implications for petal evolution. New Phytologist, 190:870-883.
25. Ballerini, E. and **E. M. Kramer**. (2011) The control of flowering time in the lower eudicot model *Aquilegia*. EvoDevo, 2:4.
24. Sharma, B. and **E. M. Kramer**. (2014) The MADS box gene family of the lower eudicot *Aquilegia coerulea* E. James. Annals of the Missouri Botanical Garden, 99:313-322.
23. Zhang, W., **E. M. Kramer**, and C. C. Davis. (2010) Floral symmetry genes and the origin and maintenance of zygomorphy in a plant-pollinator mutualism. Proceedings of the National Academy of Science, USA, 107:6388-6393.
22. Voelckel, C., J. O. Borevitz, **E. M. Kramer**, and S. A. Hodges. (2010) Within and between whorls: comparative profiling of *Aquilegia* and *Arabidopsis*. PLoS One, 5:e9735. doi:10.1371/journal.pone.0009735.
21. Puzey, J. R. and **E. M. Kramer**. (2009) Identification of conserved *Aquilegia coerulea* microRNAs and their targets. Gene, 448:46-56.
20. Chiang, G. C. K., D. Baura, **E. M. Kramer**, R. M. Amasino, and K. Donohue. (2009) The major flowering time gene, *FLOWERING LOCUS C*, regulates seed germination in *Arabidopsis thaliana*. Proceedings of the National Academy of Science, USA, 106:11661-11666.
19. Rasmussen, D. E., **E. M. Kramer**, and E. A. Zimmer. (2009) One size fits all? Molecular evidence for a commonly inherited petal identity program in the Ranunculales. American Journal of Botany, 96:96-109.
18. Abzhanov, A., C. Extavour, A. Groover, S. A. Hodges, H. Hoekstra, **E. M. Kramer**, and A. Monteiro. (2008) Are we there yet? Tracking the Development of New Model Systems. Trends in Genetics, 24:355-362.

17. Gould, B. and **E. M. Kramer**. (2007) Virus-induced gene silencing as a tool for functional analyses in the emerging model plant *Aquilegia* (columbine, Ranunculaceae). *Plant Methods*, 3:6.
16. **Kramer, E. M.**, L. Holappa, B. Gould, M. A. Jaramillo, D. Setnikov, and P. Santiago. (2007) Elaboration of B gene function to include the identity of novel floral organs in the lower eudicot *Aquilegia* (Ranunculaceae). *Plant Cell*, 19:750-766.
15. Jaramillo, M. A. and **E. M. Kramer**. (2007) Molecular evolution of the petal and stamen identity genes *APETALA3* and *PISTILLATA* after petal loss in the Piperales. *Molecular Phylogenetics and Evolution*, 44:598-609.
14. **Kramer, E. M.**, H.-J. Su, C.-C. Wu, J.-M. Hu. (2006) A simplified explanation for the frameshift mutation that created a novel C-terminal motif in the *APETALA3* gene lineage. *BMC Evolutionary Biology*, 6:30.
13. Hall, J. H., T. E. Tisdale, K. Donohue and **E. M. Kramer**. (2006) Developmental basis of an anatomical novelty: heteroarthrocarpy in *Cakile lanceolata* and *Erucaria erucarioides* (Brassicaceae). *International Journal of Plant Science*, 167:771-789. [cover feature]
12. Di Stilio, V. S., **E. M. Kramer** and D. A. Baum. (2005) Floral MADS box genes and homeotic gender dimorphism in *Thalictrum dioicum* (Ranunculaceae) - a new model for the study of dioecy. *Plant Journal*, 41:755-766.
11. Jaramillo, M. A. and **E. M. Kramer**. (2004) *APETALA3* and *PISTILLATA* homologs exhibit novel expression patterns in the unique perianth of *Aristolochia* (Aristolochiaceae). *Evolution and Development*, 6:449-458.
10. Stellari, G. M., M. A. Jaramillo and **E. M. Kramer**. (2004) Evolution of the *APETALA3* and *PISTILLATA* gene lineages of MADS-box containing genes in the basal angiosperms. *Molecular Biology and Evolution*, 21:506-519. [evaluated on Faculty of 1000]
9. **Kramer, E. M.**, M. A. Jaramillo and V. S. Di Stilio. (2004) Patterns of gene duplication and functional evolution during the diversification of the *AGAMOUS* subfamily of MADS box genes in angiosperms. *Genetics*, 166:1011-1023. [evaluated on Faculty of 1000]
8. Hileman, L., **E. M. Kramer**, and D. Baum. (2003) Differential regulation of symmetry genes and the evolution of floral morphologies. *Proceedings of the National Academy of Science, USA*, 100:12814-12819.
7. **Kramer, E. M.**, V. S. Di Stilio and P. Schlüter. (2003) Complex patterns of gene duplication in the *APETALA3* and *PISTILLATA* lineages of the Ranunculaceae. *International Journal of Plant Sciences*, 164:1-11. [cover feature]
6. Baum, D. A., J. Doebley, V. F. Irish and **E. M. Kramer**. (2002) Response: Missing links: the genetic architecture of flower and floral diversification. *Trends in Plant Science*, 7:31-34.
5. **Kramer, E. M.** and V. F. Irish. (2000) Evolution of the petal and stamen developmental programs: evidence from comparative studies of the basal angiosperms. *International Journal of Plant Science*, 161:S29-S40.

4. **Kramer, E. M.** and V. F. Irish. (1999) Evolution of genetic mechanisms controlling petal development. *Nature* 399:144-148.
3. **Kramer, E. M.**, R. L. Dorit, and V. F. Irish (1998) Molecular evolution of genes controlling petal and stamen development: Duplication and divergence within the *APETALA3* and *PISTILLATA* MADS-box gene lineages. *Genetics* 149:765-783.
2. Irish, V. F., C. Day, K. Bouhidel, B. McGonigle, S. Carr, T. Hill, **E. M. Wright (Kramer)**, and P. Jenik (1996) Genetic analysis of petal and stamen development in *Arabidopsis*. *Flowering Newsletter* 21:3-9.
1. Smith, L. A., A. A. Peixoto, **E. M. Kramer**, A. Villeda, and J. C. Hall (1998) Courtship and visual defects of *cacophony* mutants reveal functional complexity of a calcium-channel $\alpha 1$ subunit in *Drosophila*. *Genetics* 149:1407-1426.

