

Curriculum Vitae

James Travis Columbus II

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Date and Place of Birth

8 March 1962, Carlsbad, New Mexico

Education and Degrees

Ph.D., Integrative Biology, University of California, Berkeley, 1996

Major professor: Thomas O. Duncan

Dissertation: “Lemma micromorphology, leaf blade anatomy, and phylogenetics of *Bouteloua*, *Hilaria*, and relatives (Gramineae: Chloridoideae: Boutelouinae)”

M.S., Range Science (major), Biology (minor), New Mexico State University, Las Cruces, 1988

Major professor: Kelly W. Allred

Thesis: “Flora of Cooke's Range, southwestern New Mexico” (716 minimum-rank taxa)

B. S., Range Science (major), Biology (minor), New Mexico State University, Las Cruces, 1986

High school, Silver High School, Silver City, New Mexico, 1980

Positions Held

Research Scientist, Rancho Santa Ana Botanic Garden, Claremont, California, 1994–present

Professor of Botany, Claremont Graduate University, Claremont, California, 2011–present

Associate Professor of Botany, Claremont Graduate University, Claremont, California, 2002–2011

Assistant Professor of Botany, Claremont Graduate University, Claremont, California, 1994–2002

Lecturer, Department of Integrative Biology, University of California, Berkeley, 1992, 1993

Lecturer, Horticulture, Diablo Valley College, Pleasant Hill, California, 1993

Graduate Student Instructor (Teaching Assistant), Department of Botany/Integrative Biology, University of California, Berkeley, 1988–1993

Research Assistant, University of California and Jepson Herbaria, Berkeley, summers 1989, 1990

Teaching Assistant, Department of Animal and Range Sciences, New Mexico State University, Las Cruces, 1986–1988

Herbarium assistant, Range Science Herbarium (NMCR), New Mexico State University, Las Cruces, 1983–1986

Forest Technician (fire fighter), U. S. Forest Service, Gila National Forest, New Mexico, summers 1981–1986 (last two as Assistant Foreman)

Youth Conservationist, Youth Conservation Corps, U. S. Forest Service, Gila National Forest, New Mexico, summers 1979, 1980 (second as Youth Leader)

SCHOLARLY ACTIVITY

Publications

Books Edited

Columbus, J. T., E. A. Friar, J. M. Porter, L. M. Prince, and M. G. Simpson [eds.]. 2007. Monocots: Comparative biology and evolution—Poales. Rancho Santa Ana Botanic Garden, Claremont, California, USA. 682 p. [*Aliso* vol. 23]

Columbus, J. T., E. A. Friar, J. M. Porter, L. M. Prince, and M. G. Simpson [eds.]. 2006. Monocots: Comparative biology and evolution (excluding Poales). Rancho Santa Ana Botanic Garden, Claremont, California, USA. 735 p. [*Aliso* vol. 22]

Peer-Reviewed Journal Articles and Book Chapters

Siqueiros-Delgado, M. E., A. E. Fisher, and J. T. Columbus. 2017. Polyploidy as a factor in the evolution of the *Bouteloua curtipendula* complex (Poaceae: Chloridoideae). *Systematic Botany* 42: 432–448.

Fisher, A. E., K. M. Hasenstab, H. L. Bell, E. Blaine, A. L. Ingram, and J. T. Columbus. 2016. Evolutionary history of chloridoid grasses estimated from 122 nuclear loci. *Molecular Phylogenetics and Evolution* 105: 1–14.

Duvall, M. R., A. E. Fisher, J. T. Columbus, A. L. Ingram, W. P. Wysocki, S. V. Burke, L. G. Clark, and S. A. Kelchner. 2016. Phylogenomics and plastome evolution of the chloridoid grasses (Chloridoideae: Poaceae). *International Journal of Plant Sciences* 177: 235–246.

Mashayekhi, S., and J. T. Columbus. 2015. Genetic diversity of *Allium munzii* (Amaryllidaceae), a rare southern California species and implication for its conservation. *Biochemical Systematics and Ecology* 59: 91–99.

Wysocki, W. P., L. G. Clark, S. A. Kelchner, S. V. Burke, J. C. Pires, P. P. Edger, D. R. Mayfield, J. K. Triplett, J. T. Columbus, A. L. Ingram, and M. R. Duvall. 2014. A multi-step comparison of short-read full plastome sequence assembly methods in grasses. *Taxon* 63: 899–910.

Mashayekhi, S., and J. T. Columbus. 2014. Evolution of leaf blade anatomy in *Allium* (Amaryllidaceae) subgenus *Amerallium* with a focus on the North American species. *American Journal of Botany* 101: 63–85.

Ocampo, G., N. K. Koteyeva, E. V. Voznesenskaya, G. E. Edwards, T. L. Sage, R. F. Sage, and J. T. Columbus. 2013. Evolution of leaf anatomy and photosynthesis pathways in Portulacaceae. *American Journal of Botany* 100: 2388–2402.

Poinar, G. O., Jr., and J. T. Columbus. 2013. *Alarista succina* gen. et sp. nov. (Poaceae: Bambusoideae) in Dominican amber. *Historical Biology* 25: 691–696.

Siqueiros-Delgado, M. E., M. Ainouche, J. T. Columbus, and A. Ainouche. 2013. Phylogeny of the *Bouteloua curtipendula* complex (Poaceae: Chloridoideae) based on nuclear ribosomal and plastid DNA sequences from diploid taxa. *Systematic Botany* 38: 379–389.

- Wheeler, E. J., S. Mashayekhi, D. W. McNeal, J. T. Columbus, and J. C. Pires. 2013. Molecular systematics of *Allium* subgenus *Amerallium* (Amaryllidaceae) in North America. *American Journal of Botany* 100: 701–711.
- Bell, H. L., J. T. Columbus, and A. L. Ingram. 2013. *Kalinia*, a new North American genus for a species long misplaced in *Eragrostis* (Poaceae, Chloridoideae). *Aliso* 30: 85–95.
- Christin, P.-A., C. P. Osborne, D. S. Chatelet, J. T. Columbus, G. Besnard, T. R. Hodkinson, L. M. Garrison, M. S. Vorontsova, and E. J. Edwards. 2013. Anatomical enablers and the evolution of C₄ photosynthesis in grasses. *Proceedings of the National Academy of Sciences of the United States of America* 110: 1381–1386.
- Refulio-Rodriguez, N. F., J. T. Columbus, L. J. Gillespie, P. M. Peterson, and R. J. Soreng. 2012. Molecular phylogeny of *Dissanthelium* (Poaceae: Pooideae) and its taxonomic implications. *Systematic Botany* 37: 122–133.
- Ocampo, G., and J. T. Columbus. 2012. Molecular phylogenetics, historical biogeography, and chromosome evolution of *Portulaca* (Portulacaceae). *Molecular Phylogenetics and Evolution* 63: 97–112.
- Grass Phylogeny Working Group II [S. Aliscioni, H. L. Bell, G. Besnard, P.-A. Christin, J. T. Columbus, M. R. Duvall, E. J. Edwards, L. Giussani, K. Hasenstab-Lehman, K. W. Hilu, T. R. Hodkinson, A. L. Ingram, E. A. Kellogg, S. Mashayekhi, O. Morrone, C. P. Osborne, N. Salamin, H. Schaefer, E. Spriggs, S. A. Smith, and F. Zuloaga]. 2012. New grass phylogeny resolves deep evolutionary relationships and discovers C₄ origins. *New Phytologist* 193: 304–312.
- Cerros-Tlatilpa, R., J. T. Columbus, and N. P. Barker. 2011. Phylogenetic relationships of *Aristida* and relatives (Poaceae, Aristidoideae) based on noncoding chloroplast (*trnL-F*, *rpl16*) and nuclear (ITS) DNA sequences. *American Journal of Botany* 98: 1868–1886.
- Smith, J. P., Jr., and J. T. Columbus. 2011. Nomenclatural changes for some grasses in California. II. *Aliso* 29: 51.
- Riefner, R. E., Jr., S. S. Denham, and J. T. Columbus. 2010. *Paspalum publiflorum* and *P. quadrifarium* (Poaceae) new to California, with a key and notes on invasive species. *Journal of the Botanical Research Institute of Texas* 4: 761–770.
- Ocampo, G., and J. T. Columbus. 2010. Molecular phylogenetics of suborder Cactineae (Caryophyllales), including insights into photosynthetic diversification and historical biogeography. *American Journal of Botany* 97: 1827–1847.
- Columbus, J. T., P. M. Peterson, N. F. Refulio Rodríguez, R. Cerros Tlatilpa, and M. S. Kinney. 2010. Phylogenetics of Muhlenbergiinae (Poaceae: Chloridoideae, Cynodonteae) based on ITS and *trnL-F* DNA sequences, pp. 477–495. In O. Seberg, G. Petersen, A. S. Barfod, and J. I. Davis [eds.], Diversity, phylogeny, and evolution in the monocotyledons. Aarhus University Press, Århus, Denmark.
- Columbus, J. T., and J. P. Smith, Jr. 2010. Nomenclatural changes for some grasses in California and the *Muhlenbergia* clade (Poaceae). *Aliso* 28: 65–67.
- Peterson, P. M., and J. T. Columbus. 2009. *Muhlenbergia tarahumara* (Poaceae: Chloridoideae: Cynodonteae: Muhlenbergiinae), a new species from Chihuahua, Mexico. *Journal of the Botanical Research Institute of Texas* 3: 527–534.
- Cerros-Tlatilpa, R., and J. T. Columbus. 2009. C₃ photosynthesis in *Aristida longifolia*: Implication for photosynthetic diversification in Aristidoideae (Poaceae). *American Journal of Botany* 96: 1379–1387.

