Nolan C. Kane

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Positions

Associate Professor, University of Colorado, Boulder 2020-present.
Assistant Professor, University of Colorado, Boulder, 2013-2020.
Post-doctoral Fellow, University of British Columbia, Vancouver, Canada, 2008-2013.

Education

Ph.D. in Evolution, Ecology and Behavior, Indiana University in Bloomington. "Genetics and ecology of adaptation and speciation in *Helianthus*" with Loren H. Rieseberg, 2001-2007.
Sc. B. Biology, *magna cum laude*, Brown University, Honors dissertation on the genetics of flowering time evolution with Drs. J. Schmitt and L. Dorn, 1995-1999.

Awards and Fellowships

2018 Outstanding paper of the year for 2017, Crop Sciences Society, C08 Division, for the paper "Accelerating Silphium Domestication: An Opportunity to Develop New Crop Ideotypes and Breeding Strategies"
2013 Most cited paper in *Botany*, "Progress towards a reference genome for sunflower"
2008 Sigma Xi, Full Member
2002 NSF Evolution, Development and Genomics, IGERT fellowship
2001 NSF Graduate Research Fellowship
1999 Sigma Xi
1999 Phi Beta Kappa

RESEARCH

Grants **Total – $14.5M**

2023 ORCC: Uniting long-term field experiments and modern genomics to prepare sustainable crops for the future. PI – Nolan Kane $1,167,742 to CU. Co-PIs Sarah Elmendorf, CU, Brent Hulke, USDA-ARS Fargo, ND, and Colin Khoury, San Diego Botanical Garden.
2023 Next generation sequencing of the USDA sunflower breeding program and identification of Red Sunflower Seed Weevil resistance genes. PI – Nolan Kane, $110,000.
2021 Dissecting the genetic basis of sex and dioecy in Cannabis sativa. PI- Nolan Kane. $250,000.
2021 Developing knowledge and tools to optimize sunflower breeding for Sclerotinia resistance and improved microbiome-related traits. PI- Brent Hulke, USDA-ARS, Fargo, ND, and co-PI Kane, CU. $80,979.
2021 Understanding how sunflower soil microbiome impacts resistance to Sclerotinia stalk rot. PI-Brent Hulke, USDA-ARS, Fargo, ND, and co-PIs Kane and Quandt, CU. $82,694 to CU.
2021 Silphium of the future: Developing genomic resources. $ 237,135.
2021 Assessing Hybridization Between *Linum lewisii* and *Linum perenne*. PI-Peter Innes, CU, co-

PI Kane. $10,000.

2020 Genomic Structural Variation in Sunflower. USDA. $165,000 to CU.

2020 Understanding How Sunflower Soil Microbiome Impacts Resistance to Sclerotinia Stalk Rot. PI- Brent Hulke, USDA-ARS, Fargo, ND, and co-PIs Kane and Quandt, CU. $70,694 to CU.

2019 Refining genomic tools for Sclerotinia resistance and agronomic breeding of sunflower – towards dissection of the resistance phenotype. Sclerotinia stalk rot. co-PI for genomics and bioinformatics PI-Brent Hulke, USDA-ARS, Fargo, ND, Total $49,900, $33,900 to CU.

2019 Understanding how sunflower soil microbiome impacts resistance to Sclerotinia stalk rot. co-PI for genomics and bioinformatics, PI- Brent Hulke, USDA-ARS, Fargo, ND, and co-PI Alisha Quandt, CU. $73,964.

2018 Refining Genomic Tools for Sclerotinia Resistance and Agronomic Breeding of Sunflower-towards Dissection of the Resistance Phenotype. USDA#58-3060-8-019 $45,014.00. co-PI for genomics and bioinformatics, PI- Brent Hulke, USDA-ARS, Fargo, ND.

2017 Using Genomic Selection (GS) to optimize Prediction of *Sclerotinia* Phenotypes for More Efficient Breeding. USDA #58-5442-4-021 A3. co-PI for genomics and bioinformatics, PI- Brent Hulke, USDA-ARS, Fargo, ND.
Total budget $313,883 $85,565 to CU

2016 Using Genomic Selection (GS) to optimize Prediction of *Sclerotinia* Phenotypes for More Efficient Breeding. USDA #58-5442-4-021 A2. co-PI for genomics and bioinformatics, PI- Brent Hulke, USDA-ARS, Fargo, ND. Total $228,318, $130,800 to CU

2016 *Silphium* of the future: developing resources and methods to cross the bridge from wild species to domesticated crop. sole PI. The Land Institute, a non-profit research organization based in Salina, KS. CU: $250,500

2015 Using Genomic Selection (GS) to optimize Prediction of *Sclerotinia* Phenotype for More Efficient Breeding. USDA #58-5442-4-021 A1. co-PI for genomics and bioinformatics, PI- Brent Hulke, USDA-ARS. CU: $53,898

2015 NSF Dimensions Award 1542629, Biodiversity Gradients in Obligate Symbiotic Organisms: A Case Study in Lichens in a Global Diversity Hotspot. co-PI for genomics and bioinformatics, PI E. Tripp, CU and co-PI C. McCain, CU, James Lendemer (PI, NYBG) $1,795,204 total, CU: $1,035,332

2014 Using Genomic Selection to optimize Prediction of *Sclerotinia* Phenotypes for More Efficient Breeding. USDA #58-5442-4-021. co-PI for bioinformatics and genomics, PI Brent Hulke, USDA-ARS. $135,336 total, CU: $61,750

2013 Genomic Investigation of Genetic Rescue in Natural Populations.
Genomics co-PI, PI – Andrew Martin, CU Boulder. CU Seed Grant. CU: $40,000

2009 Genome Canada, *Genome of Sunflower.* Genome Canada. Co-PI for bioinformatics.
With PI L. Rieseberg, UBC, co-PI J. Burke, UGA, co-PI P. Vincourt, INRA. $10,481,589

Publications **h-index: 49** **i10-index: 93** **Total citations: 7882** **Total papers: 137**

* CU graduate student authors (28 total) ** CU undergraduate student authors (33 total)

Peer reviewed publications

105. Tittes, S., Weiss-Lehman, C., **Kane, N.C.**, Hufbauer, R.A., Emery, N.C. and Melbourne, B.A., 2023. Evolution is more repeatable in the introduction than range expansion phase of colonization. Evolution Letters, p.qrad063.

104. Pogoda, C.S., Keepers, K.G., Reinert, S., Talukder, Z.I., Smart**, B.C., Attia, Z., Corwin, J.A., Money, K.L., Collier-Zans**, E.C.E., Underwood, W. and Gulya, T.J., Quandt, C.A., **Kane,**

N.C., and Hulke, B. S. 2023. Heritable differences in abundance of bacterial rhizosphere taxa are correlated with fungal necrotrophic pathogen resistance. *Molecular Ecology*.

103. Carter*, J.K., Kimball, R.T., Funk*, E.R., **Kane, N.C.**, Schield, D.R., Spellman, G.M. and Safran, R.J.. 2023. Estimating phylogenies from genomes: A beginners review of commonly used genomic data in vertebrate phylogenomics. *Journal of Heredity* esac061.

102. Barstow, A. C., Prasifka, J. R., Attia, Z., **Kane, N. C.**, Hulke, B. S. 2022. Genetic mapping of a pollinator preference trait: Nectar volume in sunflower (*Helianthus annuus* L.). *Frontiers in Plant Science*, 13, 1056278.

101. Bailey**, D.W., Attia, Z., Reinert, S., S Hulke, B. and **Kane, N.C.**, 2022. Effective strategies for isolating DNA from members of Asteraceae with high concentrations of secondary metabolites. *BioTechniques*.

100. Vergara, D., Huscher, E.L., Keepers, K.G., Pisupati, R., Schwabe, A.L., McGlaughlin, M.E. and **Kane, N.C.** 2021. Genomic evidence that governmentally produced Cannabis sativa poorly represents genetic variation available in state markets. *Frontiers in Plant Science* doi: 10.3389/fpls.2021.668315.

99. Attia, Z., Pogoda, C., Vergara, D. and **Kane, N.C.**, 2021. Mitochondrial genomes do not appear to regulate flowering pattern/reproductive strategy in Cannabis sativa. AoB PLANTS.

