CURRICULUM VITAE

1. Erika Jeannine Edwards

Professor of Ecology and Evolutionary Biology
Yale University
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New Haven, CT 06520-8106
phone: 203.432.3869 fax: 203.432.5176 email: erika.edwards@yale.edu

2. Home address

New Haven, CT

3. Education

2000-2005	PhD in Ecology and Evolutionary Biology, Yale University, Dissertation title: *Pereskia* (Cactaceae) and the origin of the cactus life form.
1993-1998	B.S. in Earth Systems, Stanford University

4. Professional appointments

2017-current	Professor of Ecology and Evolutionary Biology, Yale University
2018-current	Director, Marsh Botanical Garden, Yale University
2017-current	Curator of Botany, Peabody Museum of Natural History
2014	Distinguished Visiting Professor, Kyushu University, Japan
2013-2017	Associate Professor of Ecology and Evolutionary Biology, Brown University
2011-2013	Richard and Edna Salomon Assistant Professor of Ecology and Evolutionary Biology, Brown University
2008-2017	Director, Brown University Herbarium, Brown University
2007-2011	Assistant Professor of Biology, Brown University
2005-2007	Post-doctoral research associate, Geography Department, University of California at Santa Barbara

5. Completed publications

a. Books/monographs (authored and/or edited volumes)

Feild T and EJ Edwards, editors. 2012. Major transitions in angiosperm ecology and functional biology. Special issue of *International Journal of Plant Sciences* 173: 559-733.

b. Refereed book chapters

2. Forrestel, EJ and **EJ Edwards**. 2018. The future biogeography of C3 and C4 grasslands. In Newman J., and D. Gibson (eds.). Grasslands and Climate Change/ Ecological Reviews, Cambridge University Press, Cambridge.

1. Davis C, **EJ Edwards**, and MJ Donoghue. 2010. A clade's eye view of global climate change. In Bell, M. A., D. J. Futuyma, W. F. Eanes, and J. S. Levinton (eds.) Evolution since Darwin: the First 150 Years, Sinauer Associates, Sunderland, MA.

c. Refereed journal articles

71. Hancock LP, F Obbens, AJ Moore, K Thiele, JM de Vos, J West, JAM Holtum, **EJ Edwards**. Phylogeny, evolution, and biogeographic history of *Calandrinia* (Montiaceae). *American Journal of Botany*, in press.

70. Li M, H An, R Angelovici, C Bagaza, A Batushansky, L Clark, V Coneva, MJ Donoghue, **EJ Edwards**, D Fajardo, H Fang, MH Frank, T Gallaher, S Gebken, T Hill, S Jansky, B Kaur, PC Klahs, LL Klein, V Kuraparthy, J Londo, Z Migicovsky, A Miller, R Mohn, S Myles, CN Topp, A Van Deynze, K Zhang, L Zhu, BM Zink, DH Chitwood. 2018. Topological data analysis as a morphometric method: using persistent homology to demarcate a leaf morphospace. *Frontiers in Plant Science* 9:553.

69. Goolsby EW, AJ Moore, LP Hancock, JM de Vos, **EJ Edwards**. 2018. Molecular evolution of key metabolic genes during transitions to C4 and CAM photosynthesis. *American Journal of Botany* 105: 602-613.

68. Spriggs EL, S Schmerler, **EJ Edwards**, MJ Donoghue. 2018. Leaf form varies along a shared axis across multiple scales in *Viburnum*. *American Naturalist* 191: 235-249.

67. Moore AJ, JM de Vos, LP Hancock, E Goolsby, **EJ Edwards**. 2018. Targeted enrichment of large gene families for phylogenetic inference: phylogeny and molecular evolution of photosynthesis genes in the portullugo (Caryophyllales). *Systematic Biology* 67: 367-383.

66. Holtum JAM, LP Hancock, **EJ Edwards**, K Winter. 2018. Crassulacean Acid Metabolism (CAM) in the Basellaceae (Caryophyllales). *Plant Biology* 20: 409-414.

65. Holtum JAM, LP Hancock, **EJ Edwards**, K Winter. 2017. Facultative CAM photosynthesis in four species of *Calandrinia*, ephemeral succulents of arid Australia. *Photosynthesis Research* 134: 17-25.

64. **Edwards EJ**, DS Chatelet, B Chen, JY Ong, S Tagane, J Kanemitsu, K Tagawa, K Teramoto, B Park, KF Chung, JM Hu, T Yahara, MJ Donoghue. 2017. Convergence, consilience, and the evolution of temperate deciduous forests. *American Naturalist* 190: S87-S104.

63. Obbens FJ, LP Hancock, **EJ Edwards,** KR Thiele. 2017. *Calandrinia holtumii* (Montiaceae), a new and unusual species from arid Western Australia. *Nuytsia* 28: 217-233.

62. Dunning L, JJ Moreno-Villena, MR Lundgren, A Brautigam, **EJ Edwards**, P Nosil, CP Osborne, PA Christin. 2017. Reticulate evolution facilitated the recurrent emergence of C4 photosynthesis within closely related species. *Evolution* 71: 1541-1555.

