

CURRICULUM VITAE

TODD JAMES BARKMAN

Associate Professor

Department of Biological Sciences

Western Michigan University

Kalamazoo, MI 49008

(269) 387-2776

todd.barkman@wmich.edu

EDUCATION:

B.S. Botany–1990: Michigan State University

M.S. Botany–1993: Michigan State University. Thesis title: Cladistic and phenetic relationships within *Cypripedium* (Orchidaceae) inferred from floral fragrance-compound data. Co-supervisors: John H. Beaman & Douglas A. Gage

Ph.D. Botany–1998: University of Texas, Austin. Dissertation title: Evolution of *Dendrochilum* subgenus *Platyclinis* section *Eurybrachium* investigated in a phylogenetic context. Supervisor: Beryl B. Simpson

Post-Doctorate–1998-2000: Pennsylvania State University, Mitochondrial DNA sequence evolution and phylogeny of parasitic plants. Mentor: Claude dePamphilis

TEACHING EXPERIENCE:

BIOS 1610-Molecular and Cellular Biology: Western Michigan University

BIOS 1620-Introductory Biology: Western Michigan University

BIOS 2020-General Botany: Western Michigan University

BIOS 3190-Plant Physiology: Western Michigan University

PLB 418-Plant Systematics. Kellogg Biological Station, Michigan State University

BIOS 4270-Systematic Botany: Western Michigan University

BIOS 5260-Molecular Biology Laboratory: Western Michigan University

BIOS 5460-Molecular Phylogenetics and Evolution: Western Michigan University

ADMINISTRATIVE EXPERIENCE:

2000-2003: Graduate Recruitment and Admissions Committee, Western Michigan University

2000-Present: Curator of Hanes Herbarium, Western Michigan University

2001-2009: Director of the DNA sequencing Core Facility, Western Michigan University

2004-2010: Department of Biological Sciences Curriculum Committee, Western Michigan University

2014-Present: Campus Planning and Finance Council, Faculty Senate, Western Michigan University

2015-Present: Executive Committee, WMU-AAUP, Western Michigan University

WORK EXPERIENCE:

- 1995 Spring: General plant and ethnobotanical collecting and training, Project Ethnobotany Kinabalu and Flora of Mt. Kinabalu project, Mt. Kinabalu, Sabah, Malaysia, contracted by John H. Beaman, Department of Botany & Plant Pathology, Michigan State University.
- 1998-2000: Post doctoral Researcher studying mitochondrial DNA sequence variation in angiosperms with special emphasis on parasites. Laboratory of Claude dePamphilis, Pennsylvania State University
- 2000-Present: Professor, Department of Biological Sciences, Western Michigan University

FUNDED GRANTS AND AWARDS:

- 1994: Species radiation in *Dendrochilum* section *Eurybrachium* (Orchidaceae) on Mt. Kinabalu. Orchid digest: \$3,000
- 1996: Evolution of *Dendrochilum* subsection *Eurybrachium* (Orchidaceae) on Mt. Kinabalu examined in a phylogenetic context.
NSF: Doctoral Dissertation Improvement Grant. \$10,000.
American Orchid Society: Grant in aid of research. \$4,600.
University of Texas, Graduate School. \$500.
- 1996: University of Texas Continuing Fellowship: in recognition of research accomplishments as a graduate student.
- 2001: FRACASF: Conservation genetics of *Rafflesia*: The world's largest flower. (PI: \$9,336; April 30, 2001-April 30, 2002)
- 2001: Hanes Fund: Origin of the endangered Michigan endemic species *Solidago houghtonii*: (Co-PI with graduate student, Pam Laureto: \$6,000; 5/2001-5/2002)
- 2002: Michigan Department of Natural Resources: Conservation, taxonomy, and origin of *Solidago houghtonii* (Asteraceae) inferred using nuclear and chloroplast DNA markers. (Co-PI with graduate student, Pam Laureto: \$5,000; 2/2002-1/2003)
- 2004: National Science Foundation: Expressed nuclear genes in the Solanaceae: unification of phylogenetic inference with character evolution. (PI: \$223, 477; Jan 2004-Jan 2008)
- 2006: Hanes Fund: Databasing the Hanes Herbarium Collection at WMU. (PI, \$4,280; 2006-2007).
- 2010: FRACAA: Ghosts of evolution past: resurrecting an extinct ancestral enzyme to understand the origins of modern-day biochemical activities. (PI: \$9,988; June 2010-May 2011).
- 2011: National Science Foundation: Ghosts of evolution past: resurrecting an extinct ancestral enzyme to understand the origins of modern-day biochemical activities. (PI: \$260,000; Nov 2011-Nov 2016)

