

CURRICULUM VITAE

Damon P. Little

New York Botanical Garden
Bronx, New York 10458-5126

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APPOINTMENTS

2022–present. Curator of Bioinformatics. Center for Biodiversity & Evolution. New York Botanical Garden (Bronx, New York).

2014–2022. Associate Curator of Bioinformatics. Lewis B. and Dorothy Cullman Program for Molecular Systematics. New York Botanical Garden (Bronx, New York).

2008–present. Doctoral Faculty. The Graduate School and University Center of the City University of New York (New York, New York).

2007–2014. Assistant Curator of Bioinformatics. Lewis B. and Dorothy Cullman Program for Molecular Systematics. New York Botanical Garden (Bronx, New York).

2007–present. Montgomery Botanical Research Fellow. Montgomery Botanical Center (Coral Gables, Florida).

2004–2007. Postdoctoral Research Associate. Lewis B. and Dorothy Cullman Program for Molecular Systematics. New York Botanical Garden (Bronx, New York). Supervisor: D.Wm. Stevenson.

EDUCATION

1998–2005. Cornell University (Ithaca, New York). Ph.D. program in systematic botany. Dissertation: Evolution and circumscription of the true cypresses (Cupressaceae: *Cupressus* and *Callitropsis*): a combined molecular and morphological approach. Committee: Jeff J. Doyle (representing the plant molecular biology minor), Melissa A. Luckow (representing the plant anatomy minor), Kevin C. Nixon (committee chair, representing plant systematics), Quentin D. Wheeler (representing the comparative zoology minor).

1994–1998. University of Vermont (Burlington, Vermont). Bachelor of Science specializing in botany.

PROGRAMMING AND SCRIPTING LANGUAGES

AWK, BASH, C, C++, Go, JavaScript, Perl, Python, R, SQL, and TypeScript.

GitHub: <https://github.com/dpl10>

CONTRIBUTED PAPERS—REGULAR PUBLICATIONS

Little, D.P. and M. Tessler. Submitted. AI for difficult herbarium specimens: identification of peat mosses (section *Sphagnum*) without dissection. *New Phytologist*.

Park, J.Y. and D.P. Little. Submitted. First principles of deep herbarium classifiers: high-pixel density learning improves the performance and efficiency of digitised herbarium identification. *New Phytologist*.

Salinas, N.R., G. Eshel, G.M. Coruzzi, R. DeSalle, M. Tessler, and D.P. Little. 2024. BAD2matrix: phylogenomic matrix concatenation, indel coding, and more. *Applications in Plant Sciences* e11604.

Park, J., R. de Lutio, B. Rappazzo, B.A. Ambrose, F.A. Michelangeli, K.A. Watson, S.J. Belongie, and D.P. Little. 2024. NAFlora-1M: A continental-scale fine-grained plant classification dataset. *Data-centric Machine Learning Research* (9): 1–21.

Stevenson, D.Wm., S. Ramakrishnan, C. de Santis Alves, L. Araujo Coelho, M. Kramer, S. Goodwin, O. Mendevil Ramos, G. Eshel, V.M. Sondervan, S. Frangos, C. Zumajo-Cardona, K. Jenike, S. Ou, X. Wang, Y.P. Lee, S. Loke, M. Rossetto, H. McPherson, S. Nigris, S. Moschin, D.P. Little, M.S. Katari, K. Varala, S.–O. Kolokotronis, B. Ambrose, L.J. Croft, G.M. Coruzzi, M. Schatz, W.R. McCombie, R.A. Martienssen. 2023. The genome of the Wollemi pine, a critically endangered living fossil unchanged since the Cretaceous, reveals extensive ancient transposon activity. *bioRxiv* 2023.08.24.554647.

Stewart, R.D., J.A.R. Clugston, J. Williamson, H.J. Niemann, D.P. Little, M. van der Bank. 2023. Species relationships and phylogenetic diversity of the African genus *Encephalartos* Lehm. (Zamiaceae). *South African Journal of Botany* 152 (2023): 165–173.

Ling, T.C. A. Inta, K.E. Armstrong, D.P. Little, P. Tiansawat, Y.–P. Yang, P. Phokasem, K.Z. Tuang, C. Sinpoo, T. Disayathanoowat. 2022. Traditional knowledge of textile dyeing plants: a case study in the Chin ethnic group of northwestern Myanmar. *Diversity* 14: 1065.

de Lutio, R., J.Y. Park, K.A. Watson, S. D’Aronco, J.D. Wegner, J.J. Wieringa, M. Tulig, R.L. Pyle, T.J. Gallaher, G. Brown, G. Guymer, A. Franks, D. Ranatunga, Y. Baba, S.J. Belongie, F.A. Michelangeli, B.A. Ambrose, and D.P. Little. 2022. The Herbarium 2021 Half-Earth challenge dataset and machine learning competition. *Frontiers in Plant Science* 12: 787127. [Winner of the Marsh Director’s Choice Publication Award from the Royal Botanic Gardens Kew.]