61. Holtum JAM, LP Hancock, **EJ Edwards**, K Winter. 2017. Optional use of CAM photosynthesis in two C4 species, *Portulaca cyclophylla* and *Portulaca dignya*. *Journal of Plant Physiology* 214: 91-96.

60. **Edwards EJ**, DS Chatelet, EL Spriggs, ES Johnson, C Schlutius, MJ Donoghue. 2017. Correlation, causation, and the evolution of leaf teeth: A reply to Givnish and Kriebel. *American Journal of Botany* 104: 509-515.

59. Forrestel EJ, MJ Donoghue, **EJ Edwards**, W Jetz, J du Toit, MD Smith. 2017. Different clades and traits yield similar grassland functional responses. *Proceedings of the National Academy of Sciences USA* 114: 705-710.

58. Barish S, M Arakaki, **EJ Edwards**, MJ Donoghue, WL Clement. 2016. Characterization of 16 microsatellite markers for the Oreinotinus clade of *Viburnum* (Adoxaceae). Applications in Plant Sciences 4: 1600103.

57. Thulin M, AJ Moore, H El-Seedi, A Larsson, PA Christin, **EJ Edwards**. 2016. Phylogeny and generic delimitation in Molluginaceae, new pigment data in Caryophyllales, and the new family Corbichoniaceae. *Taxon* 65: 775-793.

56. **Edwards EJ**, EL Spriggs, D Chatelet, MJ Donoghue. 2016. Unpacking a century old mystery: winter buds and the latitudinal gradient in leaf form. *American Journal of Botany* 103: 1-4.

55. Scoffoni C, D Chatelet, J Pasquet-Kok, M Rawls, MJ Donoghue, **EJ Edwards**, L Sack. 2016. Hydraulic basis for the evolution of photosynthetic productivity. *Nature Plants* 2: 16072.

54. Bhaskar R, S Porder, P Balvanera, **EJ Edwards**. 2016. Ecological and evolutionary variation in community nitrogen use traits during tropical dry forest secondary succession. *Ecology* 97: 1194-1206.

53. Holtum JAC, L Hancock, **EJ Edwards**, M Crisp, D Crayn, R Sage, K Winter. 2016. Australia lacks stem succulents but is it depauperate in plants with Crassulacean Acid Metabolism (CAM)? *Current Opinion in Plant Biology* 31: 109-117.

52. Yang X, JC Cushman, AM Borland, **EJ Edwards**, and 47 others. 2015. A roadmap for research on crassulacean acid metabolism (CAM) to enhance sustainable food and bioenergy production in a hotter, drier world. *New Phytologist* 207: 491- 504.

51. Ogburn RM and **EJ Edwards**. 2015. Life history lability underlies rapid climatic niche evolution in the angiosperm clade Montiaceae. *Molecular Phylogenetics and Evolution* 92: 181-192.

50. **Edwards EJ**, J de Vos, MJ Donoghue. 2015. Brief Communications Arising: Doubtful pathways to cold tolerance in plants. *Nature* 521, doi:10.1038/nature14393.

49. Spriggs EL, WL Clement, PW Sweeney, S Madrinan, **EJ Edwards**, MJ Donoghue. 2015. *Viburnum* diversification: temperate radiations and dying embers of a tropical past. *New Phytologist* 207: 340-354.

48. Christin PA, M Arakaki, CP Osborne, **EJ Edwards**. 2015. Genetic enablers underlying the clustered origins of C4 photosynthesis in angiosperms. *Molecular Biology and Evolution* 32: 846-858.

47. Gao L, **EJ Edwards**, Y Zhang, Y Huang. 2014. Major evolutionary trends in hydrogen isotopic fractionation of vascular plant leaf waxes. *PLoS ONE* 9(11): e112610.

46. Donoghue MJ and **EJ Edwards**. 2014. Biome shifts and niche evolution in plants. *Annual Review of Ecology, Evolution, and Systematics* 45: 547-572.

45. Howison M, F Zapata, **EJ Edwards**, CW Dunn. 2014. Bayesian genome assembly and assessment by Markov chain Monte Carlo sampling. *PLoS ONE* 9(6): e99497.

44. Clement, W, M Arakaki, P Sweeney, **EJ Edwards**, MJ Donoghue. 2014. A chloroplast tree for Viburnum (Adoxaceae) and its implication for phylogenetic classification and character evolution. *American Journal of Botany* 101: 1029-1049.

43. Spriggs EL*, PA Christin, **EJ Edwards**. 2014. C4 photosynthesis promoted species diversification during the Miocene grassland expansion. *PLoS ONE* 9(5): e97722.

42. Hancock L and **EJ Edwards**. 2014. Phylogeny and the inference of evolutionary trajectories. Special issue of *Journal of Experimental Botany* 65: 3491-3498.

41. Christin PA, M Arakaki, CP Osborne, A Brautigam, RF Sage, JM Hibberd, S Kelley, S Covshoff, GK Wong, L Hancock, **EJ Edwards**. 2014. Shared origins of a key enzyme during the

evolution of C4 and CAM metabolism. Special issue of *Journal of Experimental Botany* 65: 3609-3621.