BOOKS:

Ahmad Puad, Aida Shafreena, Frodin, D. G and T. J. Barkman. The Genus *Schefflera* in Sabah, Malaysian Borneo (2018). Natural History Publications (Borneo) Sdn. Bhd. ISBN: 978-983-812-184-2

REFEREED PUBLICATIONS:

- Skippington, E. Barkman, T. J., Rice, D. W. and J. D. Palmer. 2017. Comparative mitogenomics indicates respiratory competence in parasitic *Viscum* despite loss of complex I and extreme sequence divergence, and reveals horizontal gene transfer and remarkable variation in genome size. *BMC Plant Biology*.
- Barkman, T. J. M. Klooster, K. Gaddis, B. Franzone, S. Calhoun, S. Manickam, S. Vessabutr, S. Pak, C. C. Davis. 2017. Reading between the vines: hosts as islands for extreme holoparasitic plants. *American Journal of Botany*. 104: 1382-11389.
- Huang, R., A. J. O'Donnell, J. J. Barbolino, and T. J. Barkman. 2016. Convergent evolution of caffeine in plants by co-option of exapted ancestral enzymes. *Proceedings of the National Academy of Sciences, USA*. 113 (38) 10613-10618
- T. J. Barkman, R. Repin, and J. Sugau. 2016. The parasitic plant families Loranthaceae and Viscaceae in Sabah, Malaysia. *Sandakanian* 21: 131-169.
- Skippington, E. Barkman, T. J., Rice, D. W. and J. D. Palmer 2015. The miniaturized mitogenome of the parasitic plant *Viscum scurruloideum* is extremely divergent and dynamic and has lost all *nad* genes. *Proceedings of the National Academy of Sciences, USA*. 112 (27) E3515-E3524.
- Ruiqi Huang, Frank Hippauf, Diana Rohrbeck, Maria Haustein, Katrin Wenke, Janie Feike, Noah Sorrelle¹, Birgit Piechulla and Todd J. Barkman. 2012. Enzyme functional evolution through improved catalysis of ancestrally non-preferred substrates. *Proceedings of the National Academy of Sciences, USA*. 109: 2966-2971.
- Laureto, P. and T. J. Barkman. 2011. Nuclear and chloroplast DNA suggest a complex single origin for the threatened allopolyploid *Solidago houghtonii* (Asteraceae) involving reticulate evolution and introgression, *Systematic Botany* 36: 209-226.
- Mika Bendiksby, Galina Gussarova, Jamili Nais, Kamarudin Mat-Salleh, Nery Sofiyanti, Domingo Madulid, Trond Schumacher, and Todd Barkman. 2010. Elucidating the evolutionary history of the Southeast Asian holoparasitic giant-flowered Rafflesiaceae: Pliocene vicariance, morphological convergence and character displacement. *Molecular Phylogenetics and Evolution* 57: 620-633.
- Hippauf, F., E. Michalsky, R. Huang, R. Preissner, T. J. Barkman, and B. Piechulla. 2010. Enzymatic, Expression and Structural Divergences among Carboxyl *O*-methyltransferases after gene duplication and speciation in *Nicotiana*. *Plant Molecular Biology* 72: 311-330.
- Barkman, T. J. and J. Zhang. 2009. Evidence for escape from adaptive conflict? *Nature* (Brief Communications Arising). 462: E1-2.
- Barkman, T. J., M. Bendiksby, S.-H. Lim, K. Mat Salleh, J. Nais, D. Madulid and T. Schumacher. 2008. Accelerated rates of floral evolution at the upper size limit for flowers *Current Biology* 18:1508-1513.
- Barkman, T. J., McNeal, J. R., Lim, S.-H., Coat, G. Croom, H. B., Young, N. and dePamphilis, C. W. 2007. Mitochondrial DNA suggests 12 origins of parasitism in angiosperms and reveals genomic chimerism in parasitic plants. *BMC Evolutionary Biology* 7: 248.