INVITED REVIEW ARTICLES

24. Min, Y., and **E. M. Kramer**. (2023) Tansley Insight: All's well that ends well: The timing of floral meristem termination. *New Phytologist*, 238:500–505, doi: 10.1111/nph.18715.
23. **Kramer, E. M.** (2019) Plus ça change, plus c'est la même chose: The developmental evolution of flowers. *Current Topics in Developmental Biology*, 131:211-238.
22. Walcher-Chevillet, C. L. and **E. M. Kramer**. (2016) Breaking the mold: understanding the evolution and development of lateral organs in diverse plant models. *Current Opinion in Genetics and Development*, 39:79-84.
21. Sharma, B., L. Yant, S. A. Hodges, and **E. M. Kramer**. (2014) Understanding the development and evolution of novel floral form in *Aquilegia*. *Current Opinion in Plant Development*, 17:22-27.
20. Mathews, S. and **E. M. Kramer**. (2012) Tansley Review: The evolution of reproductive structures in seed plants: a re-examination based on insights from developmental genetics. *New Phytologist*, 194:910-923.
19. Sharma, B. and **E. M. Kramer**. (2013) Virus induced gene silencing in the rapid cycling *Aquilegia coerulea* 'Origami.' Pp. 71-81 in A. Becker, ed. *Methods in Molecular Biology*, vol. 975.
18. Litt, A. and **E. M. Kramer**. (2010) The ABC model and the diversification of floral organ identity. *Seminars in Cell & Developmental Biology*, 21:129-137.
17. **Kramer, E. M.** and S. A. Hodges. (2009) *Aquilegia* as a model system for the evolution and ecology of petals. *Philosophical Transactions of the Royal Society of London, Series B*, 365:477-490.
16. Rosin, F. M. and **E. M. Kramer**. (2009) Old dogs, new tricks: Regulatory evolution in conserved genetic modules leads to novel morphologies in plants. *Developmental Biology*, 332:25-35.
15. **Kramer, E. M.** (2009) New model systems for the study of developmental evolution in plants. *Current Topics in Developmental Biology*, 86:67-101.

14. **Kramer, E. M.** (2009) *Aquilegia* – A new model for plant development, ecology and evolution. *Annual Reviews of Plant Biology*, 60:261-277.
13. **Kramer, E. M.** (2008) Phenotypic and developmental plasticity in plants. In: *ENCYCLOPEDIA OF LIFE SCIENCES*. John Wiley & Sons, Ltd: Chichester <http://www.els.net/>.
12. Hodges, S. A. and **E. M. Kramer.** (2007) Quick Guide: Columbines. *Current Biology*, 17:R992-R994.
11. **Kramer, E. M.** (2007) Understanding the genetic basis of floral diversity. *BioScience*, 57:479-487.
10. Kalisz, S. and **E. M. Kramer.** (2008) Variation and constraint in plant evolution and development. *Heredity*, 100:171-177.
9. Jaramillo, M. A. and **E. M. Kramer.** (2007) The role of developmental genetics in understanding homology and morphological evolution in plants. *International Journal of Plant Science*, 168:61-72.
8. **Kramer, E. M.** and K. Donohue. (2006) Perspective: Traversing the adaptive landscape in Snapdragons. *Science*, 313:924-925.
7. **Kramer, E. M.** and E. A. Zimmer. (2006) Gene duplication and floral developmental genetics of basal eudicots. Pp. 352-381 in P. Soltis, D. Soltis, J. Leebens-Mack, ed. *Advances in Botanical Research*, vol. 44.
6. **Kramer, E. M.** (2006) Floral patterning and control of floral organ formation. Pp. 49-70 in C. Ainsworth, ed. *Flowering and its Manipulation*. *Annual Plant Reviews*, vol. 23.
5. **Kramer, E. M.** (2005) Methods for studying evolution of plant reproductive structures: Comparative gene expression. *Methods in Enzymology*, 395B:617-635.
4. **Kramer, E. M.** and M. A. Jaramillo. (2005) The genetic basis for innovations in floral organ identity. *Journal of Experimental Zoology (Molecular and Developmental Evolution)*, 304B:526-535. [cover feature]
3. **Kramer, E. M.** (2005) Floral architecture: Regulation and diversity of floral shape and pattern. Pp. 121-148 in C. G. N. Turnbull, ed. *Plant Architecture and its Manipulation*. *Annual Plant Reviews*, vol. 17.
2. **Kramer, E. M.** and J. Hall. (2005) The evolutionary dynamics of genes controlling floral development. *Current Opinion in Plant Biology*, 8:1-6.
1. Irish, V. F., and **E. M. Kramer** (1998) Genetic and molecular analysis of angiosperm flower development. *Advances in Botanical Research* 28:197-230.

RESEARCH SUPPORT (Past or Current)

Harvard: Milton Fund, \$24,000, 2001. “Genetic basis of sex determination in the dioecious meadow-rue *Thalictrum dioicum*.”

Harvard: Clark/Cooke Fund, \$6,000, 2002/2003. “Evolutionary analysis of the *APETALA3* and *PISTILLATA* gene lineages in the lower eudicots.”

NSF: Evolution of Developmental Mechanisms, \$339,029, 2003-2006. “Modification of the ABC program and the evolution of floral novelty.”

NSF: Evolution of Developmental Mechanisms, \$6,000, 2003-2006. “Modification of the ABC program and the evolution of floral novelty.” REU supplement.

NSF: Biocomplexity in the Environment: Genome-Enabled Environmental Science and Engineering, \$1,999,973, 2004-2009. “Genomics of Adaptation to the Biotic and Abiotic Environment in *Aquilegia*.” Lead PI, Scott A. Hodges; co-PIs, Justin Borevitz, Magnus Nordborg, Jeffrey Tomkins.

American Orchid Society: Research Grant, \$11,400, 2005-2007. “Integrating phylogeny, biomechanics and pollination ecology in a study of the genus *Catasetum*.” Co-I, Daniel Fulop.

Joint Genome Institute: Community Sequencing Program. Proposal to sequence the genome of *Aquilegia formosa*: a model system for both ancient and recent evolutionary genomic studies.
www.jgi.doe.gov/sequencing/why/CSP2007/aquilegia.html

Radcliffe Institute for Advanced Study: Exploratory Seminar Program, \$12,000, May 18-19, 2007. “Genetics and Genomics of Emerging Model Species.”

NSF: Evolution of Developmental Mechanisms, \$397,755, 2007-2010. “Modification of the ABC program and the evolution of floral novelty.” [Renewal]

NESCent: NESCent Working Group “Building Tools for Emerging Model Systems in Development, Evolution, and Ecology.” Co-PIs, Scott A. Hodges and Hopi Hoekstra.

NSF: Research Coordination Networks, \$502,963, 2010-2015. “RCN: EDEN (Evo-Devo-Eco Network) A research coordination network to promote technique and community development across the Evo-Devo-Eco field.” Lead PI, Cassandra Extavour; co-PIs, Antonia Monteiro, Scott Hodges, and Michael Shapiro.

NSF: Evolution of Developmental Mechanisms, \$549,998. 2011-2014. “Modification of the ABC program and the evolution of floral novelty.” [Renewal]

NSF: Phylogenetic Systematics, \$465,000, 2011-2014. “Floral development, conservation genetics, and horizontal gene transfer in the world's largest flowers, Rafflesiaceae.” Lead PI, Charles Davis; co-PI, Kenneth Wurdack.