98. Smith*, C.C., Rieseberg, L.H., Hulke, B.S. and **Kane, N.C**. 2021. Aberrant RNA splicing due to genetic incompatibilities in sunflower hybrids. Evolution, 75:2747-2758.

97. Keepers, K.G., Pogoda, C.S., Lendemer, J.C., **Kane, N.C.** and Manzitto-Tripp, E.A. 2021. Author response to Tagirdzhanova et al.(2021):"Lichen fungi do not depend on alga for ATP production: A comment on Pogoda et al.(2018)". Molecular Ecology, 30:4160-4161.

96. O'Hara, N.B., Franks, S.J., **Kane, N.C.**, Tittes*, S. and Rest, J.S. 2021. Evolution of pathogen response genes associated with increased disease susceptibility during adaptation to an extreme drought in a Brassica rapa plant population. BMC Ecology and Evolution, 21:1-11.

95. Vergara, D., Feathers**, C., Huscher, E.L., Holmes, B., `**, J.A. and **Kane, N.C.,** 2021. Widely assumed phenotypic associations in *Cannabis sativa* lack a shared genetic basis. *PeerJ*, 9:e10672.

94. Attia, Z., Pogoda, C.S., Reinert, S., **Kane, N.C.** and Hulke, B.S., 2021. Breeding for sustainable oilseed crop yield and quality in a changing climate. *Theoretical and Applied Genetics*

93. Raduski, A.R., Herman, A., Pogoda, C., Dorn, K.M., Van Tassel, D.L., **Kane, N.C.** and Brandvain, Y., 2021. Patterns of genetic variation in a prairie wildflower, *Silphium integrifolium*, suggest a non-prairie origin and locally adaptive variation. *American Journal of Botany*, 108:145-158.

92. Pogoda, C.S., Reinert, S., Talukder, Z.I., Attia, Z., Collier-Zans**, E.C., Gulya, T.J., **Kane, N.C.** and Hulke, B.S. 2021. Genetic loci underlying quantitative resistance to necrotrophic pathogens *Sclerotinia* and *Diaporthe* (Phomopsis), and correlated resistance to both pathogens. *Theoretical and Applied Genetics* 134:249-259.

91. Hamann, E., Pauli**, C.S., Joly-Lopez, Z., Groen, S.C., Rest, J.S., **Kane, N.C**., Purugganan, M.D. and Franks, S.J., 2021. Rapid evolutionary changes in gene expression in response to climate fluctuations. *Molecular Ecology* 30:193-206.

90. O'Hara, N. B., Franks, S. J**., Kane, N. C**., Tittes*, S., and Rest, J. S. 2021. Evolution of pathogen response genes associated with increased disease susceptibility during adaptation to an extreme drought in a *Brassica rapa* plant population. *BMC Ecology and Evolution* 21:1-11.

89. Reinert, S., Price, J.H., Smart**, B.C., Pogoda, C.S., **Kane, N.C.,** Van Tassel, D.L. and Hulke, B.S., 2021. Mating compatibility and fertility studies in an herbaceous perennial Aster undergoing de novo domestication to enhance agroecosystems. *Agronomy for Sustainable Development* 108:145-158.

88. Carter*, J.K., Innes*, P., Goebl*, A.M., Johnson**, B., Gebert*, M., Attia, Z., Gabani**, Z., Li**, R., Melie**, T., Dart**, C., Mares*, A., Greidanus**, C., Paterson**, J., Wall**, B., Cortese**, G., Thirouin*, K., Glime*, G., Rutten*, J., Poyd**, C., Post*, E., Wall**, B., Elhadi**, A. A., Feldmann*, K., Danz*, A., Blanchard*, T., Amato**, S., Reinert, S., Pogoda, C. S., Scordato, E. S. C., Hund, A. K., Safran, R. J., **Kane, N. C.** 2020. Complete mitochondrial genomes provide current refined phylogenomic hypotheses for relationships among ten *Hirundo* species. *Mitochondrial DNA Part B* 5:2881-2885.

87. Kovalchuk, I., Pellino, M., Rigault, P., van Velzen, R., Ebersbach, J., Ashnest, J.R., Mau, M., Schranz, M.E., Alcorn, J., Laprairie, R.B. McKay, J.K., Burbridge, C. Schneider, D., Vergara, D., **Kane, N. C.**, and Sharbel, T. F. 2020. The Genomics of Cannabis and Its Close Relatives. *Annual Review of Plant Biology* 713-739.

86. Guidini, R., Reinert, S., Hulke, B., **Kane, N. C.**, Korah, M., Pogoda, C., Braun, N., Okello, P.N., Marek, L.F. and Mathew, F.M. 2019. Forty-one accessions have possible resistance to Diaporthe gulyae causing Phomopsis stem canker of sunflower (*Helianthus annuus). Plant Health 2019*.

85. Pogoda, C. S., Keepers, K. G., Stanley, J. T., and **Kane, N. C.** 2019. A CURE-based approach to teaching genomics using mitochondrial genomes. *CourseSource*.

84. Vergara, D., Huscher, E.L., Keepers, K.G., Givens, R.M., Cizek, C.G., Torres, A., Gaudino, R. and **Kane, N.C.** 2019. Gene copy number is associated with phytochemistry in Cannabis sativa. *AoB PLANTS* 11:plz074.

83. Reinert, S., Van Tassel, D.L., Schlautman, B., **Kane, N.C.** and Hulke, B.S., 2019. Assessment of the biogeographical variation of seed size and seed oil traits in wild Silphium integrifolium Michx. genotypes. *Plant Genetic Resources* 17:427-436.

82. Lendemer, J.C., Keepers, K.G., Tripp, E.A., Pogoda, C.S., McCain, C.M. and **Kane, N.C.**, 2019. A taxonomically broad metagenomic survey of 339 species spanning 57 families suggests cystobasidiomycete yeasts are not ubiquitous across all lichens. *American Journal of Botany* 106:1090-1095.

81. Keepers, K.G., Pogoda, C.S., White, K.H., Anderson Stewart, C.R., Hoffman, J.M., Ruiz, A.M., McCain, C.M., Lendemer, J.C., **Kane, N.C.** and Tripp, E.A., 2019. Whole genome shotgun sequencing detects greater lichen fungal diversity than amplicon-based methods in environmental samples. *Frontiers in Ecology and Evolution* 7:484.

80. Brown, P., Tan, A.C., El-Esawi, M.A., Liehr, T., Blanck, O., Gladue, D.P., Almeida, G.M., Cernava, T., Sorzano, C.O., Yeung, A.W. **Kane, N. C.** and Engel, M.S.. 2019. Large expert-curated database for benchmarking document similarity detection in biomedical literature search. *Database* 2019.

79. Hamsher, S. E., Keepers*, K. G., Pogoda*, C. S., Stepanek, J. G., **Kane, N. C.** , Kociolek, J. P. 2019. Extensive chloroplast genome rearrangement amongst three closely related

Halamphora spp. (Bacillariophyceae), and evidence for rapid evolution as compared to land plants. *PLoS One* 14:e0217824.

78. Tripp, E. A., Morse, C. A., Keepers*, K. G., Stewart*, C. A., Pogoda*, C. S., White*, K. H., Hoffman, J. R., **Kane, N. C.** and McCain, C.M., 2019. Evidence of substrate endemism of lichens on Fox Hills Sandstone: Discovery and description of *Lecanora lendemeri* as new to science. *The Bryologist* 122:246-259.

77. Hulke, B. S., Markell, S. G., **Kane, N. C.**, and Mathew, F. M. 2019. *Phomopsis* stem canker of sunflower in North America: correlation with climate and solutions through breeding and management. *OCL*, 26:13.

76. Pogoda*, C. S., Keepers*, K. G., Nadiadi**, A. Y., Bailey**, D. W., Lendemer, J. C., Tripp, E. A. and **Kane, N. C.**, 2019. Genome streamlining via complete loss of introns has occurred multiple times in lichenized fungal mitochondria. *Ecology and Evolution.* 9:4245–4263.