- Barkman, T. J., Martins, T. R., Sutton, E., and Stout, J. T. 2007. Positive selection for single amino acid change promotes substrate discrimination of a plant volatile-producing enzyme. *Molecular Biology and Evolution* 24: 1320-1329.
- T. R. Martins, J. T. Stout, S. E. Todd, K. Kuipers, and T. J. Barkman. 2007. Molecular phylogenetic tests of floral scent evolution in the Solanaceae. *Acta Hort.* 745: 183-200.
- Barkman, T. J. 2006. A role for evolutionary predictions in gene isolation and characterization studies. *Journal of Plant Biology* 49(4): 331-335.
- Martins, T. and Barkman, T. J. 2005. Reconstruction of Solanaceae phylogeny using the nuclear gene SAMT. *Systematic Botany* 30(2): 433-445.
- Tan, W. G. H., T. J. Barkman, V. G. Chinchar, and K. Essani. 2004. Comparative genomic analyses of frog virus 3, type species of the genus *Ranavirus* (Family *Iridoviridae*). *Virology* 323: 70-84.
- Barkman, T. J., S.-H. Lim, K. Mat Salleh, and J. Nais. 2004. Mitochondrial DNA sequences reveal the photosynthetic relatives of *Rafflesia*, the world's largest flower. *Proceedings of the National Academy of Sciences, USA.* 787-792.
- Barkman, T. J., B. E. Emoi, R. Repin. 2003. The genus *Balanophora* (Balanophoraceae) in Sabah, Malaysia *Blumea.* 48: 465-474.
- Barkman, T. J. 2003. Evidence for positive selection on the floral scent gene Isoeugenol-O-methyltransferase. *Molecular Biology and Evolution* 20: 168-172.
- Barkman, T. J. & Simpson, B. B. 2002. Hybridization and parentage of *Dendrochilum acuiferum* (Orchidaceae) inferred in a phylogenetic context using nuclear and chloroplast DNA sequence data. *Systematic Botany* 27(2): 209-220.
- Stahlhut, J. K., Cowan, D. P., Essani, K., Shoemaker, D.D., and Barkman, T. J. 2002. Microsatellite markers for the wasp *Euodynerus foraminatus* (Vespidae: Eumeninae). *Molecular Ecology Notes* 2(4): 467-468.
- Barkman, T. J. 2001. Character coding of secondary chemical variation for use in phylogenetic analyses. *Biochemical Systematics and Ecology* 29: 1-20.
- Barkman T. J. & Simpson, B. B. 2001. Origin of High-Elevation *Dendrochilum* Species (Orchidaceae) Endemic to Mount Kinabalu, Sabah, Malaysia. *Systematic Botany* 26(3): 658-669.
- Barkman, T. J. 2001. Evolution of vegetative morphology in Mount Kinabalu high-elevation endemics: insights from the orchid genus *Dendrochilum*. *Sabah Parks Nature Journal* 4: 9-24.
- Barkman, T. J., G. Chenery, J. R. McNeal, J. Lyons-Weiler, W. J. Ellisens, G. Moore, A. D. Wolfe, and C. W. dePamphilis 2000. Independent and combined analyses of sequences from all three genomic compartments converge on the root of flowering plant phylogeny. *Proceedings of the National Academy of Sciences, USA.* 13166-13171.
- Argent, G. and Barkman, T. J. 2000. Two exciting new species of *Rhododendron* section *Vireya* (Ericaceae) from Mount Kinabalu, Sabah. *The New Plantsman* 7: 209-219.
- Wood, J. J. & Barkman, T. J. 1998. Notes on the orchid flora of Mount Kinabalu, Borneo. *Sandakania* 12: 7-24.
- Barkman, T. J., Beaman, J. H. and Gage, D. A. 1997. Floral fragrance variation in *Cypripedium* (Orchidaceae): implications for evolutionary and ecological studies. *Phytochemistry* 44(5): 875-882.