- Riefner, R. E., Jr., J. T. Columbus, and S. Boyd. 2009. Noteworthy collections, California. *Eleusine coracana* (L.) Gaertn. subsp. *africana* (Kenn.-O'Byrne) Hilu & De Wet (Poaceae). *Madroño* 55: 310–312.
- Liu, Q., X. Ge, W. Chen, and J. T. Columbus. 2009. Grass (Poaceae) richness patterns across China's reserves. *Plant Ecology* 201: 531–551.
- Pacheco, D. L., and J. T. Columbus. 2008. *Bouteloua tamaulipensis* G. J. Pierce ex D. Pacheco & Columbus, sp. nov., pp. 966–970. In Y. Herrera Arrieta, P. M. Peterson, and J. Valdés-Reyna, *Bouteloua* (Poaceae: Chloridoideae: Cynodonteae: Boutelouinae) del noreste de México. *Journal of the Botanical Research Institute of Texas* 2: 917–981.
- Peterson, P. M., and J. T. Columbus. 2008. *Muhlenbergia alopecuroides* (Poaceae: Muhlenbergiinae), a new combination. *Madroño* 55: 159–160.
- Bell, H. L., and J. T. Columbus. 2008. Proposal for an expanded *Distichlis* (Poaceae, Chloridoideae): Support from molecular, morphological, and anatomical characters. *Systematic Botany* 33: 536–551.
- Riefner, R. E., Jr., and J. T. Columbus. 2008. *Paspalum vaginatum* (Poaceae), a new threat to wetland diversity in southern California. *Journal of the Botanical Research Institute of Texas* 2: 743–759.
- Ocampo, G., and J. T. Columbus. 2008. Nota sobre *Portulaca californica* Legrand (Portulacaceae), una especie endémica poco conocida de Baja California Sur, México. *Acta Botánica Mexicana* 83: 25–32.
- Roberts, F. M., and J. T. Columbus. 2008. Noteworthy collections, California. *Rytidosperma caespitosum* (Gaudich.) Connor & Edgar (Poaceae). *Madroño* 55: 90–91.
- Kinney, M. S., J. T. Columbus, and E. A. Friar. 2008. Unisexual flower, spikelet, and inflorescence development in monoecious/dioecious *Bouteloua dimorpha* (Poaceae, Chloridoideae). *American Journal of Botany* 95: 123–132.
- Columbus, J. T., R. Cerros-Tlatilpa, M. S. Kinney, M. E. Siqueiros-Delgado, H. L. Bell, M. P. Griffith, and N. F. Refulio-Rodriguez. 2007. Phylogenetics of Chloridoideae (Gramineae): A preliminary study based on nuclear ribosomal internal transcribed spacer and chloroplast *trnL-F* sequences, pp. 565–579. In J. T. Columbus, E. A. Friar, J. M. Porter, L. M. Prince, and M. G. Simpson [eds.], *Monocots: Comparative biology and evolution—Poales*. Rancho Santa Ana Botanic Garden, Claremont, California, USA. [*Aliso* vol. 23]
- Kinney, M. S., J. T. Columbus, and E. A. Friar. 2007. Dicliny in *Bouteloua* (Poaceae: Chloridoideae): Implications for the evolution of dioecy, pp. 604–614. In J. T. Columbus, E. A. Friar, J. M. Porter, L. M. Prince, and M. G. Simpson [eds.], *Monocots: Comparative biology and evolution—Poales*. Rancho Santa Ana Botanic Garden, Claremont, California, USA. [*Aliso* vol. 23]
- Peterson, P. M., J. T. Columbus, and S. J. Pennington. 2007. Classification and biogeography of New World grasses: Chloridoideae, pp. 580–594. In J. T. Columbus, E. A. Friar, J. M. Porter, L. M. Prince, and M. G. Simpson [eds.], *Monocots: Comparative biology and evolution—Poales*. Rancho Santa Ana Botanic Garden, Claremont, California, USA. [*Aliso* vol. 23]
- Skendzic, E. M., J. T. Columbus, and R. Cerros-Tlatilpa. 2007. Phylogenetics of Andropogoneae (Poaceae: Panicoideae) based on nuclear ribosomal internal transcribed spacer and chloroplast *trnL-F* sequences, pp. 530–544. In J. T. Columbus, E. A. Friar, J. M. Porter, L. M. Prince, and M. G. Simpson [eds.], *Monocots: Comparative biology and evolution—Poales*. Rancho Santa Ana Botanic Garden, Claremont, California, USA. [*Aliso* vol. 23]

- Liu, Q., P. M. Peterson, J. T. Columbus, N. Zhao, G. Hao, and D. Zhang. 2007. Inflorescence diversification in the “finger millet clade” (Chloridoideae, Poaceae): A comparison of molecular phylogeny and developmental morphology. *American Journal of Botany* 94: 1230–1247.
- Riefner, R. E., Jr., J. T. Columbus, and S. Boyd. 2004. Noteworthy collections, California. *Dinebra retroflexa* (Vahl.) Panz. var. *retroflexa* (Poaceae). *Madroño* 50: 312–313.
- Columbus, J. T., and N. F. Refulio-Rodriguez. 2004. The chromosome number of *Schaffnerella gracilis* (Gramineae, Chloridoideae). *Aliso* 21: 31–32.
- Kinney, M. S., J. T. Columbus, and E. A. Friar. 2003. Molecular evolution of the maize sex-determining gene *TASSELSEED2* in *Bouteloua* (Poaceae). *Molecular Phylogenetics and Evolution* 29: 519–528.
- Columbus, J. T., H. L. Bell, R. Cerros-Tlatilpa, M. P. Griffith, and J. M. Porter. 2002. *Schaffnerella* rediscovered! (Gramineae, Chloridoideae). *Aliso* 20: 45–50.
- Roalson, E. H., J. T. Columbus, and E. A. Friar. 2001. Phylogenetic relationships in Cariceae (Cyperaceae) based on ITS (nrDNA) and *trnT-L-F* (cpDNA) region sequences: Assessment of subgeneric and sectional relationships in *Carex* with emphasis on section *Acrocystis*. *Systematic Botany* 26: 318–341.
- Columbus, J. T., M. S. Kinney, M. E. Siqueiros Delgado, and J. M. Porter. 2000. Phylogenetics of *Bouteloua* and relatives (Gramineae: Chloridoideae): Cladistic parsimony analysis of internal transcribed spacer (nrDNA) and *trnL-F* (cpDNA) sequences, pp. 189–194. In S. W. L. Jacobs and J. Everett [eds.], *Grasses: Systematics and evolution*. CSIRO Publishing, Melbourne, Australia.
- Columbus, J. T. 1999. Morphology and leaf blade anatomy suggest a close relationship between *Bouteloua aristidoides* and *B. (Chondrosium) eriopoda* (Gramineae: Chloridoideae). *Systematic Botany* 23: 467–478.
- Columbus, J. T. 1999. An expanded circumscription of *Bouteloua* (Gramineae: Chloridoideae): New combinations and names. *Aliso* 18: 61–65.
- Roalson, E. H., and J. T. Columbus. 1999. Glume absence in the Orcuttieae (Gramineae: Chloridoideae) and a hypothesis of intratribal relationships. *Aliso* 18: 67–70.
- Columbus, J. T., M. S. Kinney, R. Pant, and M. E. Siqueiros Delgado. 1998. Cladistic parsimony analysis of internal transcribed spacer region (nrDNA) sequences of *Bouteloua* and relatives (Gramineae: Chloridoideae). *Aliso* 17: 99–130.
- Peterson, P. M., and J. T. Columbus. 1997. Allelic variation in the amphitropical disjunct *Scleropogon brevifolius* (Poaceae: Eragrostidae). *BioLlania, Edición Especial* 6: 473–490.
- Columbus, J. T. 1996. *Bouteloua chihuahuana* (Gramineae), a new nomenclatural combination. *Aliso* 14: 227.
- Poinar, G. O., Jr., and J. T. Columbus. 1992. Adhesive grass spikelet with mammalian hair in Dominican amber: First fossil evidence of epizoochory. *Experientia (Basel)* 48: 906–908.
- Allred, K. W., and J. T. Columbus. 1989. Additions to the flora of New Mexico. *Phytologia* 67: 361–365.