75. Weiss-Lehman*, C., Tittes*, S., **Kane, N. C.**, Hufbauer, R. A. and Melbourne, B. A., 2019. Stochastic processes drive rapid genomic divergence during experimental range expansions. *Proceedings of the Royal Society B*, 286:20190231.

74. Streich*, S. P., Keepers*, K. G., Griffin, K. A., **Kane, N. C.**, and Martin, A. P. 2019. The complete mitochondrial genome of Gunnison's prairie dog subspecies (*Cynomys gunnisoni gunnisoni*) and phylogenetic relationship within the genus *Cynomys*. *Mitochondrial DNA Part B* 4:397-398.

73. Hübner, S., Bercovich, N., Todesco, M., Mandel, J.R., Odenheimer, J., Ziegler, E., Lee, J.S., Baute, G.J., Owens, G.L., Grassa, C.J. Ebert, D.P., Ostevik, K.L., Moyers, B.T., Yakimowski, S., Masalia, R.R., Gao, L., Calic, I., Bowers, J.E., **Kane, N.C.**, Swanevelder, D.Z.H., Kuback T., Munos, S., Langlade, N.B., Burke, J.M., and Rieseberg, L.H. 2019. Sunflower pan-genome analysis shows that hybridization altered gene content and disease resistance. *Nature Plants* 5:54-62.

72. Pogoda*, C. S., Keepers*, K. G., Hamsher*, S. E. Stepanek**, J. G., and **Kane, N. C.** 2019. Comparative analysis of the mitochondrial genomes of six newly sequenced diatoms reveals group II introns in the barcoding region of cox1. *Mitochondrial DNA Part A*, 30:1-9

71. Stewart*, C.R.A., Lendemer, J.C., Keepers*, K.G., Pogoda*, C.S., **Kane, N.C.**, McCain, C.M. and Tripp, E.A., 2018. *Lecanora markjohnstonii* (Lecanoraceae, lichenized Ascomycetes), a new sorediate crustose lichen from the southeastern United States. *The Bryologist* 121:498-513.

70. Reinert, S., Money, K. L., Rockstad, G. B., **Kane, N. C**., Van Tassel, D. L., and Hulke, B. S. 2018. Two contrasting laboratory methods improve *Silphium integrifolium* Michx. germination rate to agronomically acceptable levels. *Euphytica*, 214: 156.

69. Smith*, C. C. R., Flaxman, S. M., Scordato, E. S., **Kane, N. C**., Hund*, A. K., Sheta, B. M., and Safran, R. J. 2018. Demographic inference in barn swallows using whole genome data shows signal for bottleneck and subspecies differentiation during the Holocene. *Molecular ecology* 27:4200-4212.

68. Smith*, C. C. R., *Tittes, S., Mendieta**, J. P., Collier-zans**, E., Rowe, H. C., Rieseberg, L. H. and **Kane, N. C.** 2018. Genetics of alternative splicing evolution during sunflower domestication. *Proceedings of the National Academy of Sciences* 115:6768-6773.

67. Brigham*, L. M., Allende*, L. M., Shipley**, B. R., Boyd**, K. C., Higgins**, T. J., Kelly*, N., Stewart**, C. A., Keepers*, K. G., Pogoda*, C. S., Lendemr, J. C., Tripp, E. A., and

Kane, N. C. 2018. Genomic insights into the mitochondria of 11 eastern North American species of *Cladonia. Mitochondrial DNA Part B* 3:508-512.

66. Funk*, E.R., Adams*, A. A., Spotten**, S. M., **Van Hove, R. A., **Whittington, K. T., Keepers*, K. G., Pogoda*, C. S., Lendemer, J. C., Tripp, E. A., and **Kane, N. C.** 2018. The complete mitochondrial genomes of five lichenized fungi in the genus *Usnea* (Ascomycota: Parmeliaceae). *Mitochondrial DNA Part B* 3:305-308.

65. Pogoda* C.S., Keepers*, K.G., Lendemer, J.C., **Kane, N.C.** and Tripp, E.A., 2018. Reductions in complexity of mitochondrial genomes in lichen-forming fungi shed light on genome architecture of obligate symbioses. *Molecular ecology* 27:1155-1169.

64. Pisupati, R., Vergara, D., and **Kane, N.C.** 2018. Diversity and evolution of the repetitive genomic content in *Cannabis sativa.* BMC Genomics 19: 156.

63. Gao, Q.M., **Kane, N. C.**, Hulke, B.S., Reinert, S., *Pogoda, C., *Tittes, S. and Prasifka, J.R. 2018. Genetic architecture of capitate glandular trichome density in florets of domesticated sunflower (*Helianthus annuus* L.). *Frontiers Plant Science* 8:2227.

62. Semenov, G. A., Scordato, E. S., Khaydarov, D. R., *Smith, C. C., **Kane, N. C.**, and Safran, R. J. 2018. Effects of assortative mate choice on the genomic and morphological structure of a hybrid zone between two bird subspecies. *Molecular Ecology* 26:6430-6444.

61. Scordato, E.S., *Wilkins, M.R., Semenov, G., Rubtsov, A.S., **Kane, N.C**. and Safran, R.J., 2018. Genomic variation across two barn swallow hybrid zones reveals traits associated with divergence in sympatry and allopatry. *Molecular Ecology* 26:5676-5691.

60. Vergara, D., Bidwell, L.C., Gaudino, R., Torres, A., Du, G., Ruthenburg, T.C., deCesare, K., Land, D. P., Hutchison, K. E. and **Kane, N. C.** 2017. Compromised external validity: Federally produced *Cannabis* does not reflect legal Markets. *Scientific Reports* 7:46528.

59. Badouin, H., Gouzy, J., Grassa, C.J., Murat, F., Staton, S.E., Cottret, L., Lelandais-Brière, C., Owens, G.L., Carrère, S., Mayjonade, B., Legrand, L., Gill, N., **Kane, N. C.,** Bowers, J. E., Hubner, S., Bellec, A., Bérard, A., Bergès, H., Blanchet, N., Boniface, M., Brunel, D., Catrice, O., Chaidir, N., Claudel, C., Donnadieu, C., Faraut, T., Fievet, G., Helmstetter, N., King, M., Knapp, S. J. Lai, Z., Le Paslier, M., Lippi, Y., Lorenzon, L., Mandel, J. R., Marage, G., Marchand, G., Marquand, E., Bret-Mestries, E., Morien, E., Nambeesan, S., Nguyen, T., Pegot-Espagnet, P., Pouilly, N., Raftis, F., Sallet, E., Schiex, T., Thomas, J., Vandecasteele, C., Varès, D., Vear, F., Vautrin, S., Crespi, M., Mangin, B., Burke, J. M., Salse, J., Muños, S., Vincourt, P., Rieseberg L. H., and Langlade, N. B. 2017. The sunflower genome provides insights into oil metabolism, flowering and Asterid evolution. *Nature* 546:148-152.

58. Van Tassel, D.L., Albrecht, K.A., Bever, J.D., Boe, A.A., Brandvain, Y., Crews, T.E., Gansberger, M., Gerstberger, P., González-Paleo, L., Hulke, B.S. and **Kane, N.C**. 2017. Accelerating domestication: An opportunity to develop new crop ideotypes and breeding strategies informed by multiple disciplines. *Crop Science* 57:1274-1284.

57. Leff*, J. W., Lynch*, R. C., **Kane, N. C.**, and Fierer, N. 2017. Plant domestication and the assembly of bacterial and fungal communities associated with strains of the common sunflower, *Helianthus annuus*. *New Phytologist* 214:412-423.

56. Vergara, D., Baker**, H., Clancy**, K., Keepers*, K. G., Mendieta**, J. P., Pauli**, C. S., Tittes*, S. B., White*, K. H., and **Kane, N. C.** 2017. Genetic and genomic tools for *Cannabis*. *Critical Reviews in Plant Sciences* 35:364-377.

55. Lynch*, R.C., Vergara, D., Tittes*, S., White*, K., Schwartz, C.J., Gibbs, M.J., Ruthenburg, T.C.,

Land, D.P. and **Kane, N.C.** 2017. Genomic and chemical diversity in *Cannabis*. *Critical Reviews in Plant Sciences* 35:349-363.