NSF: Phylogenetic Systematics, \$400,000, 2014-2017. “Collaborative Proposal: Phylogeny and floral evolution of Malpighiaceae.” Lead PI, Wenheng Zhang (VA Commonwealth Univ.); co-PI, Charles Davis.

NSF: Evolution of Developmental Mechanisms, \$419,286, 2015-2019. “The *Aquilegia* petal as a model for organ shape elaboration and evolution.” Collaborative proposal with Scott Hodges (UCSB).

NSF: Biological Sciences, \$268,214, 2018-2021. “REU Site: Evolution, Ecology, Environment.” Co-PI, Sheila Thomas.

Harvard: Dean’s Competitive Fund for Promising Scholarship, \$37,650. “Tracing the evolution of the novel genetic program.”

NSF: EDGE, \$306,859, 2021-2024. “Collaborative Research: EDGE FGT: Transformation and genomic resources to advance diverse, emerging model angiosperms.” Co-PIs, Blake Meyers (Danforth Center) and Alex Harness (Auburn Univ.).

NSF: Biological Sciences, \$321,024, 2022-2025. “REU Site: Genes, Ecosystems, Organisms.” Co-PI, Sheila Thomas.

Harvard: Dean’s Competitive Fund for Promising Scholarship, \$74,122. “Tracing the evolution of the novel genetic program.”

RESEARCH SUPPORT (Pending)

CONTRIBUTED ABSTRACTS (Last Five Years)

Edwards, M., E. S. Ballerini, Y. Min, **E. M. Kramer**. Genetic architecture of nectar spur traits in bee- and hummingbird-pollinated sister species of *Aquilegia* (columbine). Botany 2020, Virtual.

Min, Y., M. Edwards, E. S. Ballerini, **E. M. Kramer**. Understanding floral meristem termination by exploring genetic architecture underlying stamen whorl numbers in *Aquilegia*. Botany 2020, Virtual.

Min, Y., E. S. Ballerini, **E. M. Kramer**. Understanding floral meristem termination by exploring genetic architecture underlying stamen whorl numbers in *Aquilegia*. SICB 2020, Austin, TX.

Edwards, M, E. S. Ballerini, G. Choi, L. Mahadevan, S. A. Hodges, **E. M. Kramer**. Exploring the developmental and genetic basis of complex petal morphologies in bee- and hummingbird-pollinated *Aquilegia* (columbine). Botany 2019, Tuscon, AZ.

Burrus, A., C. Davis, and **E. M. Kramer**. Understanding gland development and evolution in the Malpighiaceae. Botany 2019, Tuscon, AZ.

Conway, S. and **E. M. Kramer**. The role of the plant hormone Brassinosteroid in the petal spur in *Aquilegia*. Botany 2019, Tuscon, AZ.

Edwards, M., Ballerini, E., Hodges, S., **E. M. Kramer**. Exploring the developmental and genetic basis of complex petal morphologies in bee- and hummingbird-pollinated *Aquilegia* (columbine). Evolution 2018, Montpellier, France.

Min, Y. and **E. M. Kramer**. Sweet genes are made of *STYLISH* – Members of the *STYLISH* gene family control both style and nectary development in *Aquilegia* (Ranunculaceae). Evolution 2018, Montpellier, France.

Kramer, E. M., Y. Min, M. Edwards, C. Meaders, E. S. Ballerini, S. Hodges. Exploring the genetic basis of floral novelty in *Aquilegia*. Botany 2018, Rochester, MN.

Min, Y. and **E. M. Kramer**. Sweet genes are made of *STYLISH* – Members of the *STYLISH* gene family control both style and nectary development in *Aquilegia* (Ranunculaceae). Botany 2018, Rochester, MN.

Wu, C.-C. and **E. M. Kramer**. Origin and evolution of the WUSCHEL-related (WOX) homeobox transcription factors in plants. Botany 2018, Rochester, MN.

Min, Y. and **E. M. Kramer**. Sweet genes are made of *STYLISH* – Members of the *STYLISH* gene family control both style and nectary development in *Aquilegia* (Ranunculaceae). Pan-American Society for Evolutionary and Developmental Biology, Univ. of Calgary, 2017

Edwards, M., E. S. Ballerini, G. Choi, S. A. Hodges, **E. M. Kramer**. Development of curved petal nectar spurs in bee-pollinated *Aquilegia* (columbine). Pan-American Society for Evolutionary and Developmental Biology, Univ. of Calgary, 2017

Wu, C.-C. and **E. M. Kramer**. Origin and evolution of the WUSCHEL-related (WOX) homeobox transcription factors in plants. Pan-American Society for Evolutionary and Developmental Biology, Univ. of Calgary, 2017

Min, Y., **E. M. Kramer**. The *Aquilegia JAGGED* homolog promotes proliferation of adaxial cell types in both leaves and stems. Botany 2017, Fort Worth, TX.

Edwards, M. and **E. M. Kramer**. American Society of Plant Biologists, 2017, Honolulu, HI

Evangelina Ballerini, **E. M. Kramer** and S. A. Hodges. Identifying the genetic basis of morphological variation in columbine (*Aquilegia*) flowers. Selected talk. Pan-American Society for Evolutionary and Developmental Biology, Berkeley, CA, 2015.

Bharti Sharma and **E. M. Kramer**. Unraveling new players in the control of inflorescence structure in *Aquilegia* (columbine). Poster. Pan-American Society for Evolutionary and Developmental Biology, Berkeley, CA, 2015.

Min Ya and **E. M. Kramer**. *JAGGED* regulates lateral organ development and leaf adaxial identity in *Aquilegia*. Poster. Pan-American Society for Evolutionary and Developmental Biology, Berkeley, CA, 2015.

INVITED PRESENTATIONS

Presentations at Major Symposia:

EuroEvoDevo, Naples, Italy, 2022

Northeast Society for Developmental Biology, Virtual 2021.

Society for Developmental Biology 77th Annual Meeting, Boston 2019.

EuroEvoDevo, Galway, Ireland, 2018.

Developmental Biology, Gordon Research Conference, Mount Holyoke, 2017.

FASEB Mechanisms of Plant Development, Saxton's River, VT, 2017.

NYU 9th Annual Developmental Genetics Symposium, New York, NY, 2016.

German Botanical Congress, Univ. of Tübingen, Germany, 2013.

18th Biennial Penn State Plant Biology Symposium. Plant Evolutionary Genetics and Genomics. State College, PA, 2011.

57th Annual Systematics Symposium: Evo Devo. Genomic level views of novel floral organ morphology. Missouri Botanical Garden, St. Louis, MO, 2010.

Presidential Symposium: Genomic level views of novel floral organ morphology. Society for Developmental Biology 69th Annual Meeting, Albuquerque, NM, 2010.