Allred, K. W., and J. T. Columbus. 1988. The grass spikelet formula: An aid in teaching and identification. *Journal of Range Management* 41: 350–351.

Allred, K. W., and J. T. Columbus. 1988. New Mexico grasses: A synopsis of the classification and a key to the genera. *New Mexico Journal of Science* 28: 21–43.

Columbus, J. T. 1980. Watershed abuse—the effect on a town. *Rangelands* 2: 148–150.

Floristic Treatments

Columbus, J. T. 2012. *Bouteloua*, pp. 1424–1425, 1427. In B. G. Baldwin, D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken [eds.], *The Jepson manual: Vascular plants of California*, 2nd ed. University of California Press, Berkeley.

Columbus, J. T. 2012. *Hilaria*, pp. 1456, 1461. In B. G. Baldwin, D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken [eds.], *The Jepson manual: Vascular plants of California*, 2nd ed. University of California Press, Berkeley.

Columbus, J. T., J. P. Smith, Jr., and D. H. Goldman. 2012. *Stipa*, pp. 1490–1496, 1499. In B. G. Baldwin, D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken [eds.], *The Jepson manual: Vascular plants of California*, 2nd ed. University of California Press, Berkeley.

Smith, J. P., Jr., J. T. Columbus, and D. H. Wilken [scientific eds.]. 2012. Poaceae, pp. 1405–1498, 1505. In B. G. Baldwin, D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken [eds.], *The Jepson manual: Vascular plants of California*, 2nd ed. University of California Press, Berkeley.

Columbus, J. T. 2002. Key to the grass genera, pp. 555–559. In B. G. Baldwin, S. Boyd, B. J. Ertter, R. W. Patterson, T. J. Rosatti, and D. H. Wilken [eds.] (M. Wetherwax, managing ed.), *The Jepson desert manual: Vascular plants of southeastern California*. University of California Press, Berkeley.

Columbus, J. T. 2002. *Bouteloua*, pp. 565–566, 573. In B. G. Baldwin, S. Boyd, B. J. Ertter, R. W. Patterson, T. J. Rosatti, and D. H. Wilken [eds.] (M. Wetherwax, managing ed.), *The Jepson desert manual: Vascular plants of southeastern California*. University of California Press, Berkeley.

Columbus, J. T. 2002. *Pleuraphis*, pp. 592–593, 597. In B. G. Baldwin, S. Boyd, B. J. Ertter, R. W. Patterson, T. J. Rosatti, and D. H. Wilken [eds.] (M. Wetherwax, managing ed.), *The Jepson desert manual: Vascular plants of southeastern California*. University of California Press, Berkeley.

Columbus, J. T. 1993. *Bouteloua*, pp. 1238–1239, 1241. In J. C. Hickman [ed.], *The Jepson manual: Higher plants of California*. University of California Press, Berkeley.

Columbus, J. T. 1993. *Pleuraphis*, pp. 1283, 1285. In J. C. Hickman [ed.], *The Jepson manual: Higher plants of California*. University of California Press, Berkeley.

Book Reviews

Columbus, J. T. 2009. Review in *Madroño* 55: 296 of: W. Zhengyi and P. H. Raven [ed. comm. co-chairs] and H. Deyuan [ed. comm. vice co-chair], 2007, *Flora of China Illustrations*, vol. 22, *Poaceae*, Science Press, Beijing, China, and Missouri Botanical Garden Press, St. Louis, Missouri.

Columbus, J. T. 2008. Review in *Taxon* 57: 682–683 of: W. Zhengyi and P. H. Raven [ed. comm. co-chairs] and H. Deyuan [vice co-chair], *Flora of China* (2006) and *Flora of China Illustrations* (2007), vol. 22, *Poaceae*, Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.

Columbus, J. T. 1993. Review in *Taxon* 42: 742–743 of: L. Watson and M. J. Dallwitz, 1992, *The Grass Genera of the World*, C·A·B International, Wallingford, Oxon, United Kingdom.

Columbus, J. T. 1990. Review in *Taxon* 39: 638 of: F. Ardath, 1990, The Tripsacinae: An interdisciplinary review of maize (*Zea mays*) and its relatives, *Acta Botanica Fennica* 140: 1–51.

Grants

“Empowering plant science research at Rancho Santa Ana Botanic Garden with high resolution and variable pressure scanning electron microscopy instrumentation,” National Science Foundation, Major Research Instrumentation, 2016 (Co-Principal Investigator, \$165,049)

“Dissertation research: Evolution and systematics of *Claytonia lanceolata* sensu lato,” Doctoral Dissertation Improvement Grant (student: Tommy R. Stoughton), National Science Foundation, 2015–2017 (Principal Investigator, \$18,510)

“Collaborative research: Branching in chloridoid grasses: phylogeny and inflorescence diversification,” National Science Foundation, 2009–2013 (Principal Investigator, \$586,039)

“Dissertation research: Ecological diversification in the *Eriogonum* clade (Polygonaceae),” Doctoral Dissertation Improvement Grant (student: Elizabeth A. Kempton), National Science Foundation, 2009–2011 (Principal Investigator, \$12,614)

“Systematics and evolution of the *Chloris* group in the tribe Cynodonteae (Poaceae),” National Natural Science Foundation of China, 2008–2010 (Co-Principal Investigator, \$20,000)

“International Conference: Monocots III/Grasses IV, 31 March–4 April, 2003, Ontario, California,” National Science Foundation, 2003 (Principal Investigator, \$28,000)

“Data analysis and integration in systematics initiative,” W. M. Keck Foundation, 2001–2005 (Co-Principal Investigator, \$900,000)

“An automated DNA sequencer for the Claremont Colleges,” National Science Foundation, 2000 (Co-Principal Investigator, \$104,643)

“Evolution and classification of North American chloridoid grasses,” Fletcher Jones Foundation, via Claremont Graduate University, Claremont, California, 1999, 2000 (Principal Investigator, \$8400)

“Agmatoploid chromosome number change and speciation: molecular phylogenetic and cytogenetic studies in *Carex* section *Acrocystis*,” Doctoral Dissertation Improvement Grant (student: Eric H. Roalson), National Science Foundation, 1998–2000 (Principal Investigator, \$9996)

“Apomixis in the panicoid grasses: a graduate student training grant,” Systemwide Biotechnology Research and Education Program, University of California, 1996–1998 (Co-Principal Investigator; \$150,000)