54. Grassa, C. J., Ebert, D. P., **Kane, N. C.**, and Rieseberg, L. H. 2016. Complete mitochondrial genome sequence of sunflower (*Helianthus annuus L.*). *Genome Announcements* 4:e00981-16.

53. Safran, R. J., Scordato, E. S. C., Hubbard*, J. K., Jenkins, B. R., Albrecht, T., Flaxman, S. M., Pap, P., Shen, S., Chan, F., Parchman, T., and **Kane, N. C**. 2016. Genome-wide differentiation in closely related populations: the roles of selection and geographic isolation. *Molecular Ecology* 25: 3865–3883. (Cover photo)

52. Franks, S. J., **Kane, N. C.**, O'Hara, N. B., Tittes*, S., and Rest, J. S. 2016. Rapid genome-wide evolution in *Brassica rapa* populations following drought revealed by sequencing of ancestral and descendant gene pools. *Molecular ecology* 25:3622-3631. (From the cover)

51. Keepers*, K., Martin, A. P., and **Kane, N. C.** 2016. The complete mitochondrial genome of the Warm Springs pupfish, *Cyprinodon nevadensis pectoralis. Mitochondrial DNA Part A* 27:2349-2350.

50. White*, K. H., Vergara, D., Keepers*, K. G., and **Kane, N. C.** 2016. The complete chloroplast genomes of *Cannabis sativa* and *Humulus lupulus. Mitochondrial DNA Part B* 1:715-716.

49. Vergara, D., White*, K. H., Keepers*, K. G., and **Kane, N. C.** 2016. The complete chloroplast genomes of *Cannabis sativa* and *Humulus lupulus. Mitochondrial DNA Part A* 27:3793-3794.

48. Kantar, M. B., Sosa, C. C., Khoury, C. K, Castañeda-Álvarez, N. P., and **Kane, N. C**. 2015. Ecogeography and utility to plant breeding of the crop wild relatives of sunflower (*Helianthus annuus* L.). *Frontiers in Plant Science* 6:841.

47. Delmore, K. E., Hübner, S., **Kane N. C**., Schuster, R., Andrew, R. L., Câmara, F., Guigó, R., Irwin, D. E. 2015. Genomic analysis of a migratory divide reveals candidate genes for migration and implicates selective sweeps in generating islands of differentiation. *Molecular Ecology* 24:1873-1888.

46. Baute, G. J., **Kane, N. C.**, Grassa, C. J., Lai, Z., Rieseberg, L. H. 2015. Genome scans reveal candidate domestication and improvement genes in cultivated sunflower, as well as post-domestication introgression with wild relatives. *New Phytologist* 206:830-838.

45. Whitney, K. D., Broman, K. W., **Kane, N. C.**, Hovick, S. M., Randell, R. A., Rieseberg, L. H. 2015. QTL mapping identifies candidate alleles involved in adaptive introgression and range expansion in a wild sunflower. *Molecular Ecology* 24:2194-2211.

44. Lynch*, R.C., Darcy*, J.L., **Kane, N. C**, Nemergut, D.R., and Schmidt, S.K. 2014.Metagenomic evidence for metabolism of trace atmospheric gases by high-elevation desert Actinobacteria. *Frontiers in Microbiology* 5:698.

43. Tittes*, S., and **Kane, N. C.** 2014.The genomics of adaptation, divergence and speciation: a congealing theory. *Molecular Ecology* 23:3938-3940.

42. Marchand, G., Huynh-Thu, V. A., **Kane, N. C.**, Arribat, S., Varès, D., Rengel, D., Balzergue, S., Rieseberg, L. H., Vincourt, P., Geurts, P., Vignes, M., Langlade, N. B. 2014. Bridging physiological and evolutionary time scales in a gene regulatory network. *New Phytologist*

203:685–696.

41. Gill, N., Buti, M., **Kane, N. C.,** Bellec, A., Helmstetter, N., Berges, H., Rieseberg, L. H. 2014. Sequence-based analysis of structural organization and composition of the cultivated sunflower (*Helianthus annuus* L.) *Genome Biology* 3:295-319.

40. Bock, D. G., **Kane, N. C.,** Ebert, D. P, Rieseberg, L. H. 2014. Genome skimming reveals the origin of the Jerusalem Artichoke tuber crop species: neither from Jerusalem nor an Artichoke. *New Phytologist* 201*:*1021-1030.

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Editorials and other non-peer-reviewed scientific publications

22. Rieseberg, L., Warschefsky, E., O'Boyle, B., Taberlet, P., Ortiz-Barrientos, D., **Kane, N.C.** and Sibbett, B., 2022. Editorial 2022. Molecular ecology 31:1-30.

21. Molecular Ecology Editorial Board. 2021. Sharing and reporting benefits from biodiversity research. Molecular Ecology, 30:1103-1107.

20. Rieseberg, L., Warschefsky, E., O'Boyle, B., Taberlet, P., Ortiz-Barrientos, D., **Kane, N.C.** and Sibbett, B., 2021. Editorial 2021. *Molecular Ecology* 30.

19. Molecular Ecology Editorial Board. 2020. Sharing and reporting benefits from biodiversity research. *Molecular Ecology* 29:1.

18. Rieseberg, L., Geraldes, A., Chambers, K. Belkin, K.E. and **Kane, N.** 2019. Editorial 2019. *Molecular Ecology*, 28:1-28.

17. Rieseberg, L., Geraldes, A., Chambers, K. and **Kane, N.** 2018. Editorial 2018. *Molecular Ecology*, 27:1-34.

16. Gray, H. B., Clancy**, K., Clarke, R. C deCesare, K., Fike, J., Gibbs, M. J., Grotenhermen, F., **Kane, N. C.,** Keepers*, K. G., Land, D., Lynch*, R. C., Mendieta**, J. P., Merlin, M., Müller-Vahl, K., Pauli**, C. S., Pearson, B. J., Rhan, B., Ruthenberg, T. C., Schwartz, C. J., Tittes*, S. B., Vergara, D., White*, K. H., Trigiano, R. N. 2017. Current and future needs and applications for *Cannabis. Critical Reviews in Plant Sciences.* 35:425-426.

15. Rieseberg, L., Vines, T. and **Kane, N**. 2014. Editorial 2014. *Molecular Ecology* 23:1-15.

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13. Rieseberg, L., Vines, T. and **Kane, N**. 2012. Editorial 2012. *Molecular Ecology* 21:1-22.

12. Rieseberg, L., Vines, T. and **Kane, N**. 2011. Editorial – 20 years of Molecular Ecology. *Molecular Ecology* 20:1-21.

11. Geraldes, A. and **Kane, N. C.** 2010. Pushing north one bottleneck at a time: site frequency spectra tell the history of Sitka spruce. *Molecular Ecology* 19:3837–3839.

10. Moyers, B. and **Kane, N. C**. 2010. Genetics of adaptation during colonization. *Molecular Ecology* 19:1270-1272.

9. Rieseberg, L., Vines, T. and **Kane, N**. 2010. 2010 Editorial and Retrospective. *Molecular Ecology* 19:1-22.10.

8. Hudson, M. E., and **Kane, N. C.** 2009. Plant genomes do a balancing act. *Molecular Ecology* 18:2743-2745.

7. **Kane, N. C**. and King, M. 2009. Using parentage analysis to examine gene flow and spatial genetic structure. *Molecular Ecology.* 18:1551-1552.

6. Rieseberg, L., Vines, T. and **Kane, N**. 2009. 2009 Editorial and Retrospective. *Molecular Ecology* 18: 1-13.

5. **Kane, N. C.** and Baack, E. J. 2007. Hybridization and the origin of weedy rice. *Molecular Ecology* 16: 4423-4425.

4. Ortiz-Barrientos, D. and **Kane, N. C.** 2007. The genetics of speciation. *Molecular Ecology* 16: 2852-2854.

3. **Kane, N. C.**, Gross, B. L., and Rieseberg, L. H. 2006. Transgressive segregation (plant breeding). pp. 331-334 in "McGraw-Hill Yearbook of Science & Technology." McGraw-Hill, New York.

2. **Kane, N. C**. and Rieseberg, L. H. 2005. Maize genetics: The treasure of the Sierra Madre. *Current Biology* 15: R137-R139.

