

CURRICULUM VITAE
ALEJANDRA VASCO

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I EDUCATION

- Ph.D. in Biology (2010).** City University of New York (CUNY)/ The New York Botanical Garden.
Dissertation Title: Systematics and Phylogeny of *Elaphoglossum* section *Lepidoglossa*
(Dryopteridaceae). Advisor: Dr. Robbin C. Moran
- M.Phil. in Biology (2007).** City University of New York (CUNY)/ The New York Botanical Garden.
Advisor: Dr. Robbin C. Moran
- B. S. in Biology (2002).** University of Antioquia, Biology Department. Medellín, Colombia.
Advisor: Dr. Ricardo Callejas

II PROFESSIONAL APPOINTMENTS

- Research Botanist.* 2017–present. Botanical Research Institute of Texas, Fort Worth, Texas, USA.
Associate member of the Graduate Faculty 2017–2027. Texas Christian University, Fort Worth, Texas, USA.
- Adjoint Professor* 2017–2023. University of Texas Arlington, Department of Biology, Arlington, Texas, USA.
- Assistant Professor.* 2015–2017. Department of Botany, Biology Institute, National Autonomous University of Mexico, Mexico City.
- Postdoctoral Research Associate.* 2014–2015. Biology Institute, National Autonomous University of Mexico, Mexico City. “Leaf anatomy in the *Elaphoglossum petiolatum* group”.
Supervisor: Dr. Teresa Terrazas.
- Postdoctoral Research Associate.* 2010–2013. The New York Botanical Garden. “Leaf development and phylogeny of the fern group *Elaphoglossum* section *Squamipedia* (Dryopteridaceae)”. Supervisors: Drs. Barbara Ambrose and Robbin Moran.
- Research assistant.* 2007–2009. The New York Botanical Garden. “Monographic revision and phylogeny of the fern genus *Megalastrum* (Dryopteridaceae)”. Supervisor: Dr. Robbin Moran.
- Herbarium Curatorial Assistant.* 2004–2007. The New York Botanical Garden New York, USA.
- Adjunct Teacher.* 2003. School of Natural and Exact Sciences, University of Antioquia. Colombia.
- Herbarium Curatorial Assistant.* 2002–2004. University of Antioquia’s Herbarium (HUA), Colombia.

III PUBLICATIONS

Peer Reviewed Publications

- Rothfels, C. J., J. Lee, M. A. Sundue, A. R. Smith, A. Kasameyer, J. Gross, G. Holman... **Vasco, A.**, et al. 2025. The PteridoPortal: A publicly accessible collection of over three million records of extant and extinct pteridophytes. *Applications in Plant Sciences* 13: e70003. <https://doi.org/10.1002/aps3.70003>
- Martínez-Becerril, A.G. and **Vasco, A.** 2024. Taxonomic Revision of the Petiolatum Clade of *Elaphoglossum* sect. *Lepidoglossa* (Dryopteridaceae). *Annals of the Missouri Botanical Garden* 109 (1): 208-243. <https://doi.org/10.3417/2024894>
- Doherty, D., **Vasco, A.**, Rehman, T., Niño, A. & Sasan, K. 2024. Illuminations: Past, Present, and Future of Fern Research. *Plant Science Bulletin*, 70 (1): 15 – 20.
- Martínez-Becerril, A.G. and **Vasco, A.** 2023. *Elaphoglossum auralolitae*, a new species of *Elaphoglossum* sect. *Lepidoglossa* (Dryopteridaceae) from Guatemala. *American Fern Journal*, 113(2): 126-136. <https://doi.org/10.1640/0002-8444-113.2.126>
- Vega-Betancur, S., Callejas, R., Testo, W.L., and **Vasco, A.** 2023. Sinopsis de *Selaginella* (Selaginellaceae) para el departamento de Antioquia, Colombia. *Brittonia*, 75 (2): 133-158. <https://link.springer.com/article/10.1007/s12228-023-09744-0>
- Matos, F.B., & **Vasco, A.** 2022. *Elaphoglossum matogrossense* (Dryopteridaceae), a new and threatened species from Chapada dos Guimarães, Mato Grosso, Brazil. *Kew Bulletin*. <https://doi.org/10.1007/s12225-022-10043-2>
- Quaresma A., Zartman C.E., Piedade M.T F., Wittmann F., Jardim M.A.G., Irupe M.V., Benavides A.M., Freitas L., Toledo J.J., Boelter C. R., Obermüller F., Duque A.J., Klein V.P., Mari M.L. G., Schöngart J., Arenas E., Pos E.T., **Vasco A.**, Ek R., Plantenga F.D.M., Duivenvoorden J.F., Biesmeijer K., Bender I.M. A., ter Steege H. 2022. The Amazon Epiphyte Network: A First Glimpse Into Continental-Scale Patterns of Amazonian Vascular Epiphyte Assemblages. *Frontiers in Forests and Global Change* 5. <https://www.frontiersin.org/articles/10.3389/ffgc.2022.828759>
- Rodríguez-Pelayo, C., Ambrose, B.A., **Vasco, A.**, Alzate, J.F., Pabón-Mora, N. 2022. Tracking ancestral flowering integrators: evolution and expression of *PEBP* genes in lycophytes and ferns. *International Journal of Plant Sciences* 183: <https://doi.org/10.1086/719575>
- Rodríguez-Pelayo, C., Ambrose, B.A., **Vasco, A.**, Alzate, J.F., Pabón-Mora, N. 2022. Evolution and expression of *LEAFY* genes in ferns and lycophytes. *EvoDevo* 13, 2 (2022). <https://doi.org/10.1186/s13227-021-00188-9>
- Martínez-Becerril; A.G., Solano, E.; **Vasco, A.** 2021. Spore morphology of the Mexican species of the *Elaphoglossum petiolatum* complex (Dryopteridaceae). *Brittonia* 73: 131-142 <https://doi.org/10.1007/s12228-020-09643-8>
- Breinholt, J.W., S.B. Carey, G.P. Tiley, E.C. Davis, L. Endara, S.F. McDaniel, L.G. Neves, E.B. Sessa, M. von Konrat, S. Chantanaorrapint, S. Fawcett, S.M. Ickert-Bond, P.H. Labiak, J. Larraín, M. Lehnert, L.R. Lewis, N.S. Nagalingum, N. Patel, S.A. Rensing, W. Testo, **A. Vasco**, J.C. Villarreal, E.W. Williams, & J.G. Burleigh. 2021. A target enrichment probe set for resolving the flagellate land plant tree of life. *Applications in Plant Sciences* 9: e11406. <https://doi.org/10.1002/aps3.11406>
- Hernández-Hernández, B.; Tapia-López, R.; Ambrose, B.A.; **Vasco, A.** 2021. *R2R3-MYB* gene evolution in plants, incorporating ferns into the story. *International Journal of Plant Sciences* 182(1): 1–8. <https://doi.org/10.1086/710579>