- Barkman, T. J. & Wood, J. J. 1997. Re-recognition of *Pholidota sigmatochilus*: an enigmatic species from Mt. Kinabalu, Sabah, Malaysia. *Lindleyana* 12(3): 153–157.
- Barkman, T. J., Repin, R., Beaman, R. S., and Beaman, J. H.. 1997. A biogeographic analysis of orchid distributions on Mt. Kinabalu. in J. Dransfield, M. J. E. Coode, D. A. Simpson (eds.) *Plant Diversity in Malesia: Proceedings of the third international Flora Malesiana symposium*. pp. 25–40.
- Chan, C. L. & Barkman, T. J. 1997. A new species of *Calanthe* (Orchidaceae: Epidendroideae: Arethuseae) from Mt. Kinabalu, Sabah. *Sandakania* 9: 27–34.
- Barkman, T. J. & Wood, J. J. 1996. A new species of *Dendrochilum* from Mt. Kinabalu. *Orchid Review* 104: 178–182.
- Kamden, P. D., Gruber, K., Barkman, T. J., and Gage, D. A. 1994. Characterization of Black Locust Floral Fragrance. *Journal of Essential Oil Research* 6: 199–200.

NON-REFEREED PUBLICATIONS:

- Barkman, T. J. 2014. Mistletoes. In *The Ultramafic Flora of Sabah*, A. van der Ent, R. Repin, J. Sugau, & K. M. Wong. Sabah Parks and Natural History Publications (Borneo), Kota Kinabalu. (pp. 193-199).
- Hodge, T. L., B. R. Szymczyna, and T. J. Barkman 2015. Metabolic analysis: algebraic and geometric methods. In *Algebraic and Discrete Mathematical Methods for Modern Biology*, R. Robeva (Ed.). Elsevier, Inc. (pp. 261-292).
- Barkman, T. J. and J. J. Wood. 2005. The genus *Dendrochilum*. Pp. 51-56. In *Genera Orchidacearum*, Vol. 4., Pridgeon, A.M., P. J. Cribb, M. W. Chase, & F.N. Rasmussen (eds.). Oxford University Press, Oxford, U.K. (Invited contribution)
- Smith, D., Barkman, T. J., and dePamphilis, C. W. 2001. Hemiparasitism. Pp. 317-328 in *Encyclopedia of Biodiversity* V. 3, ed. S. A. Levin. Academic Press, San Diego.

PRESENTATIONS AT MEETINGS:

- 1992: Implications of floral fragrance compounds in the systematics of *Paphiopedilum*. AIBS annual meeting, Honolulu, Hawaii. Abstract. *American Journal of Botany* 79(6): 386.
- 1995: Ultramafic habitat patches as islands on Mt. Kinabalu. 1. Flora Malesiana Third International Symposium, Royal Botanic Gardens, Kew. 2. AIBS annual meeting, San Diego, CA. Abstract. *American Journal of Botany* 82(6): 324.
- 1996: Radiation of *Dendrochilum* on Mount Kinabalu. AIBS annual meeting, Seattle, WA. Abstract. *American Journal of Botany* 83(6): 141.
- 1997: Origin of high elevation endemic *Dendrochilum* (Orchidaceae) on Mount Kinabalu, Sabah, Malaysia. AIBS annual meeting, Montreal, Quebec, Canada. Abstract. *American Journal of Botany*. 84(6): 178.
- 1999: Vertical and horizontal transmission of the invasive mitochondrial *coxI* intron in angiosperms. American Genetic Association annual meeting, State College, PA
- 2001: Angiosperm phylogenetics: genomic congruence and methodological incongruence. Barkman, T. J. Botanical Society of America Annual Meeting, Albuquerque, NM.