1. **Kane, N. C.**, Gross, B. L., and Rieseberg, L. H. 2002. Book review: Hey, J. Genes, categories, and species - The evolution and cognitive cause of the species problem. *Plant Systematics and Evolution* 234:237-239.

Patents

Pauli**, C. S., Clancy**, K. M., Vergara, D. and **Kane, N. C.** 2018. Provisional Patent Application. Method for differentiating *Cannabis* plant cultivars based on cannabinoid synthase paralogs. SR Ref. 2848B-274-PROV. CU TTO Ref. CU45238B-PPA1.

Presentations

Invited talks

47. **Kane, N. C.** 2023. Taking genomics beyond SNPs to understand complex phenotypes. University of Wyoming Ecology and Evolutionary Biology seminar. Laramie, Wyoming.

46. **Kane, N. C.** 2022. Uniting historical field experiments and modern genomics to prepare for a sustainable future. Michigan State / Kellogg Biological Station, Hickory Corners, Michigan.

45. **Kane, N. C.** 2021. Using genomics to identify valuable genetic diversity in Cannabis. Virtual Winter Workshop on Advanced Molecular Dynamics Simulations 2021. Kathmandu University, Nepal.

44. Goebl. A. G., **Kane, N. C**., Ostevik, K., Rieseberg, L. H., and Doak, D. 2019. Life stage-dependent selection maintains a unique subspecies in the face of gene flow. Spotlight talk. Evolution 2019, Providence, Rhode Island.

43. **Kane, N. C**. 2019. Genomic analysis explains discrepancies between common knowledge and the *Cannabis* medical literature. EEB Departmental seminar, Calgary, Canada.

42. **Kane, N. C.** 2019. The evolutionary importance of alternative splicing. Plant and Animal Genome Conference, San Diego, California.

41. **Kane, N. C.** 2018. Keynote Presentation: Plant Biology of Cannabis. Cannabis and Epilepsy Symposium, presented by the Epilepsy Foundation of Colorado. Denver, Colorado.

40. **Kane, N. C.** 2018. Implications of phytochemistry variations for interpreting human health studies on Cannabis. CUREACH symposium, CU, Boulder, Colorado.

39. **Kane, N. C**. 2017. *Cannabis* used in research does not reflect legal markets. CannMed 2017

conference, Harvard Medical School, Boston, Massachusetts.

38. **Kane, N. C.** 2017. *Cannabis* genetics, evolution and phytochemistry. Departmental Seminar. University of Northern Colorado, Greely, Colorado.
37. **Kane, N. C.** 2017. *Cannabis* genetics, evolution and phytochemistry. Boulder Cannabis Industry Meetup, Boulder, Colorado.
36. **Kane, N. C.** 2017. Genetic regulation and evolution of alternative splicing changes during sunflower domestication. Plant and Animal Genome XXIII Conference, San Diego, California.
35. **Kane, N. C.** 2016. Alternative splicing evolution during sunflower domestication. Departmental Seminar. Colorado State University, Ft. Collins, Colorado.
34. **Kane, N. C.** 2015. The evolutionary impact of hybridization. Botany Departmental Seminar.University of Wyoming, Laramie, Wyoming.
33. **Kane, N. C.** 2015. Disease resistance and introgression. National Sclerotinia Initiative, St. Paul, Minnesota.
32. **Kane, N. C.** 2015. Genomic diversity of *Cannabis*. Plant and Animal Genome XXIII Conference, San Diego, California.
31. **Kane, N. C.** 2014. The origins of cultivated *Cannabis*. Cannabis Grand Cru. Aspen, Colorado.
30. **Kane, N. C.** 2014. The evolutionary importance of hybridization. Departmental Seminar. University of Arizona, Tucson, Arizona.
29. O'Hara, N.B., Franks S.J., **Kane, N.C.**, Tittes, S., Amidi-Abraham, G., Rest, J.S. Genomic signatures of rapid evolution in drought response and disease susceptibility in an annual plant, *Brassica rapa*. Society for Molecular Biology and Evolution, Puerto Rico.
28. **Kane, N. C.** 2014. Population genomic approaches shed light on the hybrid origins of modern sunflowers. 2Nd Plant Genomics Congress, USA, St. Louis, Missouri.
27. **Kane, N. C.** 2013. The role of hybridization during domestication and feralization. SMBE meeting, Chicago, Illinois.
26. **Kane, N. C.** 2013. The evolutionary importance of hybridization. Colorado State University, Fort Collins, Colorado.
25. **Kane, N. C.** 2013. The evolutionary importance of hybridization. University of Minnesota, St. Paul, Minnesota.
25. **Kane, N. C.** 2013. The evolutionary importance of hybridization. University of Colorado, Boulder, Colorado.
24. **Kane, N. C.** 2013. The evolutionary importance of hybridization. University of Nevada, Reno, Nevada.
23. **Kane, N. C.** 2013. Hybridization and introgression associated with range expansion and invasion in sunflowers. Plant and Animal Genome XXI Conference, San Diego, California.
22. **Kane, N. C.** 2013. Sunflower genome update. Plant and Animal Genome XXI Conference, San Diego, California.
21. **Kane, N. C.** 2012. Hybridization and the origins of novelty. Iowa State University, Ames, Iowa.

20. **Kane, N. C.** 2012. Hybridization and the origins of novelty. Washington State University, Pullman, Washington.

19. **Kane, N. C.** 2012. Hybridization and the origin of novelty. University of Arkansas, Fayetteville, Arkansas.

18. **Kane, N. C.** 2012. Hybrid origins of modern chocolate, cultivated sunflowers and several invasive plants. University of Connecticut, Stores, Connecticut.

17. **Kane, N. C.**, Grassa, C. J., Gill, N., Bowers, J., Berges, H., Gouzy, J., King, M. G., Bachlava, E., Langlade, N., Burke, J. M., Vincourt., P., Knapp, S. J., and Rieseberg, L. H. 2012. The sunflower genome and its evolution. Plant and Animal Genome XX. San Diego, California.

16. **Kane, N. C.** 2011. Crop-wild hybridization is associated with evolution of weedy sunflowers. ESA, Austin, Texas.

15. **Kane, N. C.**, Grassa, C., Andrew, R., Renaut, S., Rieseberg, L. H. 2011. Genetic underpinnings of divergence and adaptation in *Helianthus.* Symposium talk, Botany 2011, St. Louis, Missouri.

14. **Kane, N. C.**, King, M. G., Rieseberg, L. H, Andrew, R. 2011. Gene flow, hybridization and adaptation in wild, domesticated, and weedy sunflowers. Symposium, International Botanical Congress, Melbourne, Australia.

13. Rieseberg, L. H., **Kane, N. C.**, Andrew, R., Renaut, S., Scasitelli, M., Strasburg, J. 2011. The nature of species boundaries in plants. Keynote symposium, International Botanical Congress, Melbourne, Australia.

12. **Kane, N. C.**, Grassa, C., Andrews, R. and Rieseberg, L. H. 2011. RAD sequencing in sunflowers: Genomics, evolution and ecology. 2011 RAD Sequencing symposium. Portland, Oregon.

11. **Kane, N. C.** 2011. Next-gen sequencing illuminates the nature of species and speciation. Boyce Thompson Institute, Ithaca, New York.

10. **Kane, N. C.** 2011. Evolutionary genomics of adaptation and speciation in sunflowers. University of Vermont, Burlington, Vermont.

9. Rieseberg, L. H., **Kane, N. C.** 2011. Physical mapping and sequencing of the sunflower genome. Oral presentation. Plant and Animal Genome XIX, San Diego, California.

8. Rieseberg, L. H., **Kane, N. C.,** 2011. The nature of species boundaries in plants. Plant and Animal Genome XIX, San Diego, California.

7. **Kane, N. C.** 2010. The sunflower genome and related genomic resources. J. Craig Venter Institute, Rockville, Maryland.

6. **Kane, N. C.** 2010. Sequencing the sunflower genome. Oral presentation. Plant and Animal Genome XVIII, San Diego, California.