Genomic level views of novel floral organ morphology. Euro EVO-DEVO 2010, Paris, France, 2010.

The genetic control of petal development: evidence for homology vs. homoplasy. Botany 2009, Snowbird UT, 2009.

The developmental basis of floral diversity in Ranunculaceae. Darwin and the Evolution of Flowers, Royal Society, London, 2009.

The genetic basis for floral innovation. 25th Symposium in Plant Biology: Evolution of Plant Development, Univ. of CA, Riverside, 2009 (co-organizer).

The ABC Program and the Evolution of Novel Floral Organ Identity. Presented by Dr. Faye Rosin. 19th International Conference on Arabidopsis, Montreal, Canada, 2008.

The genetic basis for floral innovation. FASEB Summer Research Conference, Mechanisms of Plant Development, Saxtons River, VT, 2008.

Moving beyond the candidate gene approach: New model systems for plant evodevo. Gatsby Foundation Symposium, The Royal Society, London, UK. 2008.

The genetic basis for floral novelty in *Aquilegia* and the Ranunculaceae. Botany 2007/Plant Biology 2007 Joint Congress, Chicago IL 2007.

The comparative/phylogenetic method of reconstruction evolutionary history. Botany 2006, Chico CA 2006.

Plenary Session: Evolution and Development. Society for Developmental Biology, Ann Arbor MI 2006.

Evolution of Body Plans. Gordon Conference in Molecular Evolution, Ventura CA 2006

Evolutionary genetics and genomics. American Society of Plant Biology, Plant Genetics 2005, Snowbird, UT, October 12-16, 2005.

Understanding the early diversification of the eudicots. International Botanical Congress, Vienna, Austria, 2005

Plant Reproductive Genomics Workshop. Plant & Animal Genome XII, San Diego, CA, January 15-19, 2005.

Plant development and evolution: Lessons learned from candidate genes. Botany 2004, July 31-August 5, 2004.

Regulatory genes and the evolution of plant phenotype. Evolution 2004, Fort Collins, CO, June 26-30, 2004.

Morphological Innovations. Society for Integrative and Comparative Biology, New Orleans, LA, January 5-9, 2004.

Regulation of inflorescence morphology: Insights from genetics and genomics. Banbury Center of Cold Spring Harbor Laboratory, Lloyd Harbor, NY, September 21-24, 2003.

Evolution of developmental regulation. Society for Molecular Biology and Evolution, Newport Beach, CA, June 26-29, 2003.

Flowers: Diversity, development and evolution. Institute of Systematic Botany, Zurich Switzerland, July 5-7, 2002.

American Association for the Advancement of Science Annual Meeting, Boston, MA February 18. 2002

Northeast regional meeting of the Society for Developmental Biology, Woods Hole, MA, March 24-26, 2000.

International Botanical Congress. St. Louis, Missouri, August 1-7, 1999.

Invited Seminars:

2022: International Symposium on Horticulture and Plant Biology, Virtual; The Donald Danforth Plant Science Center, St. Louis, MO; Sussex Plant Biology Symposium, Keynote Speaker, Yale University; 2022 Horticultural Biology Conference, Virtual.

2021: John Innes Centre, Norwich, UK.

2019: Univ. of Massachusetts, Amherst.

2017: University of CT, Storrs, CT

2016: Rutgers Univ., NJ; University of Pennsylvania, Philadelphia, PA.

2015: Univ. of VA, Charlottesville, VA; Woods Hole Marine Biological Laboratory, Woods Hole, MA; Cold Spring Harbor, Plant Molecular Biology Course, 2015.

2014: Cold Spring Harbor, Plant Molecular Biology Course, 2014

2013: Max Planck Institute for Plant Breeding Research in Cologne, Germany; Univ. of New Hampshire.

2012: Univ. of CA, Davis; Boston Univ., Boston, MA.

2011: Univ. of Illinois, Springfield, IL; Univ. of California, Santa Barbara, CA.

2010: Missouri Botanical Garden, St. Louis, MO.

2009: Arnold Arboretum, Jamaica Plain, MA

2008: Amherst College, Amherst, MA; University of Georgia, Athens, GA; University of Wisconsin, Madison, WI.

2007: Cornell Univ., Ithaca, NY; Oberlin College, Oberlin OH; Harvard University, Dept. of Molecular and Cellular Biology, Cambridge, MA; New England Botanical Club, Cambridge, MA.

2006: SUNY Stonybrook, Stonybrook NY; Cornell Univ., Ithaca, NY; Univ. of Washington, Seattle, WA.

2005: Univ. of Arizona, Tucson, AZ; University of New Hampshire, Durham, NH

2004: New York University, NY; New York Botanical Garden, Bronx, NY.

2003: Dartmouth College, NH; University of Colorado, Boulder, CO.

2002: University of Massachusetts, Amherst, MA; Duke University, Durham, NC; Brown University, Providence, RI.

2001: University of Wisconsin, Milwaukee, WI; Boston University, Boston, MA; University of California, Davis, CA.

PROFESSIONAL MEMBERSHIPS/SERVICE

American Society of Plant Biologists 2001-present

American Society for the Advancement of Science 2001-present

Botanical Society of America 1999-present

Co-organizer, "Plant development and evolution: Lessons learned from candidate genes.", symposium sponsored by the Genetics and Development/Structural sections for Botany 2004 meeting.

Co-organizer, "Beyond Arabidopsis: Alternative Plant Model Species.", symposium sponsored by the Genetics and Development/Structural sections for the joint BSA/ASPB meeting in 2007.

Treasurer, Development and Structural Section, 2011-2014

Society for Developmental Biology 2002-present

Co-organizer, 2004 Northeast regional SDB meeting at Wood's Hole, MA.

Society for Molecular Biology and Evolution 2002-present

New York Botanical Garden Science Advisory Committee 2005-2010

PanAmerican Society for Evolutionary Developmental Biology 2014-present

Founding Executive Council 2014-2016

Secretary 2014-2016

EDITORIAL SERVICE

Editorial board: New Phytologist; Frontiers in Plant Science; Philosophical Transactions of the Royal Society London. Panel member: NSF Plant and Microbial Developmental Processes; Plant Genome. Ad-hoc reviewer for: Plant Cell; Proceedings of the National Academy of Science, USA; Science; Nature Plant; Development; PLoS Biology; Canadian Journal of Botany; American Journal of Botany; BMC

Plant Biology: BMC Evolutionary Biology; Development, Genes and Evolution; Evolution and Development; Plant Molecular Biology; Plant Physiology: Plant Journal; Molecular Biology and Evolution; Molecular Phylogenetics and Evolution; Annals of Botany; NSF Evolution of Developmental Processes program; NSF Plant Genome Research program; NSF Plant and Microbial Developmental Processes program; NSF Population and Evolutionary Processes program.

DEPARTMENTAL/UNIVERSITY SERVICE

2000-2001: Member, Junior faculty search, Plant population genetics and systematics.