“Allozyme variation in the New World amphitropical disjunct, *Scleropogon brevifolius* (Gramineae: Chloridoideae: Eragrostideae),” Short Term Visitor Grant, Department of Botany, Smithsonian Institution, Washington, D. C., 1993 (\$2000)

Dissertation research, Graduate Student Research Allocation, Department of Integrative Biology, University of California, Berkeley, 1992 (\$300), 1993 (\$300)

“Generic-level taxonomy and evolution in the Boutelouinae (Gramineae: Cynodonteae),” Grants-in-Aid of Research, National Academy of Sciences (Alexander Bache Fund), via Sigma Xi, The Scientific Research Society, 1992 (\$800)

Dissertation research, Sigma Xi, The Scientific Research Society, University of California at Berkeley Chapter, 1992 (\$250)

“Interplay between science and politics: a case study” (video rental), Graduate Student Instructor Course Improvement Grant, Graduate Division, University of California, Berkeley, 1991 (\$20)

Equipment for enzyme electrophoresis, Educational Research Grant, Graduate Division, University of California, Berkeley, 1989 (with 14 other graduate students; \$6979)

Contracts

Identification of grass specimens, Yosemite National Park, National Park Service, United States Department of the Interior, 2004 (\$555)

“A seed germination study of *Tuctoria mucronata* (Crampton) Reeder (Gramineae, Chloridoideae, Orcuttieae),” Habitat Conservation Planning Branch, California Department of Fish and Game, 2001–2003 (Principal Investigator, \$8000)

“Population genetics study of *Swallenia alexandrae*,” Death Valley National Park, National Park Service, United States Department of the Interior, 2001–2003 (Principal Investigator, \$8600)

Inventory of plants for Unimin Corporation (Byron, California, facility), 1993

Awards, Fellowship, Internship

Graduate Student Fellowship (“Leaf micromorphology and anatomy of the Boutelouinae [Gramineae: Chloridoideae: Cynodonteae]”), Department of Botany, Smithsonian Institution, Washington, D. C., 1993 (\$3000)

Outstanding Graduate Student Instructor Award, University of California, Berkeley, 1993

Lawrence Memorial Award (“Generic-level taxonomy and evolution in the grama grasses and relatives [Gramineae: Cynodonteae: Boutelouinae]”), Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, Pennsylvania, 1992 (\$1000)

Internship (curation of Floyd A. McClure bamboo collection), Department of Botany, Smithsonian Institution, Washington, D. C., Christmas break 1987–1988

Outstanding Senior in Range Science, New Mexico State University, Las Cruces, 1986

First place individual, International Range Plant Identification Contest, Society for Range Management annual meeting, Salt Lake City, Utah, 1985

Oral Presentations

Meetings (presenter underlined)

Fisher, A. E., K. E. Hasenstab, H. Bell, A. Ingram, J. T. Columbus. 2015. Nuclear phylogeny of chloridoid grasses with > 100 targeted loci. Botany 2015/American Society of Plant Taxonomists annual meeting, Edmonton, Alberta, Canada. Abstract:
<http://www.botanyconference.org/engine/search/index.php?func=detail&aid=1228>

- Columbus, J. T., A. Fisher, F. Freund, and A. L. Ingram. 2014. Origin of the *Centropodia* clade (Poaceae). Botany 2014/American Society of Plant Taxonomists annual meeting, Boise, Idaho. Abstract: <http://www.2014.botanyconference.org/engine/search/index.php?func=detail&aid=789>
- Fisher, A., H. Bell, A. L. Ingram, K. Hasenstab, and J. T. Columbus. 2014. Phylogenetic estimation in chloridoid grasses (Poaceae) using hyb-seq NGS data. Botany 2014/Botanical Society of America annual meeting, Boise, Idaho. Abstract: <http://www.2014.botanyconference.org/engine/search/index.php?func=detail&aid=752>
- Wysocki, W. P., L. G. Clark, S. A. Kelchner, S. V. Burke, J. C. Pires, P. Edger, D. Mayfield-Jones, J. K. Triplett, J. T. Columbus, A. L. Ingram, and M. R. Duvall. 2014. A multi-step comparison of short-read full plastome sequence assembly methods in grasses. Botany 2014/American Society of Plant Taxonomists annual meeting, Boise, Idaho. Abstract: <http://www.2014.botanyconference.org/engine/search/index.php?func=detail&aid=396>
- Columbus, J. T. 2012. U. S. Endangered Species Act: An overview. National Seminar on Environmental Law—Contemporary Issues, Challenges and Future Perspectives, Damodaram Sanjivayya National Law University, Visakhapatnam, India.
- Columbus, J. T., S. Denham, A. Ingram, K. Lehman, J. Zuniga, C. Kiel, H. Chhetri, and A. Fisher. 2012. Phylogenetics of *Sporobolus* and relatives (Poaceae, Chloridoideae). Botany 2012/American Society of Plant Taxonomists annual meeting, Columbus, Ohio. Abstract: <http://www.botanyconference.org/engine/search/index.php?func=detail&aid=953>
- Fisher, A., S. Malcomber, and J. T. Columbus. 2012. Expression pattern of the SEPALLATA gene *LHS1* in *Uniola* clade (Poaceae: Chloridoideae) inflorescences. Botany 2012/Botanical Society of America annual meeting, Columbus, Ohio. Abstract: <http://www.botanyconference.org/engine/search/index.php?func=detail&aid=694>
- Duvall, M. R., J. T. Columbus, A. Ingram, and S. S. Jones. 2011. Plastome-scale phylogenetics and the evolution of Poaceae. XVIII International Botanical Congress, Melbourne, Australia.
- Columbus, J. T., and J. P. Smith, Jr. 2011. Changing concepts of grass genera in California. Northern California Botanists fourth symposium, Chico, California.
- Bell, H. L., and J. T. Columbus. 2010. *Distichlis* (Poaceae, Chloridoideae) en México. XVIII Congreso Mexicano de Botánica, Guadalajara, Jalisco, Mexico.
- Cerros Tlatilpa, R., J. T. Columbus, and N. P. Barker. 2010. Filogenia y datación de Aristidoideae (Poaceae). XVIII Congreso Mexicano de Botánica, Guadalajara, Jalisco, Mexico.
- Columbus, J. T. 2010. Molecular phylogenetics of the *Aegopogon* clade (Poaceae, Chloridoideae). XVIII Congreso Mexicano de Botánica, Guadalajara, Jalisco, Mexico.
- Palomeque Carlín, A., M. E. Siqueiros Delgado, J. T. Columbus, and R. Cerros Tlatilpa. 2010. Diversidad genética de las poblaciones de *Bouteloua curtipendula* (Gramineae: Chloridoideae). XVIII Congreso Mexicano de Botánica, Guadalajara, Jalisco, Mexico.
- Columbus, J. T. 2010. Chloridoid grasses of New Mexico—evolution and classification. Native Plant Society of New Mexico annual meeting, Silver City, New Mexico.