- 2002: Evolution of floral scent: cooption of SAMT from a defensive function for an attractive function. Barkman, T. J. and Martins (Robadey), T. Gordon Research Conference, Ventura CA.
- 2002: Riveting reverses editing in plant mitochondrial sequences. dePamphilis, C., L. Landherr, T. J. Barkman, J. McNeal, and N. Young. Botanical Society of America Annual Meeting.
- 2002: Flowering plant phylogenetic studies. Barkman, T. J. Beckman-Coulter's Advanced Technology Seminar. 1. St. Louis, MO & 2. Detroit, MI.
- 2002: Evolution of SAMT in the plant family Solanaceae and its ecological implications. Martins (Robadey), T. & T. J. Barkman. Midwest Ecology and Evolution Conference. Bowling Green, OH.
- 2002: Induction of salicylic acid methyltransferase gene expression in *Nicotiana tabacum* leaves by exogenous salicylic acid and tobacco mosaic virus. American Society of Plant Biologists. Enyedi, A, Martin (Robadey), T. & T. J. Barkman.
- 2003: Uniting phylogenetics and character evolution in the Solanaceae. Robadey, T. & Barkman, T. J. Midwest Ecology and Evolution Conference. University of Akron, Akron, OH.
- 2003: The molecular genetics of a plant-pathogen interaction mediated by volatile signals. Kuipers, K., Robadey, T., Enyedi, A. & Barkman, T. J. Midwest Ecology and Evolution Conference. University of Akron, Akron, OH.
- 2003: Phylogenetic analyses of the genus *Rafflesia* using ITS sequence data. Lim, J., Mat-Salleh, K., Nais, J. & Barkman, T. J. Midwest Ecology and Evolution Conference. University of Akron, Akron, OH.
- 2003: A novel approach to characterizing loci underlying traits of ecological and evolutionary importance. Hasan, N. & Barkman, T. J. Midwest Ecology and Evolution Conference. University of Akron, Akron, OH.
- 2003: Taxonomy and origin of *Solidago houghtonii* (Asteraceae) inferred using nuclear and chloroplast DNA markers. Laureto, P. & Barkman, T. J. Midwest Ecology and Evolution Conference. University of Akron, Akron, OH.
- 2004: Phylogenetic analysis reveals the photosynthetic relatives of *Rafflesia*, the world's largest flower. T. J. Barkman, J. Lim, K. Mat Salleh & J. Nais –Botanical Society of America Annual Meeting, Snowbird, Utah
- 2004: Mitochondrial DNA suggests 12 origins of parasitism in angiosperms and implicates parasitic plants as vectors of horizontal gene transfer. T. J. Barkman*, J. McNeal, J. Lim, G. Coat, H. B. Croom, N. Young & C. W. dePamphilis. Botanical Society of America Annual Meeting, Snowbird, Utah
- 2004: Reconstruction of Solanaceae phylogeny using the nuclear gene SAMT. T. Robadey and T. J. Barkman –Botanical Society of America Annual Meeting, Snowbird, Utah
- 2005: Analyses of four chloroplast DNA intergenic spacers reveal a maternal parent of the rare allopolyploid-*Solidago houghtonii* (Asteraceae). P. Laureto and T. J. Barkman – Botanical Society of America Annual Meeting, Austin, Texas
- 2005: Distinguishing between parallel and convergent evolution of floral scent in Solanaceae. T. Robadey and T. J. Barkman –Botanical Society of America Annual Meeting, Austin, Texas
- 2006: Molecular phylogenetic tests of floral scent evolution in the Solanaceae. T. J. Barkman, T. Martins, S. Todd, and J. Stout. –Solanaceae Conference, Madison, Wisconsin