40. Still CJ, S Pau, **EJ Edwards**. 2014. Land surface skin temperature captures thermal environments of C3 and C4 grasses. *Global Ecology and Biogeography* 23: 286-296.

39. **Edwards EJ**, D Chatelet, L Sack, MJ Donoghue. 2014. Leaf lifespan and the global leaf economic spectrum in the context of whole plant architecture. Special issue of *Journal of Ecology* 102: 328-336.

38. Christin PA, EL Spriggs*, CP Osborne, CAE Stromberg, N Salamin, **EJ Edwards**. 2014. Molecular dating, evolutionary rates, and the age of the grasses. *Systematic Biology* 63: 153-165.

37. Christin, PA, SF Boxall, R Gregory, **EJ Edwards**, J Hartwell, CP Osborne. 2013. Biased recruitment of genes for C4 photosynthesis. *Genome Biology and Evolution* 5: 2174-2187.

36. Chatelet DS, MJ Donoghue, W Clement, L Sack, **EJ Edwards**. 2013. The evolution of photosynthetic anatomy in Viburnum (Adoxaceae). *International Journal of Plant Sciences* 174: 1277-1291.

35. **Edwards EJ** and MJ Donoghue. 2013. Is it easy to move and easy to evolve? Evolutionary accessibility and adaptation. Special issue of *Journal of Experimental Botany* 64: 4047-4052.

34. Ogburn RM and **EJ Edwards**. 2013. Repeated origin of three-dimensional leaf venation releases constraints on the evolution of succulence. *Current Biology* 23: 722-726.

33. Christin PA, CP Osborne, DS Chatelet, TJ Columbus, G Besnard, TR Hodkinson, LM Garrison, M Voronstova, **EJ Edwards**. 2013. Anatomical enablers and the evolution of C4 photosynthesis in grasses. *Proceedings of the National Academy of Sciences USA* 110: 1381-1386.

32. Pau, S. **EJ Edwards**, CJ Still. 2013. Improving our understanding of environmental controls on the distribution of C3 and C4 grasses. *Global Change Biology* 19: 184-196.

31. Christin PA, MJ Wallace, H Clayton, **EJ Edwards**, RT Furbank, PW Hattersley, RF Sage, TD Macfarlane, M Ludwig. 2012. Multiple photosynthetic transitions, polyploidy, and lateral gene transfer in the grass subtribe Neurachninae. *Journal of Experimental Botany* 63: 6297-6308.

30. Schmerler S*, W Clement, J Beaulieu, D Chatelet, L Sack, MJ Donoghue, **EJ Edwards**. 2012. Evolution of leaf form correlates with temperate/tropical transitions in Viburnum. *Proceedings of the Royal Society of London B: Biological Sciences* 279: 3905-3913.

29. Liu, H. **EJ Edwards**, R Freckleton, CP Osborne. 2012. Phylogenetic niche conservatism in C4 grasses. *Oecologia* 170: 835-845.

28.Ogburn RM and **EJ Edwards**. 2012. Quantifying succulence: a rapid, physiologically meaningful measure of plant water storage. *Plant, Cell and Environment* 35: 1533-1542 (cover article).

27. **Edwards EJ** and RM Ogburn. 2012. Angiosperm responses to a low CO_2 world: CAM and C4 photosynthesis as parallel evolutionary trajectories. Special issue of *International Journal of Plant Sciences* 173: 724-733.

26. Christin, PA, **EJ Edwards**, S Boxall, G Besnard, EA Kellogg, J Hartwell, CP Osborne. 2012. Adaptive evolution of C4 photosynthesis through recurrent lateral gene transfer. *Current Biology* 22: 1-5.

25. Christin PA, G Besnard, **EJ Edwards**, N Salamin. 2012. Effect of genetic convergence on phylogenetic inference. *Molecular Phylogenetics and Evolution* 62:921-927.

24. Grass Phylogeny Working Group II* (**EJ Edwards** corresponding author). 2012. New grass phylogeny resolves deep evolutionary relationships and discovers C4 origins. *New Phytologist* 193: 304-312.

23. Taylor S, P Franks, S Hulme, EL Spriggs*, PA Christin, **EJ Edwards**, I Woodward, CP Osborne. 2012. Photosynthetic pathway and ecological adaptation explain stomatal trait diversity amongst grasses. *New Phytologist* 193: 387-396.

22. Sage RF, PA Christin, **EJ Edwards**. 2011. C4 plant lineages of planet Earth. Special issue of *Journal of Experimental Botany* 62: 3155-3169.

21. Christin, PA, CP Osborne, RF Sage, M Arakaki, **EJ Edwards**. 2011. C4 eudicots are not younger than C4 monocots. Special issue of *Journal of Experimental Botany* 62: 3171-3181.

20. Arakaki M, PA Christin, A Lendel, R Nyffeler, U Eggli, RM Ogburn, EL Spriggs*, M Moore, **EJ Edwards**. 2011. Recent and contemporaneous radiations of the world's succulent plant lineages. *Proceedings of the National Academy of Sciences USA* 108: 8379-8384.