5. Dlugosch, K. M., Lai, Z., **Kane, N. C.**, Mayrose, M. and Rieseberg, L. H. 2009. The evolution of genomic responses to stress in Compositae weeds. International Plant Molecular Biology Congress, St. Louis. Missouri.

4. **Kane, N. C.** Barker, M. S. and Rieseberg, L. H. 2008. Molecular evolution across the Asteraceae: micro- and macroevolutionary processes. Plant and Animal Genome XVI, San Diego, California.

3. **Kane, N. C.** and Rieseberg, L. H. 2006. The genetics of drought tolerance, salt tolerance, and weediness in *Helianthus annuus*. Plant and Animal Genome XIV, San Diego, California.

2. **Kane, N. C.** 2006. Selective sweeps, gene flow and species boundaries in *Helianthus annuus.* AGA Symposium, Speciation Genetics, Vancouver, British Columbia.

1. **Kane, N. C.** and Brunick, B. 2005. Analysis of phenotypic variation in sunflowers. Compositae genome meetings, Athens, Georgia.

Contributed talks and posters

38. Franks, S., and **Kane, N. C.** Selection and evolution of gene expression in plant responses to drought. Evolution 2020, Cleveland, Ohio.

37. Hamann, E., Pauli**, C. S., **Kane, N. C.**, Franks, S. J. Differential gene expression associated with rapid evolution to consecutive drought episodes in a *Brassica rapa* resurrection study. Talk. Evolution 2019, Providence, Rhode Island.

36. Pogoda*, C., **Kane, N. C.**, Keepers*, K., and Stanley, J. 2019. Mitochondrial Genomes as Tools for Teaching of Comparative Genomics and Evolution. Poster. Evolution 2019, Providence, Rhode Island.

35. Vergara, D. Huscher, E., Keepers*, K., Gaudino, R., **Kane, N**. 2019. When science becomes political: studying NIDA's Cannabis. Talk. Evolution 2019, Providence, Rhode Island.

34. Reinert, S., Corwin, J., Gao, Q., Prasifka, J, **Kane, N.**, Hulke, B. 2019. W342 Understanding the Role of Plant Genetics in Provisioning and Regulating Ecosystem Services: Two Examples in Sunflower. Plant and Animal Genome Conference, San Diego, California.

33. Vergara, D. Huscher, E., Keepers* K., Gaudino, R., **Kane, N.** 2017. Gene duplications associated with phytochemistry in *Cannabis sativa*. Talk. Evolution 2017, Portland, Oregon.

32. Semenov, G., Scordato, E., Khaydarov, D., Smith*, C., **Kane, N.**, Badyaev, A., Koblik, E., Red'kin, Y., and Safran, R. 2017. Assortative mate choice and maintenance of reproductive barriers: lessons from a phenotypically diverse avian species. Talk. Evolution 2017, Portland, Oregon.

31. Weiss-Lehman*, C., Tittes*, A., **Kane, N.,** Hufbauer, R., and Melbourne, B. 2017. Genetic signatures of adaptation and gene surfing in replicated biological range expansions. Talk. Evolution 2017, Portland, Oregon.

30. Tittes*, A., Hufbauer, R., **Kane, N.,** Melbourne, B., and Weiss-Lehman*, C. 2017. Surfing in pools of beetles: using replicated landscape experiments to disentangle signatures of selection and drift. Talk. Evolution 2017, Portland, Oregon.

29. Goebl*, A. Tittes*, S. and **Kane, N. C.** 2017. Population genomic study of adaptation and selection in a dune sunflower. Poster. Evolution 2017, Portland, OR.

28. Safran, R., Scordato, E. and **Kane, N. C.** 2016. Divergent phenotypes and their influence on genome-wide divergence in barn swallows. Talk. Evolution 2016, Austin, Texas.

27. Scordato, E., Safran, R., and **Kane, N. C.** 2016. Genomic basis of hybridization in two barn swallow contact zones. Spotlight session talk. Talk. Evolution 2016, Austin, Texas.

26. Franks, S.J., and **Kane, N. C.** 2016. Selection causes rapid genome-wide evolution in *Brassica rapa* following a climatic change. Talk. Evolution 2016, Austin, Texas.

25. Goebl*, A., **Kane, N. C.**, and Tittes, S. 2016. Studying adaptation of sunflowers in Great Sand

Dunes National Park using genotyping-by-sequencing. Poster. Evolution 2016, Austin, Texas.

24. Keepers*, K., **Kane, N. C.,** and Martin, A. 2016. A Rescue in the Desert: Fitness in Inbred Fish Recovered After Admixture. Poster. Evolution 2016, Austin, Texas.

23.Collier-Zans**, E. and **Kane, N. C.** 2016. Recombination in the chloroplasts of the Andean subtribe Iochrominae (Solanaceae). Poster. Evolution 2016, Austin, Texas.

22. Franks, S.J., and **Kane, N. C.**, 2014. Genome-wide analysis reveals rapid genetic changes in natural *Brassica rapa* populations following drought. Evolution, Raleigh, North Carolina, June 23.

21. Grassa, C. J., Ebert, D. P., **Kane, N. C.** and Rieseberg, L. H. 2013. Cytoplasmic genomes of sunflowers: Assembly, evolution, structure, and function. Poster P0442. Plant and Animal Genome XXI. San Diego, California.

20. Baute, G. J., **Kane, N. C.**, Grassa, C. J., and Rieseberg, L. H. 2013. The genetics of domestication and improvement in sunflowers (*Helianthus* annuus). Poster P0444. Plant and Animal Genome XXI. San Diego, California.

19. Gill, N., **Kane, N. C.**, Berges, H., Burke, J. M., Vincourt., P., Knapp, S. J., and Rieseberg, L. H. 2012. A sequence-based physical map of the sunflower (*Helianthus annuus* L.) genome. Poster P0700. Plant and Animal Genome XX. San Diego, California.

18. Grassa, C. J., **Kane, N. C.**, Bowers, J., Knapp, S. J., Burke, J. M., and Rieseberg, L. H. 2012. Ultra- high density genetic map of sunflower. Poster P0701. Plant and Animal Genome XX. San Diego, California.

17. Andrew, R. L., **Kane, N. C.**, Grassa, C. J., Baute, G. J., and Rieseberg, L. H. 2012. Genome-wide patterns of divergence between sunflower ecotypes. Poster P0072. Plant and Animal Genome XX. San Diego, California.

16. **Kane, N. C.,** Whitney, K., Bonin, A. and Rieseberg, L. H. 2010. Genomics of invasiveness in *Helianthus*. Oral presentation. Evolution 2010, Portland, Oregon.

15. **Kane, N. C.** and Rieseberg, L. H. 2009. Genes under selection during domestication and adaptation in *Helianthus*. Oral presentation. Evolution 2009, Moscow, Idaho.

14. **Kane, N. C.** 2008. Chloroplast genome sequencing using Solexa and SOLiD. Oral presentation. Botany 2008, Vancouver, British Columbia.

13. **Kane, N. C.**, Barker, M. S. and Rieseberg, L. H. 2007. Molecular evolution across the Asteraceae: micro- and macroevolutionary processes. Oral presentation. ESEB meeting, Uppsala, Sweden.

12. Barker, M. S., **Kane, N. C.** and Rieseberg, L. H. 2007. Widespread paleopolyploidy across the Viridiplantae. Poster presentation. AGA meeting, Bloomington, Indiana.

11. Barker, M. S., **Kane, N. C.** and Rieseberg, L. H. 2007. Widespread paleopolyploidy across the Viridiplantae. Oral presentation. BSA meetings, Chicago, Illinois.

10. Barker, M. S., **Kane, N. C.** and Rieseberg, L. H. 2007. Widespread paleopolyploidy across the Viridiplantae. Poster presentation. MBE meetings, Halifax, Canada.

9. **Kane, N. C.** 2007. The evolution of agricultural weed ecotypes of *H. annuus*. Oral presentation. GSA 2007. UBC, Vancouver, Canada.

8. **Kane, N. C.** and Rieseberg, L. H. 2005. Selective sweeps reveal candidate genes for adaptation to drought and salt tolerance in *Helianthus annuus*. Oral presentation. Evolution 2005. Fairbanks, Alaska.