- 2007: Positive selection for single amino acid change promotes substrate discrimination of a plant volatile-producing enzyme. T. J. Barkman, T. R. Martins, E. Sutton, and J. T. Stout. –Botanical Society of America Annual Meeting, Chicago, IL
- 2008: A novel pistil-specific methyltransferase gene is capable of producing methyl jasmonate, benzoate, and salicylate in vitro and is probably responsible for the jasmonate emission of mature *Nicotiana tabacum* L. flowers. Avanci, N. C., M. C. S. Pranchevicius, E. V. Lourenco, A. C. Quiapim, G. H. Goldman, T. J. Barkman, L. A. B. Moraes, M. H. S. Goldman. XXth International Congress on Sexual Plant Reproduction Brasilia, Brazil.
- 2009: Phylogenetics in Ericales – the Utility of mtDNA Gene Sequences and the Placement of Holoparasite *Mitrastema* Kenneth J. Sytsma, Thomas J. Kleist, Daniel Nickrent, Todd J. Barkman, Jürg Schönenberger. Botanical Society of America Annual Meeting, Snowbird, Utah.
- 2011: Phylogenetic relationships of the genus *Schefflera* (Araliaceae) in Borneo, Malaysia inferred from chloroplast and nuclear DNA sequences. A. Ahmad-Puad and T. J. Barkman. Botanical Society of America Annual Meeting, St. Louis, Mo.
- 2014: An evolutionary story of convergence, constraint and complexity in a biochemical pathway. Andrew O'Donnell, Ruiqi Huang, Jessica Barboline and T. J. Barkman. Society for Molecular Biology and Evolution. Annual meeting, Puerto Rico

INVITED SEMINARS:

- 1999: Testing hypotheses of biogeography and hybridization in a phylogenetic context: a case study of the genus *Dendrochilum* (Orchidaceae). Institute of Molecular and Evolutionary Genetics, Pennsylvania State University
- 1999: A truly automated approach to genetic analysis. Discovery Series Seminar, Beckman-Coulter. Princeton, N.J.
- 1999: Origin of high elevation endemic *Dendrochilum* species (Orchidaceae) on Mount Kinabalu, Sabah, Malaysia. XVI IBC St. Louis, MO
- 1999: Multiple origins of parasitism in angiosperms inferred using mitochondrial DNA sequence variation. Colgate University, Hamilton, NY
- 2000: Origins and evolution of parasitism in angiosperms. National University of Malaysia.
- 2000: Origins and evolution of *Dendrochilum* on Mount Kinabalu, Sabah, Malaysia. Department of Biological Sciences, Western Michigan University.
- 2001: Studies in flowering plant evolution using plant mitochondrial DNA. Department of Botany, Michigan State University.
- 2003: Phylogeny and Evolution of Parasitic Plants. Field Museum of Natural History, Chicago, IL.
- 2003: Orchids, Parasites, and Carnivores: The Plants of Borneo. Michigan Botanical Club.
- 2004: Phylogeny and Evolution of Parasitic Plants. Kellogg Biological Station, Michigan State University
- 2004: Genome evolution and phylogeny of parasitic flowering plants. Department of Biological Sciences, Western Michigan University.
- 2004: Phylogenetic and Evolutionary aspects of Parasitism in Angiosperms. Department of Ecology and Evolutionary Biology, Ohio State University, Columbus, OH