2001-2002: Member, Junior faculty search, Plant comparative development and systematics/Fungal Biology.

2002-2003: Member, Graduate committee; member, Arnold Arboretum research program development committee; member, Standing committee on Plant Biology/Greenhouse allocation; Co-organizer of Greater Boston Evo-Devo seminar series (monthly).

2003-2004: Member, Graduate committee; member, Junior faculty search, Fungal biology; member, Standing committee on Plant Biology/Greenhouse allocation; Co-organizer of Greater Boston Evo-Devo discussion group (biweekly); Organizer of HUH seminar series; member, Hoopes Prize evaluation committee.

2004-2005: Member, Graduate committee; Co-organizer of OEB 399 program; member, Standing committee on Plant Biology; Co-organizer of Greater Boston Evo-Devo seminar series (monthly); Organizer of HUH seminar series; member, Hoopes Prize evaluation committee; member, Women in Science and Engineering Task Force, co-chair Graduate Students working group.

2005-2006: Member, Graduate committee; member, Standing committee on Plant Biology; Organizer of HUH seminar series; member, Junior Faculty Search, Developmental Evolution; member, Hoopes Prize evaluation committee.

2006-2007: Member, Graduate committee; member, Junior Faculty search, Plant Evolutionary Biology; member, Standing committee on Plant Biology; Organizer of HUH seminar series; member, Standing Committee on Women; Faculty advisor to the Harvard Graduate Women in Science and Engineering group; co-Director of the Genetics and Genomics Training Program; member, Second Year Review committee for Charles Davis and Anne Pringle; member, Hoopes Prize evaluation committee.

2007-2008: Chair of Junior Faculty Search Committee, Plant Biodiversity and Evolution; member, Standing Committee on Plant Biology & Plant Growth Facilities; Organizer of HUH seminar series; co-Chair, Standing Committee on Women (spring semester); co-Leader of the Genetics, Genomics and Evolution Training Program; member, Hoopes Prize evaluation committee; formal tenure track faculty mentor, Cassandra Extavour (OEB).

2008-2009: Co-Chair of Senior Faculty Search Committee, Plant Organismal Biology; member, Standing Committee on Plant Biology & Plant Growth Facilities; chair, Standing Committee on Women; member, Anne Pringle Associate Promotion Committee; co-Leader of the Genetics, Genomics and Evolution Training Program; member, Student-Faculty Judiciary Board; mentor, HGWISE graduate student mentoring program; member, Hoopes Prize evaluation committee; formal tenure track faculty mentor, Cassandra Extavour (OEB).

2009-2010: Chair, Standing Committee on Women; member, Arnold Arboretum Director search committee; member, Standing Committee on Plant Biology & Plant Growth Facilities; member, HUH Executive Committee; co-Leader of the Genetics, Genomics and Evolution Training Program; member, Hopi Hoekstra tenure promotion committee; mentor, HGWISE graduate student mentoring program; member, Hoopes Prize evaluation committee; formal tenure track faculty mentor, Cassandra Extavour (OEB), Kirsten Bomblies (OEB), Tanya Smith (HEB).

2010-2011: Chair, Standing Committee on Women; member, Standing Committee on Plant Biology & Plant Growth Facilities; member, HUH Executive Committee; co-Leader of the Genetics, Genomics and Evolution Training Program; member, Cassandra Extavour Associate Promotion Committee; member, HUH Director/Senior Plant Evolutionary Biology Search Committee; member, OEB Executive Committee; organizer, OEB Tenure Track Faculty Mentoring Program; Hoopes Prize evaluation committee; co-organizer of HUH seminar series; mentor, HGWISE graduate student mentoring program (2 graduate students); formal tenure track faculty mentor, Cassandra Extavour (OEB), Kirsten Bomblies (OEB), Tanya Smith (HEB).

2011-2012: Chair, Standing Committee on Women (Spring); member, FAS Dual Career Advisory Group; member, Standing Committee on Plant Biology & Plant Growth Facilities; member, HUH Executive Committee; member, OEB Executive Committee; member, AA Executive Committee; co-Leader of the Genetics, Genomics and Evolution Training Program; member, HUH Director/Senior Plant Evolutionary Biology Search Committee; member, OEB/AA Plant Biology Faculty Search Committee; organizer, OEB Tenure Track Faculty Mentoring Program; Hoopes Prize evaluation committee; co-organizer of HUH seminar series; mentor, HGWISE graduate student mentoring program (3 graduate students); formal tenure track faculty mentor, Cassandra Extavour (OEB), Kirsten Bomblies (OEB), Tanya Smith (HEB).

2012-2013: Chair, Standing Committee on Women; member, Dean's Faculty Resources Committee; member, Standing Committee on Plant Biology & Plant Growth Facilities; member, HUH Executive Committee; member, OEB Executive Committee; member, AA Executive Committee; co-Leader of the MCO Genetics, Genomics and Evolution Training Program; member, HUH Director/Senior Plant Evolutionary Biology Search Committee; member, Kirsten Bomblies Associate Promotion Committee; member, Anne Pringle Tenure Promotion Committee; organizer, OEB Tenure Track Faculty Mentoring Program; chair, Hoopes Prize Natural Sciences Subcommittee; co-organizer of HUH seminar series; mentor, HGWISE graduate student mentoring program (1 graduate student); formal tenure track faculty mentor, Cassandra Extavour (OEB), Kirsten Bomblies (OEB), Tanya Smith (HEB).

2013-2014: Chair, Standing Committee on Women; member, Dean's Faculty Resources Committee; member, Dean of the College Search committee; member, Standing Committee on Plant Biology & Plant Growth Facilities; member, HUH Executive Committee; member, OEB Executive Committee; member, AA Executive Committee; co-Leader of the MCO Genetics, Genomics and Evolution Training Program; chair, Cassandra Extavour Tenure Promotion Committee; organizer, OEB Tenure Track Faculty Mentoring Program; chair, Hoopes Prize Natural Sciences Subcommittee; co-organizer of HUH seminar series; mentor, HGWISE graduate student mentoring program (2 graduate students); formal tenure track faculty mentor, Cassandra Extavour (OEB), Kirsten Bomblies (OEB), Tanya Smith (HEB) and Robin Hopkins (OEB).

2014-2015: Co-Director of Graduate Studies, OEB; member, Dean's Faculty Resources Committee; member, Standing Committee on Plant Biology & Plant Growth Facilities; member, HUH Executive Committee; member, OEB Executive Committee; member, AA Executive Committee; co-Leader of the MCO Genetics, Genomics and Evolution Training Program; co-organizer, OEB Tenure Track Faculty Mentoring Program; chair, Hoopes Prize Natural Sciences Subcommittee; co-organizer of HUH seminar

series; mentor, HGWISE graduate student mentoring program (2 graduate students); formal tenure track faculty mentor, Kirsten Bomblies (OEB), Tanya Smith (HEB), and Robin Hopkins (OEB).