- Columbus, J. T., J. D. Zúñiga, T. D. Macfarlane, and B. K. Simon. 2010. Phylogenetics, biogeography, and taxonomy of the *Uniola* clade (Poaceae, Chloridoideae). Botany 2009/American Society of Plant Taxonomists annual meeting, Providence, Rhode Island. Abstract: <http://2010.botanyconference.org/engine/search/index.php?func=detail&aid=721>.
- Mashayekhi, S., and J. T. Columbus. 2010. Leaf anatomy of *Allium* (Alliaceae) in North America. Botany 2009/American Society of Plant Taxonomists annual meeting, Providence, Rhode Island. Abstract: <http://2010.botanyconference.org/engine/search/index.php?func=detail&aid=691>.
- Columbus, J. T., N. F. Refulio-Rodriguez, and H. Chhetri. 2009. Molecular phylogenetics of *Aegopogon* (Poaceae, Chloridoideae). Botany 2009/American Society of Plant Taxonomists annual meeting, Snowbird, Utah. Abstract: <http://2009.botanyconference.org/engine/search/index.php?func=detail&aid=817>.
- Ocampo, G., and J. T. Columbus. 2009. Systematics of *Portulaca* (Portulacaceae). Botany 2009/American Society of Plant Taxonomists annual meeting, Snowbird, Utah. Abstract: <http://2009.botanyconference.org/engine/search/index.php?func=detail&aid=381>.
- Mashayekhi, S., E. J. Wheeler, D. McNeal, J. T. Columbus, and J. C. Pires. 2009. Molecular phylogeny of genus *Allium* (Alliaceae) in North America. Botany 2009/American Society of Plant Taxonomists annual meeting, Snowbird, Utah. Abstract: <http://2009.botanyconference.org/engine/search/index.php?func=detail&aid=493>.
- Columbus, J. T. 2008. Phylogeny of *Muhlenbergia* and relatives (Poaceae, Chloridoideae). Monocots without Borders symposium, Xalapa, Veracruz, Mexico.
- Columbus, J. T. 2008. Grasses are easy! 32nd Annual Southern California Botanists Symposium, Fullerton, California.
- Cerros R., J. T. Columbus, and N. Barker. 2008. Filogenia molecular de *Aristida* y géneros relacionados basado en marcadores de nucleo y cloroplasto. XI Encuentro de Botánica “Johannes Bisse in Memoriam,” Camagüey, Cuba.
- Siqueiros D., M. E., and J. T. Columbus. 2008. Filogenia del complejo *Bouteloua curtipendula* basado en datos moleculares. XI Encuentro de Botánica “Johannes Bisse in Memoriam,” Camagüey, Cuba.
- Bell, H., and J. T. Columbus. 2008. Phylogenetic relationships within Chloridoideae (Poaceae) based on ITS, *trnL-F*, and *ndhF*. Fifth International Symposium on Grass Systematics and Evolution, Copenhagen, Denmark.
- Cerros, R., J. T. Columbus, and N. P. Barker. 2008. A phylogeny of *Aristida* (Poaceae: Aristidoideae) based on ITS, *trnL-F*, and *rpl16* sequences. Fifth International Symposium on Grass Systematics and Evolution, Copenhagen, Denmark.
- Peterson, P.M., J. T. Columbus, N. F. Refulio Rodriguez, R. Cerros Tlatilpa, and M. S. Kinney. 2008. A phylogeny of the Muhlenbergiinae (Poaceae: Chloridoideae) based on ITS and *trnL-F* sequences. Fifth International Symposium on Grass Systematics and Evolution, Copenhagen, Denmark.
- Chhetri, H., and J. T. Columbus. 2008. Phylogenetics of Zoysieae (Poaceae, Chloridoideae) based on ITS and *trnL-F* sequences, a preliminary report. Botany 2008/American Society of Plant Taxonomists annual meeting, Vancouver, British Columbia, Canada. Abstract: <http://2008.botanyconference.org/engine/search/index.php?func=detail&aid=246>.

- Kempton, E., and J. T. Columbus. 2008. Phylogenetics, character evolution and diversification of the *Eriogonum* clade (Polygonaceae). Botany 2008/American Society of Plant Taxonomists annual meeting, Vancouver, British Columbia, Canada. Abstract: <http://2008.botanyconference.org/engine/search/index.php?func=detail&aid=250>.
- Ocampo, G., and J. T. Columbus. 2007. Filogenética molecular de las especies americanas de *Portulaca* (Portulacaceae). XVII Congreso Mexicano de Botánica, Zacatecas, Mexico. Best talk award.
- Bell, H. L., and J. T. Columbus. 2007. Relationships within the *Distichlis* clade inferred from molecular, anatomical, and micromorphological characters. Botany 2007/American Society of Plant Taxonomists annual meeting, Chicago, Illinois. Abstract: <http://www.2007.botanyconference.org/engine/search/index.php?func=detail&aid=980>.
- Kempton, E., and J. T. Columbus. 2007. Phylogenetics of the *Eriogonum* clade (Polygonaceae, Eriogonoideae) based on nuclear and chloroplast sequences. Botany 2007/American Society of Plant Taxonomists annual meeting, Chicago, Illinois. Abstract: <http://www.2007.botanyconference.org/engine/search/index.php?func=detail&aid=1006>.
- Ocampo, G., and J. T. Columbus. 2007. Molecular phylogenetics of New World *Portulaca* (Portulacaceae). Botany 2007/American Society of Plant Taxonomists annual meeting, Chicago, Illinois. Abstract: <http://www.2007.botanyconference.org/engine/search/index.php?func=detail&aid=964>.
- Cerros-Tlatilpa, R., and J. T. Columbus. 2006. Anatomía foliar del género *Aristida* (Gramineae: Aristidoideae). X Encuentro de Botánica “Johannes Bisse in Memoriam,” Camagüey, Cuba.
- Cerros-Tlatilpa, R., and J. T. Columbus. 2006. Anatomía foliar del género *Aristida* y descubrimiento de nuevos caracteres (Gramineae: Aristidoideae). XXX Congreso Nacional de Histología, Sociedad Mexicana de Histología, Mexico City, Mexico.
- Bell, H. L., J. M. Porter, and J. T. Columbus. 2006. Patterns of molecular evolution in *ndhF*: Observations from Chloridoideae (Poaceae). Botany 2006/American Society of Plant Taxonomists annual meeting, Chico, California. Abstract: <http://www.2006.botanyconference.org/engine/search/index.php?func=detail&aid=350>.
- Halbrook, K., S. Smith, J. T. Columbus, and M. E. Siqueiros-Delgado. 2006. What can rodent midden macrofossils tell us about polyploid evolution in *Bouteloua curtipendula* (Poaceae)? Botany 2006/Botanical Society of America, Chico, California. Abstract: <http://www.2006.botanyconference.org/engine/search/index.php?func=detail&aid=389>.
- Refulio-Rodriguez, N. F., and J. T. Columbus. 2006. Phylogenetic relationship of the recently rediscovered *Dissanthelium californicum* (Poaceae: Pooideae). Botany 2006/American Society of Plant Taxonomists annual meeting, Chico, California. Abstract: <http://www.2006.botanyconference.org/engine/search/index.php?func=detail&aid=256>.
- Bell, H. L., and J. T. Columbus. 2004. Molecular phylogenetics of the Monanthochloinae (Eragrostideae, Chloridoideae, Poaceae) based upon ITS (nrDNA) and *trnL-F* (cpDNA). Botany 2004/American Society of Plant Taxonomists annual meeting, Snowbird, Utah. Abstract: <http://www.2004.botanyconference.org/engine/search/index.php?func=detail&aid=656>.
- Cerros-Tlatilpa, R., and J. T. Columbus. 2004. New leaf anatomical features in *Aristida* L. (Gramineae). Botany 2004/American Society of Plant Taxonomists annual meeting, Snowbird, Utah. Abstract: <http://www.2004.botanyconference.org/engine/search/index.php?func=detail&aid=553>.