- 2005: Mitochondrial Genome Evolution in Parasitic Flowering Plants. Department of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, MI
- 2005: The Natural History of North Borneo. Aquinas College, Grand Rapids, MI
- 2006: Mitochondrial Genome Evolution in Parasitic Flowering Plants. Department of Biology Central Michigan University, Mount Pleasant, MI
- 2006: Phylogeny and Evolution of *Rafflesia*, the world's largest flower, and other strange parasitic plants. University of Southern Mississippi, Hattiesburg, MS
- 2007: Phylogeny and Evolution of *Rafflesia*, the world's largest flower, and other strange parasitic plants. Hope College, Holland, MI
- 2007: Phylogeny and Evolution of *Rafflesia*, the world's largest flower, and other strange parasitic plants. National University of Malaysia, Banggi, Malaysia.
- 2007: Phylogeny and Evolution of *Rafflesia*, the world's largest flower, and other strange parasitic plants. Grand Valley State University, Grand Rapids, MI.
- 2008: Molecular Phylogenetics and Evolution. University of Sao Paulo, Brazil. Ribeirao Preto.
- 2009: Phylogeny and Evolution of *Rafflesia*, the world's largest flower, and other strange parasitic plants. University of Georgia, Athens, GA.
- 2009: Reflecting on 200 Years of Darwin. WMU Center for ethics and Dept. of Philosophy, Western Michigan University, Kalamazoo, MI.
- 2009: Plant Evolution. Michigan Botanical Club. Kalamazoo, MI.
- 2010: Biochemical Diversity: Flavorants to stimulants. Kalamazoo Section of the American Chemical Society. Kalamazoo, MI May 18th, 2010.
- 2011: On the origins of plant biochemical diversity. WMU Dept. of Biological Sciences. 1/18/11.
- 2011: Ghosts of evolution past: resurrecting an extinct ancestral enzyme to understand the origins of modern-day biochemical activities. WMU Department of Physics. 3/7/11.
- 2011: Ghosts of evolution past: resurrecting an extinct ancestral enzyme to understand the origins of modern-day biochemical activities. Grand Valley State University.
- 2012: Ghosts of evolution past: resurrecting an extinct ancestral enzyme to understand the origins of modern-day biochemical activities. Wayne State University: December 3rd, 2012.
- 2012: GVSU/VARI Bioinformatics & Computational Biology Symposium; Oct. 26, 2012.
- 2013: Ghosts of evolution past: resurrecting extinct ancestral enzymes to understand the origins of modern-day biochemical activities. Eastern Michigan University: February 13rd, 2012.
- 2016: Orchid diversity. Michigan Botanical Club Foray. Sept. 3 2016.
- 2017: Geological diversity on Mount Kinabalu in northern Borneo and its impact on the evolution of tropical plant diversity. Dept. of Geosciences. Western Michigan University, February 6, 2017
- 2018: Phylogeny and population genetics of *Rafflesia*. Sandakan Forest Research Centre, Sabah, Malaysia. August 9, 2018.
- 2018: Phylogeny, biogeography and population genetic studies of plants in Southeast Asia. Universiti Malaysia Sabah, Sabah, Malaysia August 13, 2018.
- 2018: Testing evolutionary hypotheses in a parasitic plant genus that produces the world's largest flowers: the *Rafflesia* berry does not fall far from the tree. Kellogg Biological Station, Michigan State University, Oct. 12, 2018.

2018: Evolution of Plant Specialized Metabolism: replaying the evolutionary DVD of the SABATH methyltransferase family history. Department of Plant Biology, Michigan Sstate University. November 16, 2018.

PROFESSIONAL ACTIVITIES:

Ad Hoc Manuscript Reviews since 2000

Biochemical Systematics and Ecology, Systematic Botany, Rhodora, Lindleyana, American Journal of Botany, Plant Systematics and Evolution, International Journal of Plant Sciences, Blumea, Molecular Phylogenetics and Evolution, Physiologia Plantarum, Genetica, Evolution, Plant Molecular Biology, Journal of Plant Research, The Plant Cell, Kew Bulletin, Australian Journal of Botany, Phytochemistry, Journal of Tropical Forest Science, Proceedings of the National Academy of Sciences USA, Journal of Integrated Plant Biology, Science, Journal of Molecular Evolution, Biology Letters, Taxon, Reinwardtia, BMC Evolutionary Biology, BMC Plant Biology, PLOS One, PLOS Genetics, Current Biology, Journal of Systematics and Evolution, International Journal of Molecular Sciences, Molecular Biology and Evolution, Trends in Plant Sciences, BMC Plant Biology, Journal of the Science of Food and Agriculture, New Phytologist, Current Opinion in Plant Biology, Genome Biology and Evolution, Phytokeys, Botanical Journal of the Linnaean Society, Journal of Biotechnology, Plant Physiology, Taxon, Scientific Reports, Annals of Botany

Editorial Positions

2006-2013: *The Michigan Botanist* (Editor-in-Chief)