19. Christin PA, T Sage, **EJ Edwards**, RM Ogburn, R Khoshravish, RF Sage. 2011. Complex evolutionary transitions and the significance of C3-C4 intermediate forms of photosynthesis in Molluginaceae. *Evolution* 65: 643-660.

18. Ogburn RM and **EJ Edwards**. 2010. The ecological water use strategies of succulent plants. Invited review, *Advances in Botanical Research* 55: 179-255.

17. **Edwards EJ**‡, CP Osborne‡, CAE Stromberg‡, SA Smith and the C4 Grasses Consortium. 2010. The origins of C4 grasslands: integrating evolutionary and ecosystem science. *Science* 328: 587-591. ‡indicates equal authorship

16. **Edwards EJ** and SA Smith. 2010. Phylogenetic analyses reveal the shady history of C4 grasses. *Proceedings of the National Academy of Sciences USA* 107: 2532-2537.

15. Haberle RC, A Dang, T Lee, C Penaflor, H Cortes-Burns, A Oestreich, L Raubeson, N Cellinese, **EJ Edwards**, ST Kim, WMM Eddie, and RK Jansen. 2009. Taxonomic and biogeographic implications of a phylogenetic analysis of the Campanulaceae based on three chloroplast genes. *Taxon* 58: 715-734.

14. Cellinese N, SA Smith, **EJ Edwards**, ST Kim, RC Haberle, and MJ Donoghue. 2009. Historical biogeography of the endemic Campanulaceae of Crete. *Journal of Biogeography* 36: 1253-1269.

13. Ogburn RM and **EJ Edwards**. 2009. Anatomical variation in the closest relatives of cacti: trait lability and evolutionary innovation. *American Journal of Botany* 96: 1-20. (cover article)

12. Butterworth CA and **EJ Edwards**. 2008. Investigating Pereskia and the earliest divergences in Cactaceae. Invited paper, *Haseltonia* 14: 46-53.

11. Nyffeler R, U Eggli, RM Ogburn, and **EJ Edwards**. 2008. Variations on a theme: repeated evolution of succulent life forms in the Portulacineae. Invited paper, *Haseltonia* 14: 26-36.

10. **Edwards EJ** and CJ Still. 2008. Climate, phylogeny, and the ecological distribution of C4 grasses. *Ecology Letters* 11: 266-276.

9. **Edwards EJ**, CJ Still and MJ Donoghue. 2007. The relevance of phylogeny to studies of global change. *Trends in Ecology and Evolution* 22: 243-249.

8. **Edwards EJ**. 2006. The correlated evolution of stem and leaf hydraulic traits in Pereskia (Cactaceae). *New Phytologist* 172: 479-489.

7. **Edwards EJ** and MJ Donoghue. 2006. Pereskia and the origin of the cactus life form. *American Naturalist* 167: 777-793.

6. **Edwards EJ** and M Diaz. 2006. Ecological physiology of Pereskia guamacho, a cactus with leaves. *Plant Cell and Environment* 29: 247-256 (cover article).

5. **Edwards EJ**, R Nyffeler, and MJ Donoghue. 2005. Basal cactus phylogeny: implications of Pereskia paraphyly for the transition to the cactus life form. *American Journal of Botany* 92: 1177-1188.

4. Riedel SM, HE Epstein, DA Walker, DL Richardson, MP Calef, **EJ Edwards**, and A Moody. 2005. Spatial and temporal heterogeneity of vegetation properties among four tundra plant communities at Ivotuk, Alaska, USA. *Arctic, Antarctic, and Alpine Research* 37: 25-33.

3. Brodribb TJ, NM Holbrook, **EJ Edwards**, and MV Gutierrez. 2003. Relations between stomatal closure, leaf turgor and xylem vulnerability in eight tropical dry forest trees. *Plant Cell and Environment* 26: 443-450.

2. Walker DA, HE Epstein, JG Jia, A Balsar, CD Copass, **EJ Edwards**, WA Gould, J Hollingsworth, J Knudson, HA Maier, A Moody, and MK Reynolds. 2003. Phytomass, LAI and NDVI in northern Alaska: relationships to summer warmth, soil pH, plant functional types, and extrapolation to the circumpolar Arctic. *Journal of Geophysical Research* 108 (D2): 8169 doi:10.1029/2001JD000986.

1. Bell CD, **EJ Edwards**, ST Kim, and MJ Donoghue. 2001. Dipsacales phylogeny based on chloroplast DNA sequences. *Harvard Papers in Botany* 6: 481-499.

*Brown University undergraduate

d. Non-refereed journal articles

Edwards EJ. 2014. The inevitability of C4 photosynthesis. *eLife* 3: e03702.