- Aragón-Raygoza, A.; **Vasco, A.**; Blilou, I.; Herrera-Estrella, L.; Cruz-Ramírez, A. 2020. Development and cell cycle activity of the root apical meristem in the fern *Ceratopteris richardii*. *Genes* 11, 1455. <https://doi.org/10.3390/genes11121455>
- Vasco, A.**; Ambrose, B.A. 2020. Simple and divided leaves in ferns: Exploring the genetic basis for leaf morphology differences in the genus *Elaphoglossum* (Dryopteridaceae). *International Journal of Molecular Sciences* 21, 5180. <https://doi.org/10.3390/ijms21155180>
- Cruz, R.; Melo-de-Pinna, G.F.A.; **Vasco, A.**; Prado, J.; Ambrose, B.A. 2020. *Class I KNOX* is related to determinacy during the leaf development of the fern *Mickelia scandens* (Dryopteridaceae). *International Journal of Molecular Sciences* 21, 4295. <https://doi.org/10.3390/ijms21124295>
- Zumajo-Cardona, C., **Vasco, A.** & Ambrose, B.A. 2019. The evolution of the *KANADI* gene family and leaf development in lycophytes and ferns. *Plants* 8 (9), 313. <https://doi.org/10.3390/plants8090313>
- Matos, F., **Vasco, A.** & Moran, R.C. 2018. *Elaphoglossum doanense* and *E. tonduzii*: new members of *Elaphoglossum* sect. *Squamipedia* (Dryopteridaceae) and their significance for inferring the evolution of rhizome habit and nest-forming leaves within the genus. *International Journal of Plant Sciences* 179: 296–313. <https://doi.org/10.1086/696687>
- Pérez-Atilano, Y., Sánchez, A., Terrazas, T. & **Vasco, A.** 2017. Morphological and anatomical analysis of the *Myriopteris lendigera* (Pteridaceae) complex in Mexico. *Brittonia* 70: 40–59. <https://doi.org/10.1007/s12228-017-9496-y>
- Testo, W., Sundue, M. & **Vasco, A.** 2017. *Diplazium* hybrids involving *D. plantaginifolium* and *D. ternatum* from Mexico and Central America. *Brittonia* 69 (3): 295–306. <https://doi.org/10.1007/s12228-017-9476-2>
- Reyes-Rivera, J., Rodríguez-Alonso, G., Petrone, E., **Vasco, A.**, Vergara-Silva, F., Shishkova, S. & Terrazas, T. 2017. Expression of the knotted homeobox genes in the cactaceae cambial zone suggests their involvement in wood development. *Frontiers in Plant Science*. <https://doi.org/10.3389/fpls.2017.00218>
- PPG I. 2016. A community-derived classification for extant lycophytes and ferns. *Journal of Systematics and Evolution* 54: 563–603. <https://doi.org/10.1111/jse.12229>
- Vasco, A.**, Smalls, T. L., Graham, S. W., Cooper, E. D., Wong, G.K-S., Stevenson, D. W., Moran, R. C. & Ambrose, B. A. 2016. Challenging the paradigms of leaf evolution: *Class III HD-Zips* in ferns and lycophytes. *New Phytologist* 212 (3): 745–758. <https://doi.org/10.1111/nph.14075>
- Ambrose, B. A. & **Vasco, A.** 2016. Bringing the multicellular fern meristem into focus. *New Phytologist* 210 (3): 790–793. <https://doi.org/10.1111/nph.13825>
- Mynssen, C. M., **Vasco, A.**, Moran, R.C., Sylestre, L.S. & Rouhan, G. 2016. *Desmophlebiaceae* and *Desmophlebium*: A new family and genus of Eupolypod II ferns. *Taxon* 65 (1): 19–34. <https://doi.org/10.12705/651.2>
- Matos, F. & **Vasco, A.** 2015. *Elaphoglossum fendleri* (Dryopteridaceae), a new species of *Elaphoglossum* sect. *Lepidoglossa* from Venezuela, and the identity of *Elaphoglossum ornatum*. *Brittonia* 67 (2): 144–149. <https://doi.org/10.1007/s12228-015-9371-7>
- Vasco, A.**, Lóriga, J., Rouhan, G., Ambrose, B. A. & Moran, R.C. 2015. Divided leaves in the genus *Elaphoglossum* (Dryopteridaceae): A phylogeny of *Elaphoglossum* section *Squamipedia*. *Systematic Botany* 40 (1): 46–55. <https://doi.org/10.1600/036364415X686323>
- Montoya-González, J., **Vasco, A.**, Hoyos-Figueroa, F., Osorio-Cadavid, N., Marín-Agudelo, A. & Jaramillo-Bustamante, J.C. Obstrucción intestinal por semillas de *Vasconcellea*: reporte de tres casos y revisión de la literatura. *Iatreia* 28(3): 318–324. <https://doi.org/10.17533/udea.iatreia.v28n3a10>