2015-2016: Co-Director of Graduate Studies, OEB; member, Dean's Faculty Resources Committee; member, Standing Committee on Plant Biology & Plant Growth Facilities; member, HUH Executive Committee; member, OEB Executive Committee; member, AA Executive Committee; co-Leader of the MCO Genetics, Genomics and Evolution Training Program; chair, Hoopes Prize Natural Sciences Subcommittee; co-organizer of HUH seminar series; mentor, HGWISE graduate student mentoring program (2 graduate students); formal tenure track faculty mentor, Robin Hopkins (OEB).

2016-2017: Dept. Chair, OEB; member, Standing Committee on Plant Biology & Plant Growth Facilities; member, Dean's Faculty Resources Committee; member, HUH Executive Committee; member, AA Executive Committee; co-organizer of HUH seminar series; mentor, HGWISE graduate student mentoring program (2 graduate students); FAS screening committee; formal tenure track faculty mentor, Robin Hopkins (OEB).

2017-2018: Dept. Chair, OEB; chair, Standing Committee on Plant Biology & Plant Growth Facilities; member, HUH Executive Committee; member, AA Executive Committee; co-organizer of HUH seminar series; mentor, HGWISE graduate student mentoring program (2 graduate students); FAS Screening Committee; formal tenure track faculty mentor, Robin Hopkins (OEB) and Mansi Srivastava (OEB).

2018-2019: Dept. Chair, OEB; chair, Standing Committee on Plant Biology & Plant Growth Facilities; member, HUH Executive Committee; member, AA Executive Committee; member, FAS Title IX Appellate Committee; mentor, HGWISE graduate student mentoring program (2 graduate students); FAS Screening Committee; Herschbach Lecture Selection Committee; formal tenure track faculty mentor, Robin Hopkins (OEB) and Mansi Srivastava (OEB).

2019-2020: Dept. Chair, OEB; Interim Director, Harvard University Herbarium; PI, OEB E3 REU Program; Chair, Standing Committee on Plant Biology & Plant Growth Facilities; member, AA Executive Committee; member, Harvard Museums of Science and Culture Faculty Executive Committee; member, HILS Mental Health Working Group; member, FAS Title IX Appellate Committee; mentor, HGWISE graduate student mentoring program (2 graduate students); member, FAS Screening Committee; member, Herschbach Lecture Selection Committee; formal tenure track faculty mentor, Robin Hopkins (OEB) and Mansi Srivastava (OEB).

2020-2021: Dept. Chair, OEB; Interim Director, Harvard University Herbarium; PI, OEB E3 REU Program; Chair, Standing Committee on Plant Biology & Plant Growth Facilities; member, AA Executive Committee; member, Harvard Museums of Science and Culture Faculty Executive Committee; member, FAS Title IX Appellate Committee; member, FAS Screening Committee; formal tenure track faculty mentor, Robin Hopkins (OEB) and Mansi Srivastava (OEB).

2021-2022: Dept. Chair, OEB; Interim Director, Harvard University Herbarium; PI, OEB E3 REU Program; Chair, Standing Committee on Plant Biology & Plant Growth Facilities; member, AA Executive Committee; member, Harvard Museums of Science and Culture Faculty Executive Committee; member, FAS Title IX Appellate Committee; Chair, Student-Faculty Judicial Board; formal tenure track faculty mentor, Robin Hopkins (OEB) and Mansi Srivastava (OEB).

2022-2023: Sabbatical; Interim Director, Harvard University Herbarium; PI, OEB GEO REU Program; Chair, Standing Committee on Plant Biology & Plant Growth Facilities; member, AA Executive Committee; member, Harvard Museums of Science and Culture Faculty Executive Committee; member, Tenure promotion committee for Mansi Srivastava; member, Tenure promotion committee for Robin

Hopkins; formal tenure track faculty mentor, Robin Hopkins (OEB) and Mansi Srivastava (OEB); Faculty Advisor, Harvard Museums of Science and Culture.

TEACHING

Teaching Contributions at Harvard

For CUE scores, top value is overall course rating and lower bold value is personal instructor overall rating. Scores are out of 5.

Term	Course #	# of Fac	CUE score	Enrollment Reg (Total)
AY23	Sabbatical	n/a	n/a	n/a
Spring 2022	OEB 52: Biology of Plants	2	4.23 4.71	62
Fall 2021	OEB 268r: Topics in Plant Developmental Genetics	1	n/a	5
Fall 2021	OEB 10: Foundations in Biological Diversity	4	3.93 4.64	68
Spring 2021	OEB 52: Biology of Plants	2	4.75 4.92	38
Fall 2020	OEB 10: Foundations in Biological Diversity	4	3.55 4.49	75
Spring 2020	OEB 52: Biology of Plants (COVID semester, CUE scores weren't collected)	2	n/a	47
Fall 2019	OEB 10: Foundations in Biological Diversity	3	3.4 4.3	67
Fall 2019	OEB 106: Plant Development and Differentiation	1	4.8 5.0	11
Spring 2019	OEB 52: Biology of Plants	2	4.5 4.8	43
Fall 2018	OEB 10: Foundations in Biological Diversity	3	3.5 3.97	44
Spring 2018	OEB 52: Biology of Plants	2	4.34 4.79	44
Fall 2017	OEB 10: Foundations in Biological Diversity	3	3.49 3.91	66
Spring 2017	OEB 52: Biology of Plants	2	4.22 4.62	27(28)
Fall 2016	MCB 291: Genetics, Genomics & Evolution	3	3.3 4.2	16
Fall 2016	OEB 10: Foundations in Biological Diversity	3	3.62 4.33	80
Spring 2016	OEB 52: Biology of Plants	2	4.2 4.6	35
Fall 2015	OEB 106: Plant Development and Differentiation	1	5.00 5.00	12
Fall 2015	OEB 10: Foundations of Biological Diversity	3	3.33 4.02	87
Fall 2015	MCB 291: Genetics, Genomics & Evolution	5	3.3 4.14	17