7. **Kane, N. C**. 2004. Selective sweeps, linkage disequilibrium, and speciation. Poster presentation. Evolution of Gene Regulation Minisymposium, Eugene, Oregon.

6. **Kane, N. C**. 2004. Documenting selective sweeps in wild sunflowers: genetics of adaptation. Oral presentation. IGERT seminar series, Indiana University, Bloomington, Indiana.

5. **Kane, N. C.**, Gross, B. L. and Rieseberg, L. H. 2003. Reconstructing the hybrid origins of *Helianthus deserticola*: selection experiments on the desert floor. Oral presentation. Evolution 2003, Chico, California.

4. **Kane, N. C.** 2002. Molecular evolution of genes in pathways. Poster presentation. Mini-symposium on the Microevolution of Development, Indiana University, Bloomington, Indiana.

3. **Kane, N. C.** 2001. Genetics of speciation and divergence in *Helianthus*. Poster presentation. Evolution of gene networks 2001 conference, Eugene, Oregon.

2. **Kane, N. C.,** Dorn, L. A. and Schmitt, J**.** 2000. Novel phenotypes for novel environments: responses to seasonal cues in *Arabidopsis* recombinant inbreds. Oral presentation. Evolution 2000, Bloomington, Indiana.

1. **Kane, N. C.,** Dorn, L. A. and Schmitt, J. 1999. Maternal environmental effects in *Arabidopsis* recombinant inbreds. Poster presentation. XVI International Botanical Congress, St. Louis, Missouri.

Selected popular press coverage

November 13, 2023. *The Denver Post* "The future of food is banking on climate-resistant seeds"
August 2, 2023. *9News Denver* "Studying sunflowers could help other crops in a time of climate change, Colorado researcher says."
August 1, 2023. *Boulder Daily Camera* "CU Boulder studying sunflowers to strengthen crops in a changing climate"
July 11, 2023. *Colorado Arts and Science Magazine* "Are sunflowers Colorado's best hedge against climate change?"
March 20, 2020. *Boulder Daily Camera* "Domestication of Lewis flax has begun."
August 26, 2019, *The Scientist* "DEA Again Promises to Improve Access to Marijuana for Research"
June 11, 2018, *CU Boulder Today* "The sunflower's rapid evolutionary transformation"
June 11, 2018, *Earth.com* "Evolution of sunflowers was fast-tracked by changes in their RNA"
June 12, 2018, *Rolling Stone* "How Mapping Marijuana DNA Could Change the Future of Pot"
February 9, 2018*, Science Daily* "When it comes to genes, lichens embrace sharing economy"
October 13, 2017, *CU Boulder Today* "Mapping the genetics of cannabis"
November 11, 2016. *Science Magazine* "Government pot is less potent than commercial pot, questioning dozens of scientific studies"
Fall 2016. *Boulder Magazine* "A map into uncharted territory"
February 17, 2016 *Colorado Arts and Sciences Magazine* "Greenhouses grow better students, biologists say"
January 12, 2015, *KUNC* "Hemp's Legality Has Stunted Research, But That's Starting To Change"
June 2015. *National Geographic* "Science Seeks to Unlock Marijuana's Secrets" (Cover)
February 6, 2014. *Boulder Weekly* "Professor launches plan to map Cannabis genome"
February 10, 2014. *Daily Camera* "CU-Boulder prof pursues deepest-ever exploration of the

Cannabis genome." Front page, two photos, Sunday edition
January 14, 2010. *Science Daily* "Sunflower genome holds the promise of sustainable agriculture"
January 13, 2010. *Vancouver Sun* "Scientists seek sunflowers' secrets: Cracking the plant's DNA code could lead to food, energy improvements"

TEACHING AND MENTORSHIP

Undergraduate courses:
Plants in Agriculture EBIO 4460. University of Colorado, Spring 2023-2024.
Cannabis Genomics EBIO 4460, University of Colorado, Spring 2021.
Transcriptomics EBIO 4460-10, University of Colorado, Spring 2019-2020.
Evolution, EBIO 3080-001, University of Colorado, Spring 2014-2015, 2017-2021.
Genomics, EBIO 4460-020, University of Colorado, Fall 2013-2023.
Plant Evolution University of British Columbia, 2009.

Graduate courses
Whale Genomics EBIO 6100, Spring 2024.
Seminar in Evolutionary Biology EBIO 6100-007, Fall 2018-2022
Evolutionary Genomics, EBIO 6300, University of Colorado, Spring 2015, Spring 2017.
Comparative Genomics, EBIO 6210, University of Colorado, Spring 2014.
Genomics, EBIO 5460-001, University of Colorado, Fall 2013-2023.

Short courses
Workshop *Next generation sequencing data in ecology and evolution*, Ottawa, 2012.

Postdoctoral mentoring
Kyle Keepers *Genomics of complex traits in sunflower, silphium, flax, and orchids* (2022-)
Corinne Walsh *Genetic and environmental determinants of root associated microbes in sunflower* (2023, now a research scientist at CSU).
Daniela Vergara *Evolutionary genomics of Cannabis* (2014-2021, now research scientist at Cornell)
Qingming Gao *Quantitative genetics for sunflower breeding and improvement* (2017-2018, now at Cibus - Pioneering precision gene-editing)
Stephan Reinert *Using genomic tools to domesticate a new species, Silphium integrifolium* (2017-2020, now the group leader (similar to Associate Professor) for the Biocomputing Lab, Chair of Biochemistry, FAU Erlangen, Germany)
Ryan Lynch *Major lineage diversification in Cannabis* (2015, now at: Salk Institute)
Cloe Pogoda *Genetics and evolution of sunflower disease resistance* (2018-2021, worked as a Genomicist at Artisan Development Labs, now an Application Scientist at InDevR)
Jared Stewart, *Genetic architecture of hydraulic performance and cold tolerance in the common sunflower, Helianthus annuus* (2019-)
Ziv Attia, *Using physiology and genomics to develop of a new, drought tolerant perennial crop species* (2019-2021, now CSM and Product Lead at Phytech Plant-Based Farming)
Emily Warschefsky, *Genomic structural variation in sunflower: Diversity under domestication and importance for stress tolerance*. (2020-2021, now research faculty at the Missouri Botanical Garden)

Graduate students (primary mentor)

Dan Klee (2023- , PhD)
Leonardo Orozco (2021- , PhD)
Peter Innes (IQ Biology 1-year fellowship, Title tbd, 2019-)
Kristin White *Mating type evolution in lichens* (2015-)
Amy Benefield *Diagnostics as a driver of pathogen evolution* (2015-2022, PhD, Data Science Epidemiologist at Signature Science)
April Goebl *The genetics of survival and adaptation during habitat restoration* (IQ Biology, 2-year fellowship, NSERC, 2-year fellowship, 2015-2021,PhD, now a scientist at Denver Botanical Garden)
Kyle Keepers *Evolutionary genetics of lichens* (IQ Biology, 2-year fellowship, 2013-2021, PhD, postdoc at U. Minnesota, postdoc at CU Boulder)
Cloe Pogoda *Genetic underpinnings of domestication and improvement in sunflower* (IQ Biology, 2-year fellowship, 2014-2018, PhD, now an Application Scientist at InDevR)
Ryan Lynch *Genomics of adaptation and diversification* (2014-2015, PhD, now a scientist at the Salk Institute)
Silas Tittes *Predicting evolution and inferring its consequences* (2014-2019, PhD, postdoc at UC Davis, now a population genetics researcher at the University of Oregon)

Graduate students (coadvised)
Jacqueline de Mattos *Conservation genomics and population genetics of the orchid Epidendrum fulgens* (2022- , PhD)
Chris Smith *Demography, genetics, and speciation* (IQ Biology, 2-year fellowship, NSF GRFP, 3-year fellowship, 2015-2021, postdoc at University of Oregon)