- Vasco, A.**, Thadeo, M., Conover, M. & Daly, D. 2014. Preparation of samples for leaf architecture studies, a method for mounting cleared leaves. *Applications in Plant Sciences* 2(9). <https://doi.org/10.3732/apps.1400038>
- Loriga, J., **Vasco, A.**, Regalado, L., Heinrichs, J. & Moran, R.C. 2014. Phylogeny and classification of the Cuban species of *Elaphoglossum* (Dryopteridaceae), with description of *Elaphoglossum* sect. *Wrightiana* sect. nov. *Plant Systematics and Evolution* 300(5): 937-951. <https://doi.org/10.1007/s00606-013-0933-4>
- Vasco, A.**, Mickel, J.T. & Moran, R.C. 2013. Taxonomic revision of the Neotropical species of *Elaphoglossum* sect. *Squamipedia* (Dryopteridaceae). *Annals of the Missouri Botanical Garden* 99 (2): 244-286. <https://doi.org/10.3417/2012038>
- Vasco, A.**, Moran, R.C. & Ambrose, B.A. 2013. The morphology, evolution and development of fern leaves. Invited Review. *Frontiers in Plant Science* 4. doi: 10.3389/fpls.2013.00345
- Wheeler, Q.D., S. Knapp, D.W. Stevenson, J. Stevenson, S.D. Blum, B.M. Boom, G.G. Borisy, J.L. Buizer, M.R. De Carvalho, A. Cibrian, M.J. Donoghue, V. Doyle, E. M. Gerson, C.H. Graham, P. Graves, S. J. Graves, R. P. Guralnick, A. L. Hamilton, J. Hanken, W. Law, D.L. Lipscomb, T. E. Lovejoy, H. Miller, J.S. Miller, S. Naeem, M.J. Novacek, L.M. Page, N.I. Platnick, H. Porter-Morgan, P.H. Raven, M.A. Solis, A. G. Valdecasas, S. Van Der Leeuw, **A. Vasco**, N. Vermeulen, J. Vogel, R.L. Walls, E.O. Wilson & J.B. Woolley. 2012. Mapping the biosphere: exploring species to understand the origin, organization and sustainability of biodiversity. *Systematics and Biodiversity*, 10 (1), 1-20
- Sundue, M., **Vasco, A.** & Moran, R.C. 2011. Cryptochlorophyllous spores in ferns: Nongreen spores that contain chlorophyll. *International Journal of Plant Sciences*, 172 (9): 1110-1119. <https://doi.org/10.1086/662071>
- Vasco, A.** 2011. Taxonomic revision of *Elaphoglossum* subsection *Muscosa* (Dryopteridaceae). *Blumea* 56(2): 165-202. <https://doi.org/10.3767/000651911X592722>
- Benavides, A.M., **Vasco, A.**, Duque, A. J. & Duivenvoorden, J.F. 2011. Association of vascular epiphytes with landscape units and phorophytes in humid lowland forests of Colombian Amazonia. *Journal of Tropical Ecology* 27: 223-237 (Science 2011Editor's Choice, 332: 641-642). <https://doi.org/10.1017/S0266467410000726>
- Vasco, A.**, Moran, R.C. & Rouhan, G. 2009. Monograph of the *Elaphoglossum ciliatum* group (Dryopteridaceae). *Brittonia* 61 (3): 241-272. <https://doi.org/10.1007/s12228-009-9075-y>
- Vasco, A.**, Moran R.C. & Rouhan, G. 2009. Circumscription and phylogeny of the *Elaphoglossum ciliatum* group (E. sect. *Lepidoglossa*, Dryopteridaceae) based on cpDNA sequences. *Taxon* 58 (3): 825-834. <https://doi.org/10.1002/tax.583011>
- Vasco, A.** 2006. *Elaphoglossum gemmatum* (Elaphoglossaceae), a new proliferous species from Colombia. *Brittonia* 58 (1): 1-3. [https://doi.org/10.1663/0007-196X\(2006\)58\[1:EGEANS\]2.0.CO;2](https://doi.org/10.1663/0007-196X(2006)58[1:EGEANS]2.0.CO;2)
- Benavides, A.M., Duque, A. J., Duivenvoorden, J. F., **Vasco, A.** & Callejas, R. 2005. A first quantitative census of vascular epiphytes in rain forests of Colombian Amazonia. *Biodiversity and Conservation* 14: 739-758. <https://doi.org/10.1007/s10531-004-3920-9>

Non-peer Reviewed Publications

Book Chapters

- Vasco, A.** & Ocegüera-Figueroa A. F. 2016. Análisis de inferencia bayesiana con secuencias de ADN empleando el programa Beast2. In: Mata-López, R., A. N. Castañeda S., E. A. García, T., M. H. Escandón, M. B. Mendoza-Garfias y I. P. Cervantes Aguilar. (Coords.). *Manual de Prácticas de Sistemática Molecular y Bioinformática*. Las Prensas de Ciencias, Facultad de Ciencias, UNAM. México. Video: <https://youtu.be/2qCiFt4RUUk>

Vasco, A. 2011. *Elaphoglossum*. In: Flora De Antioquia, Catalog of Vascular Plants. Vol. 2. List of Vascular Plants of the Department of Antioquia. Programa Expedición Antioquia 2013. Pages 157 – 163.
(http://www.missouribotanicalgarden.org/Portals/0/staff/PDFs/ortiz/OrtizR2011Menispermaceae_Ant.pdf)

Book Reviews

Vasco, A. 2024. Ferns, Spikemosses, Clubmosses, and Quillworts of Eastern North America by Emily Sessa. *Journal of the Botanical Research Institute of Texas* 18 (2): 310

Vasco, A. 2008. Helechos arborescentes de Guatemala: distribución, diversidad, usos y manejo, by Mario Véliz and Jorge Vargas. *American Fern Journal* 98 (3): 178.

Others

Vasco, A., Matos, F.B., Sundue, M. 2021. Robbin C. Moran, Fern and Lycophyte Curator- an Appreciation. *The Botanical Review* 87: 151-166. <https://doi.org/10.1007/s12229-021-09254-2>

Miller J. S. & **Vasco, A.** 2012. Robbin C. Moran—recipient of the 2011 Peter Raven Award. *Systematic Botany* 37: 5–6.

IV ELECTRONIC MEDIA

www.fernsofcolombia.com

Vasco, A., R.C. Moran & M. Tulig (2008 and ongoing). *Elaphoglossum* pages: A web-based monograph of the fern genus *Elaphoglossum*. sweetgum.nybg.org/elaphoglossum

Vasco, A. & R.C. Moran & M. Tulig (2008 and ongoing). *Megalastrum*: an electronic monograph. sweetgum.nybg.org/megalastrum

V OUTREACH

Seminar: The Ferns of Colombia project, dialogues between science and art. Eagle Hill Institute, Maine, USA. August 15, 2024.

Live: Seeds of Science: Illuminations: gazes at the ferns of Colombia, behind the scenes. Medellín Botanic Garden. <https://www.youtube.com/watch?v=paMiyXceZ4>. June 5, 2024 (In Spanish).