Feild T and **EJ Edwards**. 2012. Celebrating giant steps toward a synthetic history of angiosperm evolution. Special issue of *International Journal of Plant Sciences* 173: 559-560.

e. Book reviews

Edwards, EJ. 2009. The Great Cacti: Ethnobotany and Biogeography, by David Yetman. Quarterly Review of Biology 84: 108-109.

f. Selected contributed abstracts

2012 "Phylogenetic patterns of highly unusual leaf palisade structure in Viburnum (Adoxaceae)". Evolution meetings, Ottawa ON.
2011 "Of marginal interest: changes in leaf shape during evolutionary shifts between temperate and tropical habitats in Viburnum (Adoxaceae). Evolution meetings, Norman OK
2009 "C4 the straw man? Evolution of cold tolerance better explains global distribution of C3/C4 grasslands" Botanical Society of American conference, Snowbird UT
2005 "How the cactus lost its leaves: studies of character evolution can reveal the origins of biological diversity" Diversitas Open Science Conference, Oaxaca, Mexico

2004 "Basal phylogenetic relationships in Cactaceae, and implications for early cactus evolution" Botanical Society of America, Snowbird UT
2004 "Water relations of Pereskia guamacho, a cactus with leaves" Botanical Society of America conference, Snowbird UT
2003 "What can Pereskia really tell us about early cactus evolution?" Botanical Society of America conference, Mobile AL
2000 "Climate, Vegetation, Soil, and Spectral Reflectance Patterns Across Zonal Vegetation Boundaries in Arctic Alaska" AGU Meetings, San Francisco, CA

g. Invited lectures

Plenary and Keynote Lectures
2017 Invited keynote speaker, 17th International Botanical Congress, Shenzen China
2017 Invited plenary speaker, "Darwin Day Celebration", Bridgewater State University
2013 Invited plenary speaker, 16th International Photosynthesis Congress, St. Louis MO, USA

Symposiums
2018 'Revolutionizing Systematics: Herbaria in the Genomics Age', 2018 Botany meetings, Rochester MN
2018 'Biology of CAM Plants', Desert Botanical Garden, Phoenix AZ
2016 'Evolution meets Ecology', 58th Phylogenetic Symposium, Leipzig, Germany
2016 ASN Vice Presidential Symposium, Evolution meetings, Austin TX
2016 ASN Evolutionary Physiology Symposium, Evolution meetings, Austin TX
2016 C4-CAM symposium, 17th International Photosynthesis Congress, Netherlands
2015 'From Darwin to Borlaug: biocomplexity in natural and agricultural systems', 1st Joint Fall Symposium, Donald Danforth Plant Science Center and Missouri Botanical Garden, St Louis Missouri
2014 'Comparative phylogenetic methods and approaches in plant science', 2014 Botany meetings, Boise, ID
2014 'Systems biology and ecology of CAM plants', 34th New Phytologist Symposium, Lake Tahoe, CA
2014 'Seeing the forest for the trees: the contributions of synthesis to evolutionary science', 2014 Evolution meetings, Raleigh, NC
2014 'Plant Radiations', Institute of Systematic Botany, Zurich, Switzerland
2013 'The evolution of plant effects on carbon and nutrient cycling', INTECOL 2013, London, UK
2013 'International symposium on C4 and CAM plant biology', Urbana-Champaign, Illinois
2012 'International symposium on core Caryophyllales: perspectives in phylogeny and systematics', Moscow State University, Russia
2012 'Evolution of physiological traits', Society for Experimental Biology, Salzburg, Austria
2011 'Crassulacean Acid Metabolism: evolutionary origins, ecological plasticity, and bioenergy potential', International Botanical Congress, Melbourne, Australia

2010 2010 Symposium on C4 plant biology, Shanghai Institutes for Biological Sciences, Shanghai, China
2009 'Evolution: the past, present and future of biodiversity', 2nd Diversitas Open Science Conference, Capetown, South Africa
2009 'Genetics and genomics of environmental change', American Genetics Association Annual Symposium, Providence, RI
2009 'Phylogeny and Ecology' Early Career Scientist Symposium, University of Michigan, Ann Arbor, MI
2008 'Systematics and evolution of Cactaceae', IOS-SLCCS-Brazilian Botanical Congress, Natal, Brazil
2008 'Phylogeny informs biology: seeing the forest from the trees', Harvard Plant Biology Initiative Annual Symposium, Cambridge, MA
2007 'Impact of plant phylogenies on tropical ecology and evolutionary studies', Association of Tropical Biology and Conservation conference, Morelia, Mexico
2007 'Integration of spatial and ecological data in evolutionary studies', Botanical Society of America conference, Chicago, IL
2005 'Biology of dryland plants', Botanical Society of America conference, Austin, TX