- Peterson, P. M., J. T. Columbus, N. F. Refulio-Rodriguez, R. Cerros-Tlatilpa, and M. S. Kinney. 2004. A phylogeny of the Muhlenbergiinae (Poaceae: Chloridoideae: Cynodonteae) based on ITS and *trnL-F* sequences. Botany 2004/American Society of Plant Taxonomists annual meeting, Snowbird, Utah. Abstract: <http://www.2004.botanyconference.org/engine/search/index.php?func=detail&aid=38>.
- Cerros-Tlatilpa, R., and J. T. Columbus. 2003. Phylogenetics of *Aristida* (Gramineae) based on internal transcribed spacer (nrDNA) and *trnL-F* (cpDNA) sequences. Fourth International Symposium on Grass Systematics and Evolution, Ontario, California.
- Columbus, J. T., R. Cerros-Tlatilpa, M. S. Kinney, M. E. Siqueiros-Delgado, H. L. Bell, and M. P. Griffith. 2003. Molecular phylogenetics of the Chloridoideae (Gramineae). Fourth International Symposium on Grass Systematics and Evolution, Ontario, California.
- Kinney, M. S., J. T. Columbus, and E. A. Friar. 2003. Evolution of dicliny in *Bouteloua* (Chloridoideae). Fourth International Symposium on Grass Systematics and Evolution, Ontario, California.
- Peterson, P. M., J. T. Columbus, and S. J. Pennington. 2003. Classification and biogeography of New World grasses: Chloridoideae. Fourth International Symposium on Grass Systematics and Evolution, Ontario, California.
- Skendzic, E. M., J. T. Columbus, and R. Cerros-Tlatilpa. 2003. A phylogenetic analysis of the Andropogoneae (Gramineae: Panicoideae) based on nuclear ribosomal (ITS) and chloroplast (*trnL-F*) evidence. Fourth International Symposium on Grass Systematics and Evolution, Ontario, California.
- Columbus, J. T., and E. H. Roalson. 2001. Phylogenetics of *Hilaria* and *Pleuraphis* (Gramineae: Chloridoideae). Botany 2001/American Society of Plant Taxonomists annual meeting, Albuquerque, New Mexico. Abstract: <http://www.botany2001.org/index.shtml>.
- Cerros-Tlatilpa, R., and J. T. Columbus. 2001. Phylogenetics of *Aristida* (Gramineae) based on internal transcribed spacer sequences (nrDNA). Botany 2001/American Society of Plant Taxonomists annual meeting, Albuquerque, New Mexico. Abstract: <http://www.botany2001.org/index.shtml>.
- Peterson, P. M., J. T. Columbus, R. Cerros Tlatilpa, and M. S. Kinney. 2001. Phylogenetics of *Muhlenbergia* and relatives (Poaceae: Chloridoideae) based on internal transcribed spacer region sequences (nrDNA). Botany 2001/American Society of Plant Taxonomists annual meeting, Albuquerque, New Mexico. Abstract: <http://www.botany2001.org/index.shtml>.
- Siqueiros-Delgado, M. E., and J. T. Columbus. 2001. Evolution of the *Bouteloua curtispindula* complex (Gramineae: Chloridoideae) based on molecular data. Botany 2001/American Society of Plant Taxonomists annual meeting, Albuquerque, New Mexico. Abstract: <http://www.botany2001.org/index.shtml>.
- Columbus, J. T., M. S. Kinney, M. E. Siqueiros Delgado, and R. Cerros Tlatilpa. 2000. Homoplasy, polyphyly, and generic circumscription: The demise of the Boutelouinae (Gramineae: Chloridoideae). Botany 2000/American Society of Plant Taxonomists annual meeting, Portland, Oregon. Abstract: *American Journal of Botany* 87 (suppl.): 120.
- Columbus, J. T. 1999. Adaptation to the desert environment: Contrasting evolutionary “strategies” exhibited by *Bouteloua aristidoides* and *B. eriopoda*. California Native Grass Association annual meeting, Napa, California.

- Kinney, M. S., E. A. Friar, and J. T. Columbus. 1999. Evolution of unisexuality in *Bouteloua* (Poaceae: Chloridoideae). Joint meeting of the Society for the Study of Evolution, The American Society of Naturalists, and The Society of Systematic Biologists, University of Wisconsin, Madison.
- Columbus, J. T., M. S. Kinney, M. E. Siqueiros Delgado, and J. M. Porter. 1998. Phylogenetics of *Bouteloua* and close relatives (Gramineae: Chloridoideae). Third International Symposium on Grass Systematics and Evolution, University of New South Wales, Sydney, Australia.
- Columbus, J. T. 1997. Systematics of *Bouteloua* Lag. sensu lato (Gramineae: Chloridoideae): Past and present. Evolution and Taxonomy of Southwestern Plants, Thirteenth Annual Southwestern Botanical Systematics Symposium, Rancho Santa Ana Botanic Garden, Claremont, California.
- Columbus, J. T. 1996. Chorology and relationships of Baja California grasses and affinities of the endemic species *Bouteloua annua*. Simposio sobre la Investigación Botánica en Baja California y Áreas Adyacentes, Facultad de Ciencias, Universidad Autónoma de Baja California, Ensenada, Mexico.
- Columbus, J. T. 1995. Estudios sistemáticos en algunos géneros Mexicanos de Poaceae. Sistemática y Evolución Vegetal: Cactáceas y Gramíneas, Centro de Educación Ambiental e Investigación Sierra de Huautla, Universidad Autónoma del Estado de Morelos, Cuernavaca, Mexico.
- Columbus, J. T. 1995. Leaf blade transectional anatomy of *Bouteloua* (including *Chondrosum*; Gramineae: Chloridoideae): Systematic implications. American Society of Plant Taxonomists annual meeting, San Diego, California. Abstract: *American Journal of Botany* 82 (suppl.): 121.
- Peterson, P. M., and J. T. Columbus. 1995. Allelic variation in *Scleropogon brevifolius* (Poaceae: Eragrostidae). American Society of Plant Taxonomists annual meeting, San Diego, California. Abstract: *American Journal of Botany* 82 (suppl.): 155.
- Columbus, J. T. 1994. The female inflorescence of *Opizia* (Gramineae: Chloridoideae): Organization and homologies. American Society of Plant Taxonomists annual meeting, Knoxville, Tennessee. Abstract: *American Journal of Botany* 81 (suppl.): 149.
- Columbus, J. T. 1993. The affinities of *Bouteloua aristidoides* and *B. (Chondrosum) eriopoda* and the *Bouteloua-Chondrosum* generic delimitation problem (Gramineae: Cynodonteae). American Society of Plant Taxonomists annual meeting, Iowa State University, Ames. Abstract: *American Journal of Botany* 80 (suppl.): 138.
- Columbus, J. T. 1993. *Pleuraphis*—distinct from *Hilaria* (Gramineae: Chloridoideae). American Society of Plant Taxonomists annual meeting, Iowa State University, Ames. Abstract: *American Journal of Botany* 80 (suppl.): 138–139.
- Columbus, J. T., and M. A. Peot. 1993. Revisionary studies in *Hilaria* (Gramineae: Chloridoideae): The annual species. American Society of Plant Taxonomists annual meeting, Iowa State University, Ames. Abstract: *American Journal of Botany* 80 (suppl.): 139.
- Columbus, J. T. 1986. Plant extinction—can we afford it? Society for Range Management annual meeting, Kissimmee, Florida.

Invited Seminars

Sri Krishnadevaraya University, Anantapur, India, 2012
 South African National Biodiversity Institute, Pretoria, South Africa, 2011
 Universidad Autónoma de Aguascalientes, Aguascalientes, Mexico, 2010

Rancho Santa Ana Botanic Garden, herbarium volunteers, Claremont, California, 2010
 Desert Institute at Joshua Tree National Park and California State University, San Bernardino, Osher
 Lifelong Learning Institute, La Quinta, California, 2009
 California Native Plant Society, Orange County Chapter, Irvine, 2008
 Rancho Santa Ana Botanic Garden, Volunteer Enrichment Program, Claremont, California, 1999, 2005,
 2008, 2011, 2012
 Queensland Herbarium, Toowong, Queensland, Australia, 2008
 California State University, Long Beach, 2007
 Garden Friends organization, La Verne, California, 2005
 Universidad Mayor de San Andrés, La Paz, Bolivia, 2005
 California Native Plant Society, Mojave Desert Chapter, Victorville, 2005
 Men's Garden Club of Los Angeles, California, 2005
 California Native Plant Society, South Coast Chapter, Palos Verdes, 1996, 2004
 University of Guilan, Rasht, Iran, 2004
 University of Esfahan, Esfahan, Iran, 2004
 University of Tehran, College of Agriculture, Karaj, Iran, 2004
 Rancho Santa Ana Botanic Garden, Volunteer Organization, Claremont, California, 2001
 Redlands Horticultural and Improvement Society, Redlands, California, 1998
 California Native Plant Society, State Board Meeting, Rancho Santa Ana Botanic Garden, Claremont,
 1998
 California Botanical Society, University of California, Berkeley, 1997
 California State University, Fullerton, Department of Biological Science, 1996
 Sigma Xi, Claremont Colleges Chapter, California, 1996
 New Mexico State University, Department of Animal and Range Sciences, Las Cruces, 1994
 Smithsonian Institution, Department of Botany, Washington, D. C., 1993
 Rancho Santa Ana Botanic Garden, Claremont, California, 1993
 California Native Plant Society, East Bay Chapter, Berkeley, 1993