Art+Science Exhibition: ILUMINACIONES: Miradas a los helechos en Colombia. Artist: Dornith Doherty. Medellín Botanical Garden, Colombia. June-November 2024.

Career day, Fort Worth Country School: How do you became a Scientist? (talk), How to study diversity: iNaturalist (Workshop). Fort Worth Country School. July 1, 2024.

Art+Science Exhibition: ILLUMINATIONS: Past, Present, and Future of Fern Research. Artist: Dornith Doherty. Botanical Research Institute of Texas February–June 2023.

Podcast: Studies on ferns in Colombia, their importance, and future projects. Natural...mente a podcast from the Institute of Natural Sciences at the National University of Colombia <http://radio.unal.edu.co/detalle/naturalmente-1-1>. Aired November 3, 2022.

Seminar: Ferns of Colombia: stories from the field. Fort Worth Botanic Garden and Botanical Research Institute of Texas. Fort Worth, September 20, 2022.

Podcast: The botanist who collects ferns for the science of the future. Entrespecies, a podcast that seeks to answer the question of how human beings connect with nature through interviews, narrations, and sound explorations.

- <https://www.elspectador.com/ciencia/la-botanica-colombiana-que-colecta-helechos-para-la-ciencia-del-futuro/>. Aired September 1, 2022.
- Seminar: Ferns of Colombia: stories from the field. Eagle Hill Institute, Maine, USA. August 25, 2022.
- Live: Botany Live: The Ferns of Colombia. A celebration of the 50 years of the Medellín Botanic Garden. <https://youtu.be/wCMMIZtYzRo>. August 10, 2022 (In Spanish).
- Talk: Stories that Google will never tell you: Stories of the fern life cycle! Minute 37:30 on <https://youtu.be/m693Isnzs-I>. Published March 22, 2021. (In Spanish).
- Article: Ferns represented at the Botany meetings: Reflecting on 2017 and looking forward to 2018. *The Fiddlehead Forum*, the American Fern Society Newsletter.
- Talk: The debate of the origin of ferns and flowering plants: <https://youtu.be/0nOnCxMMzLY>. Short video from the National Autonomous University of Mexico website about our research on fern leaf development. Published February 12, 2017. (In Spanish).

V MEDIA COVERAGE

- Article: El Espectador (one of the most widely read newspapers in Colombia): “Exhibition that shows Colombia is the country with most fern species in America” <https://www.elspectador.com/ambiente/la-exposicion-que-muestra-que-colombia-es-el-pais-con-mas-helechos-en-america/>. Published Aug 3, 2024 (In Spanish)
- Radio Interview: 1.410AM Medellín; Emisora Cultural UdeA; Illuminations exhibition at the Medellín Botanical Garden /Ferns of Colombia. June 6, 2025
- Article: Colombia Visible (online Colombian blog): “With 1,450 species, Colombia is also a power in this usually ignored plants” <https://colombiavisible.com/tag/helechos/>. Published, Feb 2023 (In Spanish)
- Article: El Espectador (one of the most widely read newspapers in Colombia): “The botanist that helps Colombia to know its great diversity of ferns” <https://www.elspectador.com/ciencia/la-botanica-que-le-ayuda-a-colombia-a-conocer-su-gran-diversidad-de-helechos/>. Published Nov 28, 2022 (In Spanish)
- Article: Forbes.com “Scientists Racing Against Time to Document Colombian Fern Species” <https://www.forbes.com/sites/andrewwright/2022/05/22/scientists-racing-against-time-to-document-colombian-fern-species/?sh=75b3c17b465f>. Published May 22, 2022.
- Radio segment: NPR Kera news “Fort Worth Researchers Awarded Grant to Study Blueberries & Ferns — But COVID May Slow Their Work” <https://www.keranews.org/2021-02-05/fort-worth-researchers-awarded-grant-to-study-blueberries-ferns-but-covid-may-slow-their-work>. Published February 5, 2021.
- Article: New data on the development and evolution of leaves, *Boletín Academia Mexicana de Ciencias*, 003, 2017. <http://www.comunicacion.amc.edu.mx/comunicados/nuevos-datos-acerca-del-desarrollo-y-la-evolucion-de-las-hojas>. Published in the Bulletin of the Mexican Academy of Sciences, and in the Mexican Newspaper “La Jornada” about our research on leaf evolution and development. Published January 6, 2017. (In Spanish)
- Article: Evolutionary biology explains the diversity in seedless vascular plants <http://www.conacytprensa.mx/index.php/ciencia/mundo-vivo/10003-biologia-evolutiva-para-entender-la-diversidad-en-plantas-vasculares-sin-semilla-nota-de-la-reunion-de-la-amc>. Published in the Mexican National Council of Science and Technology (CONACYT) on-line journal. Published September 5, 2016. (In Spanish)

Editor choice: Elucidating epiphytic diversity, *Science* 2011, Editor's Choice, 332: 641-642. Note about our paper on Amazonian epiphytes, in the section of the Editor choice of the journal *Science*.