Departmental Seminars

2018 Department of Earth Sciences Colloquium, Wesleyan University
2018 Chicago Botanical Garden, Chicago IL
2017 Distinguished Lecture Series, University of Wyoming, Laramie WY
2017 Comparative Biology Seminar Series, American Museum of Natural History, NY
2016 Dept Biology, University of Pennsylvania, Philadelphia, PN
2016 Dept Ecology and Evolutionary Biology, Yale University, New Haven CT
2016 Dept Organismic and Evolutionary Biology, UMass Amherst, Amherst, MA
2014 Dept Biology, Kyushu University, Fukuoka, Japan (2 seminars)
2014 Dept Plant Biology, University of Georgia, Athens GA
2014 Dept Botany, Claremont Graduate University, Rancho Santa Ana, CA
2013 Dept Biology, Kyushu University, Fukuoka, Japan
2013 Dept Ecology and Evolution, National Taiwan University, Taipei, Taiwan
2013 Dept Ecology and Evolutionary Biology, University of Michigan, Ann Arbor MI
2013 Center for Study of Physics and Biology, The Rockefeller University, New York, NY
2013 Dept Plant Biology, University of Vermont, Burlington VT
2013 Dept Biology, University of Florida, Gainesville FL
2012 Dept Botany, Field Museum, Chicago IL
2012 Dept Biology, University of Miami, Miami FL
2012 Harvard University Herbaria Seminar Series, Cambridge, MA
2012 Dept Plant Biology, Cornell University, Ithaca, NY
2012 Dept Ecology and Evolutionary Biology, UCLA, Los Angeles, CA
2012 Dept Ecology and Evolutionary Biology, Yale University, New Haven, CT

2011 Dept Biology, University of Rhode Island, Kingston, RI
2011 Dept Ecology and Evolutionary Biology, University of Tennessee, Knoxville TN
2010 Dept Biology, Duke University, Durham, NC (elected speaker by graduate students)
2010 Dept Biology, Duke University, Durham, NC (elected speaker by graduate students)
2009 Marine Biological Laboratories, Woods Hole, MA
2009 Dept Ecology and Evolutionary Biology, Western Washington University, Pullman, WA
2009 Dept Ecology and Evolutionary Biology, SUNY at Stony Brook, NY
2009 Dept Biology, St. Marys University, Halifax, Nova Scotia
2008 Dept Ecology and Evolutionary Biology, University of Connecticut, Storrs, CT
2008 Dept Botany, University of Capetown, South Africa
2006 Dept Ecology and Evolutionary Biology, Brown University, Providence RI
2006 Dept Ecology and Evolutionary Biology, Brown University, Providence RI
2006 Dept Botany, University of Hawaii, Honolulu HI
2005 Noel Kempff Mercado Museum of Natural History, Santa Cruz, Bolivia, (in Spanish)
2005 National Herbarium of Bolivia, La Paz, Bolivia (in Spanish)
2004 Jardin Botanico Nacional, Santo Domingo, Dominican Republic (in Spanish)
2002 Universidad Exerimental Francisco de Miranda, Coro, Venezuela (in Spanish)

i. Work in review:

Hancock LP, JAM Holtum, **EJ Edwards**. Evolution of a spectrum of CAM phenotypes in Australian *Calandrinia* (Montiaceae). *New Phytologist*, in review.

6. Research Grants

a. Current grants

2016-2019 Collaborative Research: Replicated speciation in the montane neo-tropical radiation of *Viburnum* (Adoxaceae). NSF: DEB: Evolutionary Ecology. DEB-1556698. $397,253 (of $996,515 total).

2013-2018 Collaborative Research: Testing a new hypothesis for global patterns in leaf form using *Viburnum* (Adoxaceae). NSF: IOS: Organism-Environment Interactions. IOS-1257262. $443,728 (of $696,089 total).

2013-2018 CAREER: Defining the evolutionary trajectory of CAM photosynthesis in the Portulacineae (Caryophyllales). NSF: DEB: Phylogenetic Systematics. DEB-1252901. $800,000.

b. Pending grants

2018-2021 Evolution and function of an understudied photosynthetic metabolism: *Portulaca*, the C4-CAM plant. Pre-proposal to NSF: IOS: Integrative Ecological Physiology, invited for a full proposal August 2017. **recommended for funding*.

c. Completed grants

2009-2010 The dawn of a new era: deciphering the past climatic and ecological changes using integrated DNA and lipid biomarker fingerprints. Brown University SEED Fund. Co-PI; Lead PI Yongsong Huang, $100,000.

2012 Uncovering biases in gene recruitment during the evolution of C_4 and CAM photosynthesis in flowering plants. Brown University Salomon Faculty Research Award, $15,073.

2009-2012 Collaborative Research: The evolution of leaf form in *Viburnum* (Adoxaceae). NSF IOS: Organism-Environment Interactions. IOS-0843231. $606,347 (of $937,721 total)

2011-2013 Marie Curie Outgoing International Fellowship: Evolvability and drivers of photosynthetic transitions in flowering plants. Co-PI; Acting as outgoing host for lead PI Dr. Pascal-Antoine Christin. €261,334.20.

2010-2014 Phylogeny and the evolution of succulence in the Portulacineae (Caryophyllales). NSF DEB: Phylogenetic Systematics. DEB-1026611. $534,949.

2010- 2017 IGERT: Reverse Ecology: Computational Integration of Genomes, Organisms, and Environments. NSF DGE-0966060. Co-PI (of 5 total) $2,900,000.

2017 Sequencing the *Portulaca* genome: developing a new molecular tool for photosynthesis research. Brown University Faculty Research Seed Fund, $49,882. *Awarded but declined due to move to Yale University*.