Graduate students committee member, CU
Blake Stevison (2014-2017)
Katherine B. Wolfson (M.S., 2014-2015)
Jon Leff (2014-2017, PhD)
E. L."Abbey" Paulson (Ph.D., 2013-2016)
Marek Romášek (2014-2016)
Robert Roscow (2014-2016)
Tobin Hammer (2014-2018 PhD)
Aaron Wacholder (2013-2017, PhD)
Jared Stewart (2014-2017, PhD)
Sierra Stowell (2013-2016, PhD)
Rachel E. Thayer, (2013-2017, PhD)
Topher Weiss-Lehman (2014-2017, PhD)
Jack Darcy (2014-2017, PhD)
Daniel Hernandez (2020- , PhD, MCDB)
Margaret Mitter (2015-2018, MS)
Eric Funk (2017-)
Amy Benefield (2017-2022)
David Zonana (2015- 2019, PhD)
Lara Vimarcati (2014- 2019, PhD)
Sean Streich (2015-2018, M.S., 2018- PhD)
Alexandra Alexiev (2016-)
Chelsea Pretz (2016-)
Carly Stewart (2016-)
Kathryn Grabenstein (2016-)
Katherine Feldman (2019-2020, M.S.)
Katherine Kariatsumari (2020-)
Lindsey Ray (2017-)
Lonnie Vlonjat (2020-)
Will Anderson (2022-2023, BAM)
Ajay Patel (2022-, PhD, EBIO)
Mailor Amaral (2022- , PhD)
Sara Padula (2022- , PhD)
Mary Childress (2022- , PhD)
Catherine Ikudaisi (2022- , PhD)

Graduate students committee member, other institutions
Anna Schwabe (University of Northern Colorado, 2016-2019)
Brian Smart (North Dakota State University, 2019-2022)
Andre Gossweiler (North Dakota State University, 2021-2023)

Graduate studen

Graduate independent study:

Sean Streich (Spring 2017)
Carly Anderson (Spring 2017)
Kristin White (Spring 2017, Fall 2021)
Javan Carter (Fall 2019)
Ruiqi Li (Spring 2020)

Undergraduate independent study and/or UROP students

Sarah Michaud (Spring 2013)
John "Pablo" Mendieta (2014-2015, UROP)
Brian Smart (Spring 2015)
Alyssa Countway (Spring 2017, Summer 2015)
Tyler Underwood (Spring 2015)
Allen DeHoff (Spring 2017-Fall 2017)
Surabhi Nair (Spring 2017, Summer 2017)
Cameron Poyd (Spring 2020)
Brianna Wall (Spring 2020)
Dane Grosvenor (Fall 2018-Spring 2019)
Tianna Meyers (Summer 2017-Fall 2017)
Ayushi Sinha (Summer 2015)
Mathew Bell (Fall 2015)
Halie Baker (Fall 2015-Fall 2016)
Christopher Pauli (Fall 2014-Spring 2017)
Kayla Clancy (Fall 2014-Spring 2016)
Dustin Bailey (Fall 2018)
Caitlin Tiehen (Spring 2019)
Carter Alzamora (Spring 2021)

Honors undergraduates, primary mentor:

Joey White. *Genetics and evolution of insect resistance in sunflower.* Spring 2024.
Joseph Barham. *Comparative genomics of the loss of distyly and self-incompatibility in the genus Linum*. Spring 2023.
Roy Rutherford. *Ecology, evolution, and population genetics of urban sunflowers in Colorado. magna cum laude* Fall 2021.
Zachary Girard. *The Flowering Time Pathway and Related Genes in Hemp.* (*magna cum laude* Spring 2021)
Dustin Bailey *Genetic tools for understanding and breeding new crops from wild relatives.* (*magna cum laude* Spring 2019)
John Paul Mendieta *Transposable Element Abundance and Variability in 28 Different Species in the Family Solanaceae,* (*magna cum laude* Fall 2015)
Christopher Pauli *Differential mRNA Expression of Cannabis Treated with Colloidal Silveri* (*summa cum laude* Spring 2017)
Erin Collier-Zahns *Recombination in the Chloroplasts of the Florally Diverse Andean Subtribe Iochrominae (Solanaceae),* (*summa cum laude* Fall 2015)

Honors Undergraduates, committee member:

Chiara Dart *Azacitidine and MCL1 inhibitors in combination may provide novel treatment for patients with melanoma.* (*Magna cum laude* Fall 2020)
Erin Hobday (Spring 2023)

SERVICE

Scientific Journal Editorships

Senior Editor, *Molecular Ecology* 2015-2022

Associate Editor, *Molecular Ecology Resources*	2015-2022
Board of Advisors to the Editors, *New Phytologist*	2012-present
Advisory Board member, *Evolutionary Applications*	2011-2023
Guest editor, *Plant Communications*	
Special Issue on Plant Evolutionary Adaptation	November, 2020
News and Views Editor, *Molecular Ecology Resources*	2009-2015
News and Views Editor, *Molecular Ecology*	2006-2015

Reviewer

American Journal of Botany, Annals of Botany, BAOJ Biotechnology, BMC Evolutionary Biology, BMC Genomics, Cannabis and Cannabinoid Research, Conservation Genetics, Evolution, Evolutionary Applications, Genetic Resources and Crop Evolution, Genetics, Genome Biology and Evolution, Helia, Journal of Applied Research on Medicinal and Aromatic Plants, Journal of Cell Biology and Genetics, Journal of Heredity, Journal of Molecular Evolution, Marine Genomics, Molecular Biology and Evolution, Molecular Ecology, Molecular Ecology Resources, Nature Communications, New Phytologist, Oecologia, Philosophical Transactions of the Royal Society, Plant Biology, PLoS One, Theoretical and Applied Genetics**.**

Grant reviewer

National Science Foundation, USDA, Israel Science Foundation, NSERC, National Hemp Association

Grant Panelist

NSF, 2019, 2024

Professional Societies

Botanical Society of America, Ecological Society of America, Society for the Study of Evolution, Colorado Native Plant Society

Community service

2023	Judge, ASN poster awards, Evolution 2023 meeting, Albuquerque, NM
2019	Judge, undergraduate poster session, EBIO Spring Symposium
2018-2019	Board of Directors of the Industrial Hemp Research Foundation
2015-	Board member, Agricultural Genomics Foundation.
2014-2016	Science fair judge, Foothill Elementary, Boulder, CO.

Outreach

2022. Talk "Sunflower breeding for sustainable agriculture." MASA Seed Foundation, Boulder, CO.
2015-2021. Review and promote blog articles for the Agricultural Genomics Foundation.
2016. Science Lounge, "Cannabis Genetics and Evolution" Denver Museum of Nature and Science.
2014-2016. Yearly talks to 1-3 grade classrooms at Foothill Elementary, Boulder, CO.
2014. Public discussion "The future of Cannabis research at CU." Boulder, CO.
2013. Public talk "Whole genome sequencing reveals the origins of modern chocolate". Sigma Xi *Cafe Scientifique*, Boulder, Colorado.
2012. Full day, hands-on student workshop on "Next generation sequencing data in ecology and evolution", sponsored by the Canadian Institute of Ecology & Evolution (CIEE) and Canadian Society for Ecology & Evolution (CSEE). July 11, 2012, Ottawa.
2011. Three exhibits on domestication and speciation in *Helianthus* and *Guizotia,* Beaty Biodiversity Museum, Vancouver.

2011. Blog article on the use of Fst *vs* Jost's D for population genetics on The Molecular Ecologist, http://www.molecularecologist.com/
2006. Lecture and discussion on domestication and speciation in sunflowers, Trout Creek public high school, Trout Creek, Utah.

Departmental service
EBIO Executive Committee 2016-2017
EBIO graduate Committee 2015-2016
Curriculum Committee 2014-2016, 2019
Population Geneticist search committee 2014-2015
EBIO Greenhouse Committee 2018-2021
EBIO Merit Committee 2019-2020
EBIO Research Committee 2020-2021
EBIO Faculty Affairs Committee 2021-2022
PUEC Chair, Alisha Quandt 2022-2023
EBIO Merit Committee, 2023
PUEC Chair, Luke Evans 2023-2024
EBIO Early Career Mentoring Committee 2023-2024
EBIO JEDI Committee 2023-2024

University service
IQ Biology graduate admissions committee 2014-2018
Biofrontiers Task Force 2013-2016
The BioFrontiers Next-Gen Sequencing Facility Advisory Board 2015-2020
Reviewer for the Graduate School Research Grants 2023