VI GRANTS, FELLOWSHIPS, AND AWARDS

- National Science Foundation Research Grant (DEB-2045319). 2021-2025. "PurSUIT: Collaborative Research: Accelerating Lineage Discovery to Document Neotropical Fern Diversity" PI. (736,105 US Dollars)
- Texas Parks and Wildlife, License Plate Grant, 2021-2025. "Delineating the Species Identity of the State Threatened Rock Quillwort (*Isoetes lithophila* N. Pfeiffer), Part I and II". Co-PI. (44,500 US-Dollars)
- Western National Parks Association 2020-2023. "Unveiling a potential new species of California Jewelflower endemic to Pinnacles National Park". Co-PI (10,000 US Dollars)
- National Science Foundation, Advancing Digitization of Biological Collections (ADBC) program (ADBC-1802270). 2018-2021. "Digitization TCN: Collaborative Research: The Pteridological Collections Consortium: An integrative approach to pteridophyte diversity over the last 420 million years" PI. (59,221 US Dollars)
- CONACYT (Mexican National Council of Science and Technology), Support for the Strengthening and Development of Scientific and Technological Infrastructure. 2016. "Establishment of the Laboratory of Functional Genomics and Systems for the Study of the Economic and Cultural Diversity of Mexico". Co-PI (400.000 US Dollars)
- National Autonomous University of Mexico, Program UNAM-DGAPA-PAPIIT (IA201416) Research Grant. 2016-2017. "Evolutionary history and diversity of the hiperdiverse genus of tropical ferns *Elaphoglossum* (Dryopteridaceae) in Mexico" (50.000 US Dollars)
- FAPERJ (Foundation for Research Support of the State of Rio de Janeiro, Brazil). 2016-2017. "Morphological and phylogenetic diversification in *Diplazium* (Athyriaceae) in the Neotropical region" In conjunction with Dr. Claudine Mynssen from the Rio de Janeiro Botanical Garden. (7.000 US Dollars)
- CONACYT (Mexican National Council of Science and Technology), Academic Internships for Foreigner Researchers. 2014-2015. Research in collaboration with Dr. Teresa Terrazas, (24.000 US Dollars)
- National Science Foundation Research Grant (DEB-1020443). 2010-2013. "Taxonomic Revision, Phylogenetic Analysis, and Leaf Evolution in *Elaphoglossum* sect. *Squamipedia* (Dryopteridaceae)". Collaborative proposal with Drs. Robbin Moran and Barbara Ambrose as PIs. (337.499 US Dollars)
- City University of New York, Doctoral Program, Student Research Grant. 2006 & 2008.
- Explorers Club, exploration fund grant. 2007. "Systematics of *Elaphoglossum* subsection *Muscosa*: what does a group of tropical ferns tell about Andean biogeography?" Award to cover part of the costs to do fieldwork in Colombia and Venezuela.
- Cuatrecasas Award, US National Herbarium. 2007. "Monograph and phylogenetic study of *Elaphoglossum* subsection *Muscosa* (Dryopteridaceae)". Award to visit the US National Herbarium for two weeks.
- Delzie Demaree Travel Award. 2007. Award to attend the 53rd Annual Systematics Symposium at the Missouri Botanical Garden and visit the MO herbarium.

City University of New York, Graduate Center, Sue Rosenberg Zalk Student Travel and Research Fund. 2006, 2007, 2008, and 2009

Lehman College, Department of Biological Sciences, City University of New York. 2004. Funds for laboratory and field supplies.

TROPENBOS International Foundation. 2001-2002. Undergraduate Research in Biodiversity Grant. Floristic composition and distribution of vascular epiphytes in the Chiribiquete National Park, Colombian Amazonia.

VII ABSTRACTS PUBLISHED AND PRESENTATIONS IN CONGRESSES

(last 5 years, a complete list is available upon request)

Invited symposium or round table; * presented by the indicated co-author; ^ undergrad student

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- Vasco, A.**, Sundue M., Vega-Betancur, S., Morris S., Vargas, L., Sasan K., Testo, W.* Ferns of Colombia: what we know, what we've learned, and what remains to be discovered. *Botany 2025* (Botanical Society of America Annual Meeting). Palm Springs, CA, July 26-30.
- Vargas, L.*, Moran, R.C. & **Vasco, A.** 2025. Phylogeny and Character Evolution in the Fern Clade *Elaphoglossum* sect. *Lepidoglossa* (Dryopteridaceae). *Botany 2025* (Botanical Society of America Annual Meeting). Palm Springs, CA, July 26-30.
- Pascarella, G.*^, Stripe, M., Sasan, K., **Vasco, A.** Perine evolution in the fern group *Elaphoglossum* sect. *Lepidoglossa* (Dryopteridaceae). (Poster) *Botany 2025* (Botanical Society of America Annual Meeting). Palm Springs, CA, July 26-30.
- Martinez-Becerril, A.G.*# & **Vasco, A.**, Testo, W., Nejapa, R., Pace, M., Schuettelpelz, E. Rhizome Vascular Anatomy and Growth Form Evolution in the Fern Genus *Elaphoglossum* (Dryopteridaceae). *Botany 2025* (Botanical Society of America Annual Meeting). Palm Springs, CA, July 26-30.
- George, L., Kinoshian, S.*, Suissa, J., **Vasco, A.** Homoploid hybridization and animal dispersal in the Texas endemic rock quillwort (*Isoetes lithophila*). *Botany 2025* (Botanical Society of America Annual Meeting). Palm Springs, CA, July 26-30.
- Nitta, J.*, Testo, W., Sundue, M., **Vasco, A.**, Frederiksen, L., Tuomisto, H., Ebihara, A. A backbone for filmy ferns: Resolving deep relationships in Hymenophyllaceae with next-generation DNA sequencing. *Botany 2025* (Botanical Society of America Annual Meeting). Palm Springs, CA, July 26-30.
- Vargas, L.* & **Vasco, A.** 2024. Systematics of the *Elaphoglossum Dendricola* Clade (*Elaphoglossum* sect. *Lepidoglossa*, Dryopteridaceae), a Neotropical group of ferns (Poster). XX International Botanical Conference, Madrid, Spain, 21–27 July.
- Vega, S.*#, **Vasco, A.**, Testo, W. & Callejas, R. 2024. Understanding the diversity of spikemosses in the American Tropics: An update of the taxonomy of *Selaginella* in Colombia. Symposium: Neotropical botanical inventories: documenting what is left? perspectives from across tropical Americas. XX International Botanical Conference, Madrid, Spain, 21–27 July.
- Martinez-Becerril, A.G.*# & **Vasco, A.** 2024. Risk assessment and categorization proposals for *Elaphoglossum* species (Dryopteridaceae) in Mexico. Symposium: Neotropical botanical inventories: documenting what is left? perspectives from across tropical Americas. XX International Botanical Conference, Madrid, Spain, 21–27 July.
- Vasco, A.**# & Testo, W. 2024. *Elaphoglossum* phylogenomics: perspectives and challenges in the study of one of the most diverse groups of tropical ferns. Symposium: Fern and Lycopphyte evolution: a phylogenomic perspective. XX International Botanical Conference, Madrid, Spain, 21–27 July.