2012-2017 Collaborative Research: Digitization TCN: Mobilizing New England vascular plant specimen data to track environmental changes. NSF: DBI: Advancing Digitization of Biological Collections. DBI-1208972. Co-PI (of 9 total). $152,391 (of ~$2.4 M total)

2016-2017 Dissertation Research: Phylogeny and evolutionary exploration of the C3-CAM phenotypic space in Australian *Calandrinia* (Montiaceae). NSF: DEB: Phylogenetic Systematics. DEB-1600971. Co-PI (w/ Lillian Hancock). $20,792.

7. Service

To the University

2018-	Director of Graduate Studies, Yale Ecology & Evolutionary Biology Dept
2017-	panel member: "Environmental and Evolutionary Science", Yale University Science Strategy Committee
2016	panel member: 'How to write a successful CAREER grant', Brown U.
2016-2017	Director of Undergraduate Studies, EEB Dept.
2015-2017	theme leader, Institute at Brown for Environment and Society
2015-2016	Graduate Curriculum Committee, EEB Dept.
2015	Conservation Biology Faculty Search Committee, EEB/IBES
2015-2017	Biology Concentration Advisor
2013-2015	Steering Committee, Institute at Brown for Environment and Society
2013	Graduate Admissions Committee, EEB Dept.
2013	panel member: 'How to Negotiate a Job Offer', Brown U.
2013	panel member: 'The Two-Body Search', Brown U.
2012	Plant Evolution Faculty Search Committee, EEB Dept.
2012-2013	Drafting committee, Institute at Brown for Environment and Society
2012-2014	First Year Advisor (13 students)
2012	strategic planning meetings, development of Plant Biology Initiative
2010	panel member, Sarah Doyle Women's Center
2010	Graduate Admissions Committee, EEB Dept.
2009-2011	Graduate Curriculum Committee, EEB Dept.
2009-2011	Writing Advisory Board, Brown U.
2009	First-Readings Seminar Leader
2008-2017	Director, Brown University Herbarium

To the Profession

Elected Offices

President-Elect, Society of Systematic Biologists, 2019
Advisory Council Chair, Botanical Society of America, 2016-2019
Council member, International Society for Phylogenetic Nomenclature, 2013-2016
Council member, Society of Systematic Biologists, 2011-2013

Invited Workshop/Working Group Participant

2018	Evolutionary Arenas, Bayrueth, Germany
2011-2012	Origins of C4 grasslands: a new synthesis of phylogeny, ecology, and paleobiology, NESCent Working Group
2011-2012	Tempo and mode of plant functional evolution, NESCent Working Group

2010 Phylogenetic Ecology, NCEAS Workshop
2010 NSF- Dimensions of Biodiversity Charette, NESCent Workshop
2008 Ecophylogenetics, NCEAS Working Group
2002 Integration of Long Distance Transport Processes in Plants, Harvard Forest

Workshops/working groups/conferences organized

2013 C4-CAM 2013: A conference dedicated to the origin, function, and exploitation of C4 and CAM plants (with 7 other co-organizers). U. Illinois at Urbana-Champaign, Aug 6-9 2013.

2010-2011 NESCent Working Group: Grass Phylogeny Working Group II: Inferring the complex history of C4 photosynthesis in grasses. Lead PI (with two co-PI).

2009 NESCent Catalysis Meeting: Toward a New Synthesis of the Evolutionary History and Ecology of C4 Grasses. 3-day meeting bringing together PI's from U.S., Canada, South Africa, U.K., and Switzerland. Lead PI (with two co-PI).

Ad-hoc Reviewer

National Science Foundation (IOS, DEB); American Journal of Botany; Biology Letters; Bradleya; Cell; Ecology Letters; eLife, Evolution; Functional Ecology; Geology; Haseltonia; International Journal of Plant Sciences; Journal of Biogeography; Journal of Experimental Botany; Molecular Ecology Resources; Molecular Phylogenetics and Evolution; Nature; Nature-Communications; Nature-Geosciences; New Phytologist; Plant Cell and Environment; Plant Systematics and Evolution; Proceedings of the National Academy of Sciences; Proceedings of the Royal Society of London B; Science; Tree Physiology.

Panel Service

National Science Foundation, October 2010, April 2012, May 2014, June 2018

Other

2017-present Associate Editor, American Journal of Botany
2013-present Associate Editor, Systematic Biology
2012-2016 Associate Editor, International Journal of Plant Sciences
2011-2012 Scientific Advisory Committee, International Organization for Succulent Plant Study
2010-2011 Scientific Advisory Board, Grass Portal Development Team (www.grassportal.org)

8. Academic honors, fellowships, honorary societies, awards

2016 Presidential Award for Early Career Scientists and Engineers (PECASE)
2014 Distinguished Visiting Professor, Kyushu University
2011 Richard and Edna Salomon Assistant Professor
2008 NSF ADVANCE Career Development Award, Brown University, $17,506.
2006 John Spangler Nicholas Prize, Yale University, $500.
2005 Ph.D. Awarded with Distinction, Yale University