Spring 2015	OEB 52: Biology of Plants	2	4.3 4.8	64
Fall 2014	MCB 291: Genetics, Genomics & Evolution	3	3.6 4.2	15
Fall 2014	OEB 10: Foundations of Biological Diversity	3	3.5 4.0	110
Spring 2014	OEB 52: Biology of Plants	2	4.16 4.78	41
Fall 2013	OEB 10: Foundations of Biological Diversity	3	3.74 4.36	98
Spring 2013	OEB 52: Biology of Plants	3	4.26 4.85	45
Fall 2012	OEB 106: Plant Development and Differentiation	2	4.50 4.64	12
Spring 2012	OEB 52: Biology of Plants	3	4.32 4.64	39
Fall 2011	SABBATICAL			
Spring 2011	OEB 52: Biology of Plants	2	4.21 4.39	28(29)
Fall 2010	OEB 106: Plant Development and Differentiation	1	5.0 5.0	7(11)
Spring 2010	OEB 52: Biology of Plants	3	4.0 4.42	36(37)
Fall 2009	OEB 268r: Topics in Plant Developmental Genetics	2	n/a	5(8)
Fall 2009	MCB 291: Foundations of Genetics, Genomics and Evolution	2	n/a	18
Spring 2009	OEB 52: Biology of Plants	3	4.6 4.8	31(33)
Fall 2008	SABBATICAL			
Spring 2008	OEB 52: Biology of Plants	3	4.5 4.7	23
Fall 2007	OEB 268r: Topics in Plant Developmental Genetics	1	n/a	4(8)
Spring 2007	OEB 261r: Seminar in Evolution and Development	1	n/a	7(10)
Spring 2007	OEB 52 (formerly 124): Biology of Plants	3	4.00 4.64	16
Fall 2006	MEDSCI300: Conduct of Science	1	n/a	15
Fall 2006	OEB 106: Plant Development and Differentiation	1	n/a	3(5)
Spring 2006	OEB 124: Biology of Plants	3	4.62 4.92	15
Fall 2005	BS 205: Introduction to Graduate Study in Genetics and Genomics	5	n/a	16
Spring 2005	OEB 124: Biology of Plants	2	4.28 4.65	25
Fall 2004	BS 205: Introduction to Graduate Study in Genetics and Genomics	8	n/a	17
Fall 2004	OEB 106: Plant Development and Differentiation	1	5.00 4.86	8(11)
Spring 2004	OEB 124: Biology of Plants	1	4.75	15(16)

			4.90	
Fall 2003	BS 205: Introduction to Graduate Study in Genetics and Genomics	8	n/a	14
Fall 2003	OEB 268r: Topics in Plant Developmental Genetics	1	n/a	7(11)
Spring 2003	OEB 124: Biology of Plants	2	4.71 4.75	9
Fall 2002	BS 205: Introduction to Graduate Study in Genetics and Genomics	8	n/a	10
Fall 2002	OEB 106: Plant Development and Differentiation	1	4.71 4.71	8(12)
Spring 2002	OEB 261r: Seminar in Evolution and Development	2	n/a	14(16)
Spring 2002	OEB 24: Biology of Plants	2	5.00 5.00	5(6)
Fall 2001	OEB 268r: Topics in Plant Development Genetics	1	n/a	4(10)
Spring 2001	OEB 261r: Seminar in Evolution and Development	3	n/a	10

Teaching Awards: Nominee, Yale Prize Teaching Fellowship, 1997-98
 Recipient, "TA of the Year", Yale University Dept. of Molecular,
 Cellular and Developmental Biology, 1998
 Harvard College Professorship, 2015-2020
 Fannie Cox Prize for Excellence in Science Teaching, 2016

ACADEMIC ADVISING

Postdoctoral Associates:

Yan Gong, NSF Postdoctoral Fellow, EDGE project, 2021-2023. NSF Plant Genome Postdoctoral Fellow, 2023-present.

Premananda Karidas, B4 Program Fellow, 2019-2021, currently a postdoctoral fellow with Dr. Heckmann, IPK, Gatersleben, Germany.

Stephanie Conway, NSF Postdoctoral Fellow, 2018-2021, currently a postdoctoral research fellow at the University of Queensland, Australia.

Cristina Walcher-Chevillet, NSF Postdoctoral Fellow, 2015-2016, currently at 10x Genomics.

Rui Zhang, visiting postdoctoral Fellow, 2017, currently an Assistant Professor, Northwest Agriculture & Forestry University.

Levi Yant, NIH Postdoctoral Fellow, 2010-2014, currently a Project Leader, Univ. of Nottingham, UK

Bharti Sharma, NSF Postdoctoral Fellow, 2008-2014, currently an Associate Professor, California State Univ., Pomona

Jen Winther, Mercer Fellow, 2007-2010, currently an Associate Professor, Grand Valley State Univ., Allendale, MI

Faye Rosin, NSF Postdoctoral Fellow, 2007-2010, currently the Laboratory Administrator, Weld Hill Laboratory, Arnold Arboretum

Lynn Holappa, Postdoctoral Research Associate, 2005-2020, currently retired.

Jocelyn Hall, Mercer Fellow, 2003-2006, currently an Associate Professor in the Dept. of Biological Sciences of the University of Alberta, Edmonton, CA.

M. Alejandra Jaramillo, Mercer Fellow and NSF postdoctoral fellow, 2001-2003, currently an Assistant Professor at the Universidade Federal do Rio de Janeiro.

Veronica S. Di Stilio, Mercer Fellow, 2001-2003, currently an Associate Professor in the Dept.

of Biology, Univ. of Washington, Seattle, WA

Graduate Students:

Alexandria Pete, 2021-2022, currently a member of the MCO graduate program.

Andrea Appleton, 2021-present

Grace Pisano, 2018-present

Abby Burrus, 2017-2022, currently an intern with Morrison & Forester LLP, patent law.

Molly Edwards, 2015-2022, currently producing content for LabXChange.

Ya Min, 2015-2021, currently an NSF Postdoctoral Fellow, Yaowu Yuan lab, UConn, CT.

Claire Levy Meaders, 2012-2018, currently an Assistant Professor in the Division of Biology, UC San Diego.

Joshua Puzey, 2008-2012, currently an Associate Professor, William and Mary College

Emily Gleason, 2008-2013, currently Director of Educational Initiatives and Engagement, miniPCR, Inc.

George C. K. Chang, 2008-2010, currently a research fellow, Dept. of Chemistry, UC Berkeley.

Cheng-Chiang Wu, 2003-2018, currently a Mary Miles Bibb Postdoctoral Teaching Fellow/Assistant Professor, Framingham State University.

Evangeline Ballerini, 2003-2010, currently an Assistant Professor at California State University, Sacramento.

Daniel Fulop, 2001-2009, currently working in industry.

Lena Hileman 2001-2002, currently an Associate Professor at the Univ. of Kansas, Lawrence.