- Vasco, A.[#]**, Testo, W., Sundue, M., Vega-Betancur, S., Morris, L. Vargas, K. Sasan. 2024. Ferns of Colombia: Accelerating Lineage Discovery to Document Neotropical Fern Diversity. Symposium: Neotropical botanical inventories: documenting what is left? perspectives from across tropical Americas. XX International Botanical Conference, Madrid, Spain, 21–27 July.
- Vasco, A.[#]**, Testo, W., Sundue, M., Vega-Betancur, S., Morris. 2023. The Ferns of Colombia Project: Accelerating Lineage Discovery to Document Neotropical Fern Diversity. Colloquium: Neotropical Pteridology: A Dedication to Robbin Moran. *Botany 2023* (Botanical Society of America Annual Meeting). Boise, Idaho, July 22-26.
- Testo, W.* and **Vasco, A.** 2023. A phylogenomic study of *Elaphoglossum* provide new insights and highlight persistent challenges in the study of diverse tropical fern groups. *Botany 2023* (Botanical Society of America Annual Meeting). Boise, Idaho, July 22-26.
- Martinez-Becerril, A.G.*[#] & **Vasco, A.** Taxonomic revision of the *Petiolatum* Clade (*Elaphoglossum*, Dryopteridaceae). Colloquium: Neotropical Pteridology: A Dedication to Robbin Moran. *Botany 2023* (Botanical Society of America Annual Meeting). Boise, Idaho, July 22-26.
- George, L.*[#], **Vasco, A.**, George, S., Stacy, J., Stripe, M. 2023. Conserving Quillworts: Amphibious lycophytes of the Llano Uplift rock outcrops. In: Texas Plant Conservation Conference, Fort Worth, TX. Aug 14-15.
- Vargas, L.*[#], **Vasco, A.**, Aguirre-Santoro, J. 2022. Synopsis of the group of ferns *Elaphoglossum* section *Lepidoglossa* Christ (Dryopteridaceae) for Cundinamarca, Colombia. In: *XI Colombian Botanical Congress*, Villavicencio. Nov 6-10.
- Vega-Betancur, S.*[#], Callejas, R., Testo, W., **Vasco, A.** 2022. Taxonomic revision of the genus *Selaginella* in Antioquia, Colombia. In: *XI Colombian Botanical Congress*, Villavicencio. Nov 6-10.
- Vasco, A.**, Testo, W., Sundue, M., Vega-Betancur, S., Morris, S., Cardona-Naranjo, F., Castro-Hernández, J., Giraldo, L.F., Idárraga, A., Rodríguez-Duque, W. 2022. A collaborative project to better understand the ferns of Colombia. In: *XI Colombian Botanical Congress*, Villavicencio. Nov 6-10.
- Vasco, A.[#]**, Vargas, L.[^], Testo, W., Benavides, A. 2022. Epiphytic ferns from Colombia: notes on the genus *Elaphoglossum*. In: Epiphytes Symposium at the *XI Colombian Botanical Congress*, Villavicencio. Nov 6-10.
- Martinez-Becerril, A.G.*[#], Solano, E. & **Vasco, A.** 2022. The taxonomic challenge within the *Elaphoglossum petiolatum* complex: morphology and DNA. XII Mexican Botanical Conference. Puebla September 25-30.
- Vasco, A.**, Testo, W., Lóriga, J., Martínez-Becerril, A.G., Rodríguez, A., Matos, F.B., Moran, R.C., Rouhan, G., Sessa, E., Burleigh, G. 2021. Phylogenomics and historical perspectives in the fern genus *Elaphoglossum* (Dryopteridaceae). In: *Botany 2021 online* (Botanical Society of America Annual Meeting). July 19-23.
- Martinez-Becerril, A.G.*[#] & **Vasco, A.** Disentangling the systematics of the *Elaphoglossum petiolatum* complex (Dryopteridaceae). In: *Botany 2021 online* (Botanical Society of America Annual Meeting). July 19-23. *Wherry Award for best presentation at the Pteridological Section.
- Vasco, A.** & Testo, W. 2021. The fern genus *Elaphoglossum*, insights on their habit evolution. First Colombian Symposium of Epiphytes. Medellín Botanical Garden. Online: <https://youtu.be/Bvyam3qqEag> (In Spanish: 1:08-1:26)

VIII INVITED TALKS (excluding meetings and congresses)

(last 5 years, a complete list is available upon request)

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- September 2024. Medellin Botanical Garden, 2nd research Symposium. Ferns of Colombia (in Spanish).
- February 2024. The ferns of Colombia project, accelerating lineage discovery to document Neotropical fern diversity. Texas Christian University, Biology departmental seminar.
- October 2023. Stories of one of the most diverse genera of ferns: *Elaphoglossum*. Organization for Tropical Studies, 60th Anniversary Talks (virtual, seminar in Spanish).
- September 2023. The fern life cycle, living a double life. Fern Study Group, University of Antioquia, Colombia (virtual, seminar in Spanish).
- May 2023. Accelerating lineage discovery to document Neotropical fern diversity. Smithsonian Botanical Symposium "New Horizons in the Study of Neotropical Floras," Washington, DC, USA.
- May 2023. "Illuminations: Past, Present, and Future of Fern Research," a talk about the exhibition and its convergence of art and science. 55th Annual Council on Botanical and Horticultural Libraries Annual Meeting, Virtual.
- October 2022. Colombia, a country of ferns. Travel stories. Biology Institute, National University of Colombia, Bogotá, Colombia (seminar in Spanish).
- April 2022. WeDigBio2022, Spotlight on Fern Research: Exploring Colombia one fern at a time. Botanical Research Institute of Texas, USA.
- November 2021. International Seminar on Diversity, Ecology, and Conservation of Pteridophytes organized by the University of Veracruz, Mexico. "Phylogenomics and evolutionary history of the fern genus *Elaphoglossum* (Dryopteridaceae)" (virtual, seminar in Spanish). Online: <https://youtu.be/yf4in5tAi4Y> (min 49:30- 1:23:00).
- October 2021. Botanical Institute of the Northeast, Argentina. "Taxonomic history and Phylogenomics of the fern genus *Elaphoglossum*" (virtual, seminar in Spanish).
- April 2021. WeDigBio2021, Spotlight on Herbarium Research: Epiphytes! The New York Botanical Garden, Bronx, NY, USA. Online: <https://youtu.be/jvCsWFkdOAw> (min 15-32).
- March 2021. Exploring the evolution and genetic basis for leaf morphology differences in the fern genus *Elaphoglossum*. Plant Biology Department Seminar, University of Vermont.
- February 2021. From the field to the lab, leaf evolution and development in the fern genus *Elaphoglossum*. Botany Lunch seminar series, University of California Berkley.