2005 Maynard Moseley Award, Botanical Society of America
2005 Vernon I. Cheadle Student Travel Grant, Botanical Society of America, $500.
2004 MORPH Graduate Student Travel Grant, $300.
2003 EEB Department Chair Award, Yale University, $1500.
2002 YIBS Center for Field Ecology Graduate Research Award, Yale University, $2925.
2002 Deland Award for Student Research, Harvard University, $4250.
2000-2005 National Science Foundation Graduate Research Fellowship

9. Teaching

Courses

2007-2008
Biology 1950: Independent Study (supervising Cassidy Metcalf, class of 2008)

2008-2009
Biology 0430: Diversity and Adaptation of Land Plants (sole instructor, enrollment 24)
Biology 1500: Plant Ecology (sole instructor, enrollment 14)

2009-2010
Biology 0430: The Evolution of Plant Diversity (sole instructor, enrollment 26)
GISP 0017: Introductory Mycology: Applications and Ecology of Fungi (faculty sponsor, enrollment 8).
Biology 1950 (fall 09): Independent Study (Samuel Schmerler, class of 2011)
Biology 1950 (spring 10): Independent Study (Samuel Schmerler, class of 2011)

2010-2011
Biology 0430 was not taught as I had one semester of parental teaching relief.
Biology 1950 (fall 10): Independent Study (Samuel Schmerler, class of 2011, Elizabeth Spriggs, class of 2011)
LDAR 22ST: X-mutations of an infrastructural city. Guest lecturer/advisor in RISD Landscape Architecture course
Biology 1950 (spring 11): Independent Study (Samuel Schmerler, class of 2011, Elizabeth Spriggs, class of 2011)
Biology 1500: Plant Physiological Ecology (sole instructor, enrollment 16)

2011-2012
Biology 0430: The Evolution of Plant Diversity (sole instructor, enrollment 25)
Biology 2980: Graduate Seminar in Tropical Ecology (many instructors, enrollment 9)
Biology 1950 (fall 2011): Independent Study (Alejandro Brambila, Asya Rahlin; class of 2012)
Biology 1950 (spring 2012): Independent Study (Alejandro Brambila, class of 2012)

2012-2013

Biology 0430: The Evolution of Plant Diversity (sole instructor, enrollment 17)
Biology 1500: Plant Physiological Ecology (sole instructor, enrollment 15)
GISP: Introductory Mycology (faculty sponsor, enrollment 3)

2013-2014
Biology 1500: Plant Physiological Ecology (sole instructor, enrollment 19)
Biology 2470: Graduate Seminar in Biome Evolution (sole instructor, enrollment 8)

2015-2016
Biology 0430: The Evolution of Plant Diversity (sole instructor, enrollment 24)
Biology 1585: The Biology of Desert Plants (sole instructor, enrollment 12)

2016-2017
Biology 0430: The Evolution of Plant Diversity (sole instructor, enrollment 25)
Biology 1950 (fall 2016): Independent Study (Andrew Pisaturo, Haley Carter, class of 2017)

Advising

Advised post-doctoral researchers: Monica Arakaki, 2009-2012; Pascal-Antoine Christin, 2010-2012; Radika Bhaskar, 2011-2014; David Chatelet 2010-2015; Jurriaan de Vos, 2013-2015; Abigail Moore, 2013-2016; Zachary Lewis, 2016-2017; Eric Goolsby, 2016-2018; Karolina Heyduk, 2018- present; Jose Moreno-Villena, 2018-present.

Advised graduate students: R. Matthew Ogburn, 2007-2012; Laura Garrison, 2010-2015; Lillian Hancock, 2012-2017; Morgan Moeglein, 2014-present; Ian Gilman, 2017- present; Anri Chomentowska, 2018-present.

Graduate student committee member: Caroline Harper (Brown EEB, 2009-2013); Li Gao (Brown Geology, 2010-2012); Beth Forrestel (Yale University, 2009-2015); Emily Hollenbeck (Brown EEB, 2012-present); Elizabeth Spriggs (Yale University 2013-2017); Brian Park (Yale EEB, 2017-present); Kyra Pratt (Yale Forestry School, 2017-present); Catriona Munro (Brown EEB, 2013-present); KC Cushman (Brown EEB, 2015-present); Nicole Bonacorsi (Brown EEB, 2015-present).

Undergraduate Honor's Thesis Reader: Adisorn Chang, 2008; Kaya Schmandt 2008; Emily Josephs 2008; Christopher Sinatra 2010, Andre Burnier 2011, Emma Dixon 2013, Rosalyn Price-Waldman 2014, Samuel Church 2015, Jack Dietrich 2016, Dylan Spangle 2016.

Undergraduate Honor's Thesis Advisor: Samuel Schmerler 2011; Elizabeth Spriggs 2011; Anastasia Rahlin 2012; Alejandro Brambila 2012; Eric Kelosa-Kenyon 2015; Regan Lichtenberg 2015; Haley Carter 2017; Andrew Pisaturo 2017.

Summer UTRA Advising: Samuel Schmerler 2009; Anne Williard 2009; Anastasia Rahlin 2010; Arisa Lohemier 2011; Jennifer Cardona 2013; Eric Kelosa-Kenyon 2014; Haley Carter 2017, Andrew Pisaturo 2017.

Updated May 2018.