Poster Presentations

- Pearman, P., O. Lao Grueso, J. R. Trotta, T. Alioto, N. Jensen, and J. T. Columbus. 2018. The spatial structure and history of genomic variation as revealed by GBS in a generalist perennial shrub, *Eriogonum umbellatum* (Polygonaceae). Evolution Conference, Montpellier, France. Abstract: <https://oral-and-poster-abstracts.europa-group.com/index/slide/abstract/937>.
- Mashayekhi, S., and J. T. Columbus. 2012. Genetic diversity of *Allium munzii* (Amaryllidaceae), a rare species. Botany 2012/Botanical Society of America annual meeting, Columbus, Ohio. Abstract: <http://www.botanyconference.org/engine/search/index.php?func=detail&aid=661>.
- Denham, S. S., and T. Columbus. 2011. Sistemática y filogenia preliminar del género *Sporobolus* (Chloridoideae, Poaceae) en el Nuevo Mundo. XXXIII Jornadas Argentinas de Botánica, Posadas, Argentina.
- Siqueiros-Delgado, M. E., M. Ainouche, A. Ainouche, and T. Columbus. 2011. Phylogeny of the *Bouteloua curtispindula* complex diploids (Gramineae: Chloridoideae) based on nuclear ribosomal and chloroplast DNA sequences. XVIII International Botanical Congress, Melbourne, Australia.
- Mashayekhi, S., and J. T. Columbus. 2011. Leaf anatomy of *Allium* (Alliaceae) subgenus *Amerallium* with a focus on the North American species. Botany 2011/American Society of Plant Taxonomists annual meeting, St. Louis, Missouri. Abstract: <http://2011.botanyconference.org/engine/search/index.php?func=detail&aid=584>.

- Ocampo, G., and J. T. Columbus. 2009. Phylogenetic relationships within *Portulaca* sect. *Portulaca* (Portulacaceae). Botany 2009/American Society of Plant Taxonomists annual meeting, Snowbird, Utah. Abstract: <http://2009.botanyconference.org/engine/search/index.php?func=detail&aid=385>.
- Bell, H. L., and J. T. Columbus. 2005. Phylogeny of Chloridoideae (Poaceae) based on *ndhF* sequences (cpDNA). XVII International Botanical Congress, Vienna, Austria.
- Refugio-Rodriguez, N. F., J. T. Columbus, and P. M. Peterson. 2005. Systematics of *Dissanthelium* Trin. (Poaceae: Pooideae). XVII International Botanical Congress, Vienna, Austria.
- Siqueiros-Delgado, M. E., and J. T. Columbus. 2005. Contrasting morphology and molecules in *Bouteloua media*, a polyphyletic species in the *B. curtipendula* clade (Gramineae, Chloridoideae). XVII International Botanical Congress, Vienna, Austria.
- Siqueiros-Delgado, M. E., and J. T. Columbus. 2004. Evolución de los estados de carácter y relaciones filogenéticas del complejo *Bouteloua curtipendula* (Gramineae: Chloridoideae). XVI Congreso Mexicano de Botánica, Oaxaca, Mexico.
- Bell, H. L., E. A. Friar, and J. T. Columbus. 2004. Population genetics of *Swallenia alexandrae* (Poaceae), the Eureka Valley dune grass. Botany 2004/Botanical Society of American annual meeting, Snowbird, Utah. Abstract: <http://www.2004.botanyconference.org/engine/search/index.php?func=detail&aid=617>. Ecological Section Award for Best Student Poster.
- Siqueiros-Delgado, M. E., and J. T. Columbus. 2003. Species paraphyly and the *Bouteloua curtipendula* complex (Gramineae: Chloridoideae). Fourth International Symposium on Grass Systematics and Evolution, Ontario, California.
- Cerros-Tlatilpa, R., and J. T. Columbus. 2002. Análisis filogenético del género *Aristida* (Gramineae) basado en datos moleculares y anatómicos. VIII Congreso Latinoamericano de Botánica, Cartagena de Indias, Columbia.
- Siqueiros Delgado, M. E., and J. T. Columbus. 2002. Hibridación y evolución de la poliploidía en el complejo *Bouteloua curtipendula* (Gramineae: Chloridoideae). VIII Congreso Latinoamericano de Botánica, Cartagena de Indias, Colombia.
- Cerros Tlatilpa, R., and J. T. Columbus. 2001. Sistemática de *Aristida* (Gramineae). XV Congreso Mexicano de Botánica, Santiago de Querétaro, Mexico.
- Kinney, M. S., J. T. Columbus, and E. A. Friar. 1999. Evolution of unisexual spikelets in *Bouteloua* (Poaceae: Chloridoideae). XVI International Botanical Congress, St. Louis, Missouri.
- Siqueiros, M. E., and J. T. Columbus. 1999. Phylogeny of the *Bouteloua curtipendula* complex (Gramineae: Chloridoideae) based on nuclear ribosomal and chloroplast DNA sequences. XVI International Botanical Congress, St. Louis, Missouri.
- Cerros Tlatilpa, R., and J. T. Columbus. 1998. Revisión taxonómica del género *Chloris* Sw. en México. VII Congreso Latinoamericano y XIV Congreso Mexicano de Botánica, Unidad de Congresos Centro Medico Nacional Siglo XXI, Mexico City.
- Siqueiros Delgado, M. E., and J. T. Columbus. 1998. Sistemática del complejo *Bouteloua curtipendula* (Gramineae: Chloridoideae). VII Congreso Latinoamericano y XIV Congreso Mexicano de Botánica, Unidad de Congresos Centro Medico Nacional Siglo XXI, Mexico City.

Siqueiros Delgado, M. E., and J. T. Columbus. 1998. Phylogenetics of the *Bouteloua curtipendula* complex (Gramineae: Chloridoideae). Third International Symposium on Grass Systematics and Evolution, University of New South Wales, Sydney, Australia.

Field Experience

United States, mostly the Southwest (1983–2018), California (1989–2018), and Hawaii (2001, 2004); Mexico (1985–2008, 2016); Argentina (1999, 2006); Australia (2008); Bolivia (2005); China (2008); Costa Rica (1999); India (2012, 2013); Iran (2004); Namibia (2011); Peru (2000); South Africa (2011); Tanzania (2012); Venezuela (2002)

Number of pressed plant collections: 6088

TEACHING AND ADVISING STUDENTS

Universities and Courses

Claremont Graduate University, Claremont, California, Botany Department, 1994–present

Courses: Plant morphology and anatomy (2009, 2010, 2012, 2015, 2017)
Advanced botanical and evolutionary research (contributor, 2008–2018)
Principles of plant systematics (1994–2007)
Agrostology (systematics of grasses; 1996–2006)
Bernard Field Station flora (1997)

Recurring seminars/practicums: Agrostology
Botanical nomenclature
Botanical Latin
Readings in phylogenetics

Other seminars/practicums: Biogeography, concepts of plant taxa, cytogenetics (chromosome visualization techniques), desiccation tolerance in plants, evolution of plant development, homoplasy, next-generation sequencing, paraphyly, PhyloCode nomenclature, plant reproductive biology, staining plant tissues, taxon delimitation

University of California, Berkeley, Department of Botany/Integrative Biology, 1988–1993

Courses: Introduction to California plant life (1992)
Systematics of vascular plants (co-lecturer, 1992)

Graduate seminar: Grass taxonomy (co-instructor, 1990)

Laboratories: California plant life
Systematics of vascular plants
Plant and fungal biology
General biology

Diablo Valley College, Pleasant Hill, California, Horticulture, 1993

Course: Plant taxonomy

New Mexico State University, Las Cruces, Department of Animal and Range Sciences, 1986–1988

Laboratories: Range grasses
Range plants

Range plant identification team (assistant coach)