X TEACHING EXPERIENCE

(last 5 years, a complete list is available upon request)

-
- Biology of Ferns and Lycophytes.** Co-taught with: Drs. Robbin C. Moran and Weston Testo. Eagle Hill Research Institute, Steuben, Maine, USA. August 18 – 23, 2025 (40 hours).
- Tropical Ferns and Lycophytes.** Graduate Level. Organization for Tropical Studies (OTS), Universidad de Costa Rica. Jan 3-21, 2025 (140 hours).
- Modern and traditional tools for the study of ferns and lycophytes.** Graduate Level. National School of Tropical Botany, Rio de Janeiro Botanical Garden. October 21-27, 2024 (60 hours).
- Biology of Ferns and Lycophytes.** Co-taught with: Dr. Robbin C. Moran. Eagle Hill Research Institute, Steuben, Maine, USA. August 11 – 17, 2024 (40 hours).

- Seedless Vascular Plants.** Undergrad Level. Invited lecture and Lab for the Biology students, University CES, Colombia. February 13, 2024 (4 hours).
- Assigned Problems in Evolutionary Plant Biology.** Graduate level. Texas Christian University, Fall 2023 (2 credits).
- Diversity and Taxonomy of Ferns and Lycophytes of the Dominican Republic.** Invited Teacher. Undergraduate level. Dominican Republic Botanical Garden. Dominican Republic (online). Dec 7 and 8, 2023 (8 hours).
- Biology of Ferns and Lycophytes.** Co-taught with: Dr. Robbin C. Moran, Eagle Hill Research Institute, Steuben, Maine, USA. August 20 – 26, 2023 (40 hours).
- Ferns and lycophytes of Colombia.** Workshop for undergrad students at the University of El Valle, Cali, Colombia. June 23, 2023 (8 hours).
- Ferns and lycophytes of Colombia: Modern and traditional tools for their study.** Workshop for undergrad students with Weston Testo and Susana Vega-Betancur, as part of the XI Colombian Botanical Conference, Meta University, Villavicencio, Colombia. November 4 and 5, 2022 (16 hours).
- Biology of Ferns and Lycophytes.** Co-taught with: Dr. Robbin C. Moran. Eagle Hill Research Institute, Steuben, Maine, USA. August 21 – 27, 2022 (40 hours)
- Tropical Ferns and Lycophytes.** Graduate Level. Organization for Tropical Studies (OTS), Universidad de Costa Rica. June 7-23, 2022 (140 hours).
- Modern and traditional tools for the study of ferns and lycophytes.** Graduate Level. National School of Tropical Botany, Rio de Janeiro Botanical Garden. November 1-10, 2021 (60 hours, virtual).
- The wild world of ferns.** Adult Education Class. Botanical Research Institute of Texas. January 23, 2021 (2 hours, virtual)

XI STUDENT MENTORING

PhD

- Co-advisor.** Laura Lucía Vargas. Systematics of the *Elaphoglossum dendricola* clade (Funded by NSF grant Ferns of Colombia). Biology, Texas Christian University. Started Fall 2023
- Advisor.** Ana Gabriela Martinez. Systematics of the Mexican species of the *Elaphoglossum petiolatum* complex. National Autonomous University of Mexico. Defense February 11, 2023.

Master

- Co-advisor.** Jonatan Castro. National School of Tropical Botany, Rio de Janeiro Botanical Garden. Started Spring 2025
- Co-advisor.** Susana Vega-Betancur. The genus *Selaginella* in Antioquia (Colombia). Biology Institute, University of Antioquia, Colombia. Defense December 12, 2023.
- Co-advisor.** Carolina Rodríguez. *LEAFY* and *PEBP* floral genes expression in lycophytes and ferns. Biology Institute, University of Antioquia, Colombia. Defense May 7, 2021.

Bachelor

- Co-advisor.** Eulalia Vásquez Perez, Eulalia. Lycophytes and ferns of the Municipio de Nuevo Zoquiapan, Sierra Norte of Oaxaca, Mexico. Universidad de la Sierra Juárez. Defense, July 2024.
- Co-advisor.** Laura Lucía Vargas. *Elaphoglossum* section *Lepidoglossa* of the department of Cundinamarca, Colombia. National University of Colombia. Defense July 5, 2022.

Co-advisor. Susana Vega-Betancur. The genus *Selaginella* in the Department of Antioquia, Colombia. University of Antioquia, Colombia. Defense Dec 17, 2019.

Co-advisor. Brenda Hernández. *Asymmetric leaves 1* and *2* genes in ferns. National Autonomous University of Mexico. Defense June 14, 2019.

Co-advisor. Carolina Rodriguez. Genetic control of dimorphic leaves in ferns. University of Antioquia, Colombia. Defense, November 28, 2017.

Advisor. Jorge Arias. Morphology and anatomy of Eupolypoid II ferns. National Autonomous University of Mexico. Defense, May 18, 2017.

Graduate committee member

PhD

Aragón, Alejandro A. Exploring root development in ferns as an approach to assess their evolution in vascular plants - Morphological and gene expression analysis of the root apical meristem in *Ceratopteris richardii*. PhD in Integrative Biology, Center for Research and Advanced Studies of the National Polytechnic Institute of Mexico (CINVESTAV). 2017-2021. Defense July 9, 2021.

Cruz, Rafael. Leaf Ontogeny in Dryopteridaceae, under the continuous morphological approach of Agnes Arber. PhD in Biology. University of Sao Paulo, Brazil. 2014-2018.

Master

Petrone, Emilio. Functional Inferences of dimorphic wood through transcriptome analysis in Cactaceae. Master's in Sciences, National Autonomous University of Mexico. Defense, Feb 21, 2018.

Bachelor

Bravo, William. Ferns and Fern Allies of the Forest Reserve Bijagual, Boyaca, Colombia. Pedagogical and Technological University of Colombia, Tunja, Colombia. April 2013.

Thesis defense committee

PhD

Lino, Vanessa. Sistemática Filogenética do clado *Asplenium mucronatum* (Aspleniaceae). Federal University of Rio de Janeiro, National Museum. Graduate Program in Biological Sciences (Botany). Nov 1, 2024.

Viera, Thiago C. Taxonomy and phylogeny of the neotropical species of the *Asplenium serra* complex. National Museum of the Federal University of Rio de Janeiro. April 27, 2023.