Graduate Student Committees, Harvard:

Ryan Oyama, graduated 2002, Baum lab

Saharah-Moon Chapotin, graduated 2005, Holbrook lab

Josh Gross, graduated 2005, Hanken lab

Rachel Spicer, graduated 2006, Holbrook lab

Amy Maxmen, graduated 2006, Giribet/Hanken lab

Carlos Infante, graduated 2008, Hanken lab

Ryan Kerney, graduated 2007, Hanken lab

David Hewitt, graduated 2007, Pfister lab

EunSuk Kim, graduated 2010, Donohue Lab

Joseph De-Chung Shih, graduated 2008, Hunter Lab (MCB)

George C.K. Chang, graduated 2010, Donohue Lab

Marna Constanzo, graduated 2010, Hartl Lab

Ricardo Godinez, graduated 2012, Edwards Lab

Jim Wheeler, graduated 2013, Holbrook Lab

Juan-Pablo Giraldo, graduated 2011, Holbrook Lab

Lachezar Nikolov, graduated 2013, co-advised with Davis Lab

Didem Sarikaya, graduated 2014, Extavour Lab

Ben Ewen-Campen, graduated 2014, Extavour Lab

Brett Huggett, graduated 2013, Holbrook Lab

Seth Donoghue, graduated 2018, Extavour Lab

Rebecca Povilus, graduated 2017, Friedman Lab

Pierre Baudel, graduated 2016, Bombliès lab

Jasmin Camacho, graduated 2019, Abzhanov/Tabin lab

Zachary Morris, graduated 2020, Abzhanov/Tabin lab

Mara Laslo, graduated 2019, Hanken Lab

Morgan Furze, graduated 2019, Holbrook Lab

Meghan Blumstein, graduated 2020, Holbrook Lab

Steve Klosterman, graduated 2017, Richardson Lab
Kristel Schoonderwoerd, graduated 2021, Friedman Lab
Anju Manandhar, graduated 2022, Holbrook Lab
Ryan Hulett, graduated 2022, Srivastava Lab
Julian Kimura, graduated 2022, Srivastava Lab
Alyson Ramirez, graduated 2020, Srivastava Lab (MCO)
Jennifer Austiff, Hanken Lab
Samantha Royle, Hanken Lab
Sophie Everbach, Holbrook Lab
Nava Gharaei, graduated 2019, (MCO)
Nicole Bush, Hunter Lab (MCO)
Achala Chittor, Gibbs Lab (MCO)
Alexa Perez-Torres, Murray Lab (MCO)

Graduate Student Committees, Other:

Yingzhen Yang, Dartmouth College (Jack Lab)
Tania Rehse, Duke University (Manos Lab)
Samuel Brockington, Univ. Florida, Gainesville (Soltis Lab)

Undergraduate Research Students:

Philipp Schlüter, Cambridge Univ., UK, summer 2000, currently an Assistant Professor, Univ. of Hohenheim, Germany.
Eric Wehrenberg-Klee, Harvard University, 2000-2001.
Stefan Vanderweil, Harvard University, summer 2002.
Giulia Stellari, Harvard University, 2001-2003, senior thesis student, Cornell PhD, currently managing co-founder of AgSquared.
Heather Watchel, Harvard University, 2002-2003.
Phillip Santiago, Harvard University, 2003-2004, currently in the Forestry Graduate Program, Yale Univ.
Jack Austin, Willamette University, summer 2004, MORPH grant recipient.
Katherine Fifer, Harvard University February 2005-May 2006.
David Rasmussen, Reed College, summer 2006, MORPH grant recipient, currently a PhD student at Duke University.
Elena Butler, Harvard University, summer 2007, MORPH grant recipient.
Kyra Hill, Harvard University, summer 2010.
Rhea Richardson, Kansas Univ., summer 2011, MCO/Leadership Alliance Summer Internship student, currently a PhD student, Stanford Univ.
Kimberly O'Donnell, Harvard University, summer 2011-2012, senior thesis student.
Colin Guo Teo, Harvard University, summer 2011-2012, senior thesis student, Hoopes Prize Winner, currently working for The Boston Consulting Group.
Erick X. Bayala Rodriguez, Univ. of Puerto Rico, summer 2012, MCO/Leadership Alliance Summer Internship student.
Anna Vevecia McKinney, Harvard University, fall 2011-spring 2013, senior thesis student, currently a student at Indiana Univ. Medical School.
Avinaash Subramanian, Harvard University, fall 2012-spring 2014.
Imani Bunn, Harvard University, spring 2013-2016, senior thesis student, currently working in K-12 science education after getting her Masters in Education at the Univ. of Notre Dame.
Marylyn Creer, Alabama A&M, summer 2013 MCO/Leadership Alliance Summer Internship

Student, currently enrolled in the Masters Program at the Boston Univ. School of Public Health.
Gabriel Amador, Harvard University, fall 2013-2016, senior thesis student, currently in the PhD program at Stanford Univ.
Adrian Mehrtash, St. Mary's Univ., summer 2014 MCO/Leadership Alliance Summer Internship Student, currently in the PhD program at Yale Univ.
Katherine Freedberg, Harvard University, spring 2015-2016, senior thesis student, currently a student at Tufts Medical School.
Gabriel Mpilla, Delaware State University, summer 2015 MCO/Leadership Alliance Summer Internship student.
Emily Donaldson, Harvard University, spring 2016-2017, currently employed as a lab technician at UC Davis.
Mary Katherine DeWane, Harvard University, fall 2017-2020, senior thesis student, currently pursuing her Masters in Education at the Univ. of Notre Dame.
Tom Saide, Harvard University, 2017-2019, senior thesis student.
Uriah Sanders, California State Polytechnic, Pomona, CA, summer 2018 MCO/Leadership Alliance Summer Internship student.
Summer Blanco, California State Polytechnic, Pomona, CA, summer 2018 MCO/Leadership Alliance Summer Internship student.
Joanna Ladopoulou, Harvard University, fall 2017-2019.
Andrea Appleton, George Southern University, summer 2020 E3 REU/Leadership Alliance Summer Internship student., currently pursuing her PhD in the Kramer lab.
Lena Heinrich, Univ. of Vermont, summer 2022 E3 REU/Leadership Alliance Summer Internship student.
Katie Alerte, Harvard University, summer 2022-present, senior thesis student.

High School Research Students:

Rui Song, Walter Murray Collegiate Institute, Saskatoon, Saskatchewan, Canada, Summer 2012, Graduated from MIT, 2017, currently employed by Google.
Imtiyaz Hossain, Cambridge Ringe and Latin, Cambridge MA, Fall 2011-Summer 2013, Graduated from Tufts Univ., 2017, currently employed in the pharmaceutical industry.
Clara Sava-Segal, Great Neck North High School, Summer 2013.
Michael John, Boston Latin Academy, Fall 2013-2014.
Hannah Yin, Acton High School, Summer 2016.
Fabbih Hossain, Cambridge Ringe and Latin, Cambridge MA, Fall 2017-2019.
Mark Yang, San Domenico School, San Anselmo, CA, Summer 2018, currently an undergrad at UC Berkeley.

CURRENT COLLABORATORS

Vivian F. Irish, Yale Univ., PhD advisor.
Scott Hodges, UC-Santa Barbara, Development of *Aquilegia* as a model species.
Hongzhi Kong, Chinese Academy of Science, Evolution of *AP3-3* function in Ranunculales.
L. Mahadevan, Harvard Univ., Plant developmental biomechanics in petals and vasculature.
Blake Meyers, Danforth Center, St. Louis, MO, NSF EDGE project.
Alex Harkess, HudsonAlpha, NSF EDGE project.