Student Advisees

Botany Department, Claremont Graduate University, Claremont, California

Christina Varnava, M.S. student, 2018–present
A. Eileen Berbeo, Ph.D student, 2017–present
Andrew R. Siekkinen, Ph.D. student, 2016–present
F. Nicolás Medina Amaya, Ph.D. candidate, 2015–present
Erika M. Gardner, M.S., 2017
Jessica M. Orozco, M.S., 2016
Joshua L. Steele, M.S., 2016
M. Cristina Martinez-Habibe, Ph.D., 2012
Saeideh Mashayekhi, Ph.D., 2012
Elizabeth A. Kempton, Ph.D., 2010
Gilberto A. Ocampo-Acosta, Ph.D., 2010
Hari. B. Chhetri, M.S., 2009
Hester L. Bell, Ph.D., 2007
Nancy F. Refulio-Rodriguez, Ph.D., 2007
Rosa Cerros-Tlatilpa, Ph.D., 2005
Naomi S. Fraga, M.S., 2005
Maria Elena Siqueiros-Delgado, Ph.D., 2001
Eric H. Roalson, Ph.D., 2000
Vanessa E. T. M. Ashworth, Ph.D., 1999

Senior Thesis Advisees, Claremont Colleges, Claremont, California

Anna E. Christensen, Scripps College, 1999
Carrie A. Wicklund, Harvey Mudd College, 1998
Matilda Low, Scripps College, 1997
Theresa Rousseau, Pitzer College, 1997

Other Student Committees

Botany Department, Claremont Graduate University, Claremont, California

Manuel Lujan Anzola, Ph.D., 2018
Nicholas J. Jensen, Ph.D., 2018
Joy D. England, M.S., 2017
Melissa A. Johnson, Ph.D., 2016
Thomas R. Stoughton, Ph.D., 2016
Noravit Chumchim, M.S., 2015
Naomi S. Fraga, Ph.D., 2015
Kristen E. Hasenstab-Lehman, Ph.D., 2015
Stephen E. Dreher, M.S., 2014
Forrest D. Freund, M.S., 2014
José D. Zúñiga, Ph.D., 2014
Jinyan Guo, Ph.D., 2013
Daniel M. Koenemann, M.S., 2011
Carrie A. Kiel, M.S., 2010

Sula E. Vanderplank, M.S., 2010
Robert K. Lauri, Ph.D., 2009
Lisa Karst, Ph.D., 2007
Gary D. Kovnat, Ph.D., 2007
Sarah J. De Groot, M.S., 2005
Michael S. Kinney, Ph.D., 2005
Mitchell E. McGlaughlin, Ph.D., 2005
Tasha LaDoux, M.A. 2000, Ph.D. 2004
Michael A. Honer, M.S., 2003
Victor W. Steinmann, Ph.D., 2001
Megan M. Tommerup, Ph.D., 2001
Rashmi P. Pant, Ph.D., 2000
Gerard J. Allan, Ph.D., 1999
Darin L. Banks, M.A., 1998
Junzhuan Qiu, Ph.D., 1997
Sandra M. Fastnow, M.A., 1996

Other Universities

Geraldine Murillo Perez, M. en C., Agrónomicas, Universidad Autónoma de Aguascalientes, 2017
L. Fernando Cuéllar Garrido, M. en C., Biotecnología Vegetal, Universidad Autónoma de Aguascalientes, 2016
Alejandra Palomeque Carlin, M. en C., Biotecnología Vegetal, Universidad Autónoma de Aguascalientes, 2011
Aaron A. Jenks, Ph.D., Plant Biology, University of California, Riverside, 2008
Scott R. Koukol, M.S., Biological Sciences, California State Polytechnic University, Pomona, 2004
Sean C. Lahmeyer, M.S., Biological Sciences, California State Polytechnic University, Pomona, 2004
Rosa Cerros-Tlatilpa, M. en C., Biotecnología Vegetal, Universidad Nacional Autónoma de México, 2000
Maria de los Dolores Barba Avila, M. en C., Biotecnología Vegetal, Universidad Autónoma de Aguascalientes, 2000

Postdoctoral Fellows Sponsored

Amanda E. Fisher, 2011–2013
Maria A. Negritto, 2000, 2001

Interns Supervised

Elizabeth A. Kempton, 2004
Cyrille Vernet, 2003

SERVICE AND PROFESSIONAL ACTIVITY

Rancho Santa Ana Botanic Garden, Claremont, California

Editorial Board member, *Aliso*, 1994–present; Managing Editor, 2004–2007

Numerous committees, e.g., library (chair 2015–present), staff/faculty searches, strategic planning, 1994–present

Numerous events, e.g., tours, plant sales, volunteer appreciation dinner, 1994–present

Supervisor, Anatomy Laboratory, 1997–2009

Outreach publications:

Columbus, J. T. 2003. Botanists on the trail. *Rancho Santa Ana Botanic Garden at Claremont Friends' Newsletter* 18(3): 5–6.

Columbus, J. T. 1999. Systematics and plant diversity. *Rancho Santa Ana Botanic Garden at Claremont Friends' Newsletter* 14(4): 5–6.

Professional Positions Held

2nd Vice President, California Botanical Society, 2014–2015

Judge, George R. Cooley Award, American Society of Plant Taxonomists, 2001, 2009, 2014

Editorial Advisory Committee member, *Kurtziana*, 1999–2007

Board of Directors member, California Native Grass Association, 1998, 1999

Conferences Convened and Meetings Organized

California Botanical Society Annual Banquet and Meeting, Rancho Santa Ana Botanic Garden, Claremont, California, 2015

California Botanical Society 25th Graduate Student Symposium, Pomona College, Claremont, California, 2015

Third International Conference on the Comparative Biology of the Monocotyledons and Fourth International Symposium on Grass Systematics and Evolution, Ontario, California, 2003

Evolution and taxonomy of Southwestern plants, Thirteenth Annual Southwestern Botanical Systematics Symposium, Rancho Santa Ana Botanic Garden, Claremont, California, 1997

Membership in Scientific Organizations

American Society of Plant Taxonomists, 1986–present

Botanical Society of America, 1997–present

California Botanical Society, 1994–present

International Association for Plant Taxonomy, 1997–present

Sigma Xi, 1988

Society of Herbarium Curators, 2013, 2014

Society for the Study of Evolution, 2016–present

Southern California Botanists, 1996, 1997, 2010–present

Journal Referee

Aliso, *American Journal of Botany*, *Annals of the Missouri Botanical Garden*, *AoB PLANTS*, *BMC Bioinformatics*, *Botanical Journal of the Linnean Society*, *International Journal of Plant Sciences*, *Journal of the Botanical Research Institute of Texas*, *Kurtziana*, *Madroño*, *Novon*, *Sida*, *Systematic Botany*, *Systematics and Biodiversity*, *Taxon*, *Telopea*

National Science Foundation

Member, Grass Phylogeny Working Group II, The National Evolutionary Synthesis Center, 2010, 2011

Participant, Panel-Workshop on Practices and Directions in Monographic Research, Washington, D. C., 1994

Grant proposal reviewer

Outreach

Teaching

University of California, Berkeley, Jepson Herbarium, 1995–2018

Two or three-day workshop on grass identification (advanced offering in 2015, 2018)

Four-day training for California Department of Transportation biologists on keying vascular plant families (2015)

Rancho Santa Ana Botanic Garden, Claremont, California, 2018

Four-day training for California Department of Transportation biologists on keying vascular plant families

Rancho Santa Ana Botanic Garden, Claremont, California, Research Department, 2015–2018

Summer Research Institute in Plant Systematics (2 weeks; co-instructor)

Rancho Santa Ana Botanic Garden, Claremont, California, Education Department, 1995, 1996, 1998, 2000–2004, 2006, 2007, 2017

Two-day workshop on grass identification

One-day workshop on photography (1996)

Desert Institute at Joshua Tree National Park, California, 2012

Two-day workshop on grass identification

California Native Grass Association, 1993–1996, 1999, 2000

Two-day workshop on grass identification

Camp Pendleton, San Diego County, California, 1997

Two-day workshop on grass identification

University of California, Berkeley, Botanical Garden Education Program, 1991–1993

Two-day workshop on grass identification

One-day docent training workshop on plant family identification

Television Appearances

California's green, with Huell Howser: Rancho Santa Ana Herbarium, Huell Howser Productions, KCET, Los Angeles, California, first aired 9 June 2004

Plant reproduction, in the educational telecourse series *Cycles of life: Exploring biology*, KOCE-TV, Huntington Beach, California, first aired 12 November 1996

iTunes U Podcast

On DNA sequencing and plant classification, Department of Botany, Claremont Graduate University, 2009