Aragón, Alejandro A. Exploring root development in ferns as an approach to assess their evolution in vascular plants - Morphological and gene expression analysis of the root apical meristem in *Ceratopteris richardii*. PhD in Integrative Biolgy, Center for Research and Advanced Studies of the National Polytechnic Institute of Mexico (CINVESTAV). July 9, 2021.

Matos, Fernando B. Systematic Studies of *Elaphoglossum* section Polytrichia (Dryopteridaceae). PhD in Plant Sciences, City University of New York / The New York Botanical Garden. July 20, 2015.

Master

Rativa, Cristian Camilo. Taxonomic revision of the family Cyatheaceae Kaulf. for the department of Quindío, Colombia. Qunidío University, Colombia. Dec 1, 2022.

Reis, Atilés. Taxonomy of the *Asplenium serratum* complex (Aspleniaceae) in the Brazilian Atlantic Forest. Federal University of Rio de Janeiro, National Museum. Graduate Program in Biological Sciences (Botany). Aug 30, 2022.

- Bastos, Luiza M. Conservation biology of *Pteris congesta* (Pteridaceae): an endemic and endangered species. Graduate Program in Botany, National School of Tropical Botany, Rio de Janeiro Botanical Garden Research Institute. June 29, 2021.
- Yáñez, Marisela. Phylogeny of the genus *Strophocactus* (Cactaceae). National Autonomous University of Mexico. March 29, 2017.
- Gonzalez-Ramirez, Ixchel Sarahí. Diversity of Cretaceous fossil conifers in the state of Chiapas, Mexico. National Autonomous University of Mexico. March 10, 2017.
- Maussan-Pérez, Ana Isabel. Density of veins in leaves of the Miocene fossil localities of San Esteban Tizatlán, Tlaxcala and Ixtapa, Chiapas, a method for use as a possible tool in paleoclimatic interpretations. National Autonomous University of Mexico. October 20, 2015.
- Benitez-Villaseñor, Adriana. The floral structure diversification of pentamer Eudicots. National Autonomous University of Mexico. October 15, 2015.

Academic Internship director:

- Undergrad student (Summer REU Intern, funded by NSF) Sereen Elkhaliq from University of Oklahoma, USA. June–July 2025.
- Undergrad student (Fall and Spring REU Intern, funded by NSF) Grace Pascarella from University of North Texas, USA. June 2024 – May 2025.
- Undergrad student (summer Intern) Iván Rosales from University of Texas Arlington, USA. June–August 2019.
- Undergrad student (summer Intern) Lani DuFresne from Rice University, USA. June–August 2018.
- Undergrad student (summer Intern) Eulalia Pérez Vásquez from the Universidad de la Sierra Juárez, Ixtlan, Oaxaca. August–September 2015.
- Undergrad student (Summer Intern) Christian Adolfo Lopez from the University of Panama, Panama. July 15 to August 28, 2015.
- Visiting Professor Gabriel Gonzales Adame from the Universidad de la Sierra Juárez, Ixtlan, Oaxaca, August 2015.
- Master's student Josmaily Lóriga from the Institute of Ecology and Systematics of Havana, Cuba. August–November 2012
- Summer Intern Ana Kudla, under the NSF program "Research Opportunities for Undergrads". May–July 2010
- Summer Intern Maya Smith, under the NSF program "Research Opportunities for Undergrads". May–July 2009

XII OTHER ACTIVITIES

Review services: Actualidades Biológicas (2011, 2012), American Fern Journal (2011, 2016, 2017, 2019, 2020, 2021), Annals of the Brazilian Academy of Sciences (2017), Annals of the Missouri Botanical Garden (2019), Biological Journal of the Linnean Society (2022), Blumea (2010), Bonplandia (2011), Botanica Complutensis (2021), Botanical Journal of the Linnean Society (2021), Botanical Sciences (2014, 2015, 2021), Brittonia (2005, 2014, 2016, 2019), Cladistics (2014), Darwiniana (2008), Flora (2015, 2020), Flora de Colombia (2015), Frontiers in Plant Science (2019), International Journal of Plant Sciences (2017), International Journal of Tropical Biology and Conservation (2017), Journal of the Botanical Research Institute of Texas (2021), Journal of the Torrey Botanical Society (2011), Molecular Systematics and Evolution (2017), Phytotaxa (2012, 2018), PLOS One (2014), Revista Ecuatoriana de Botanica (2021),

Revista Mexicana de Biodiversidad (2016, 2017, 2024), Rodriguésia (2015), Scientific Reports (2019), Species Status Assessment Report (US Fish and Wildlife Service, 2025), Systematic Botany (2012, 2013, 2015, 2016, 2017, 2018)

Grant Reviewer:

Proposal Reviewer, National University of Colombia “National call for research, artistic creation, and innovation projects 2024”, October 2024.

Proposal Reviewer, National Science Foundation, Division of Environmental Biology, USA. October 2021

Full Proposal Review Panel, National Science Foundation, Division of Environmental Biology, USA. February 2021

Proposal Reviewer, National Science Foundation, Division of Environmental Biology, USA. October 2017

Technical Committee for Project Evaluation, Foundation for the Promotion of Research and Technology, Bogotá, Colombia. May 2018, September 2015, November 2014, and August 2013

Abstract reviewer on Developmental Biology, VIII Colombian Congress of Botany, 2015.

Committee for the Development of Research (Codi), Region specific problems, University of Antioquia, Medellín, Colombia. October 2014

Committee for the Development of Research (Codi), Natural Sciences, University of Antioquia, Medellín, Colombia. February 2013.

Book Reviewer:

Lycophytes and Ferns of Brazil, Biology and Taxonomy. 2023. University of the Rio de Janeiro State, Brazil. Pag 842. (Written in Portuguese)

Field Work:

Brazil: 2010, 2014, 2017, 2024

Colombia: more than 10 expeditions between 2001 and 2025

Costa Rica: 2001, 2007, 2015, 2017, 2019

Ecuador: 2010, 2013, 2018

Mexico: More than 5 expeditions between 2013 and 2016

United States: More than 5 expeditions between 2004 and 2024

Venezuela: 2008

Professional Societies Member: American Fern Society, American Society of Plant Taxonomists, Botanical Society of America, Colombian Botanical Association, International Association of Plant Taxonomists, Society of Herbarium Curators, The Hardy Fern Foundation.

October, 2025