- Zumajo–Cardona, C., D.P. Little, D. Stevenson, B.A. Ambrose. 2021. Expression analyses in *Ginkgo biloba* provide new insights into the evolution and development of the seed. *Scientific Reports* 11: 21995.
- Paradiso, L. and D.P. Little. 2021. Authentication of garlic (*Allium sativum* L.) supplements using a *trnL*^{UAA} mini–barcode. *Genome* 64 (11): 1021–1028.
- Diaz–Silveira, G. L., J. Deutsch, and D. P. Little 2021. DNA Barcode authentication of devil’s claw herbal dietary supplements. *Plants* 10 (10): 2005.
- de Lutio, R., D. Little, B. Ambrose, and S. Belongie. 2021. The Herbarium 2021 half–earth challenge dataset. FGVC8 Workshop at CVPR 2021. arXiv:2105.13808.
- Little, D.P. 2020. Recognition of Latin scientific names using artificial neural networks. *Applications in Plant Sciences* 8 (7): e11378.
- Little, D.P., M. Tulig, K.C. Tan, Y. Liu, S. Belongie, C. Kaeser–Chen, L.M. Kelly, F.A. Michelangeli, B.M. Thiers, K. Panesar, R.V. Guha, and B.A. Ambrose. 2020. An algorithm competition for automatic species identification from herbarium specimens. *Applications in Plant Sciences* 8 (6): e11365.
- Meyer, R.S., D.P. Little, Whitaker B.D., and A. Litt. 2019. The genetics of eggplant nutrition. Pp. 23–32 in M. Chapman, ed. *Eggplant Genome*.
- Peng, H., R.S. Meyer, T. Yang, B.D. Whitaker, F. Trouth, L. Shangguan, J. Huang, A. Litt, D.P. Little, H. Ke, and W.M. Jurick II. 2019. A novel hydroxycinnamoyl transferase for synthesis of hydroxycinnamoyl spermine conjugates in plants. *BMC Plant Biology* 19: 261.
- Clugston, J.A.R., M.P. Griffith, G.J. Kenicer, C.E. Husby, M.A. Calonje, D.P. Little, and D.W. Stevenson. 2018. Reproductive phenology of *Zamia* L.: a comparison between wild cycads and their cultivated counterparts. *Memoirs of The New York Botanical Garden* 117 (1): 433–462.
- Rousseau, P., P.J. Vorster, D.P. Little, and M. van der Bank. 2018. DNA barcoding Africa’s endemic cycads. *Memoirs of The New York Botanical Garden* 117 (1): 297–334.
- Hernández–León, S., D.P. Little, O. Acevedo–Sandoval, D.S. Gernandt, R. Rodríguez–Laguna, M. Saucedo–García, O. Arce–Cervantes, R. Razo–Zárate, and J. Espitia–López. 2018. Plant core DNA barcode performance at a local scale: identification of the conifers of the state of Hidalgo, Mexico. *Systematics and Biodiversity* 16: 791–806.
- Forest, F., E. Baloch, N.A. Brummitt, S. Bachman, J. Moat, S. Ickert–Bond, P.M. Hollingsworth, A. Liston, D.P. Little, S. Mathews, H. Rai, C. Rydin, D.W. Stevenson, P. Thomas, and S. Buerki. 2018. Gymnosperms on the EDGE. *Scientific Reports* 8: 6053.
- Clugston, J.A.R., M.P. Griffith, G.J. Kenicer, C.E. Husby, M.A. Calonje, D.Wm. Stevenson, and D.P. Little. 2016. *Zamia* (Zamiaceae) phenology in a phylogenetic context: does *in situ* reproductive timing correlate with ancestry? *Edinburgh Journal of Botany* 73 (3): 345–370.

- Meyer, R.S., B.D. Whitaker, D.P. Little, S.-B. Wu, E.J. Kennelly, C.-L. Long, and A. Litt. 2015. Parallel reductions in phenolic constituents resulting from the domestication of eggplant. *Phytochemistry* 115: 194–206.
- Little, D.P. 2014. Authentication of *Ginkgo biloba* herbal dietary supplements using DNA barcoding. *Genome* 57 (9): 513–516.
- Gorelick, R., D.L. Fraser, B.J.M. Zonneveld, and D.P. Little. 2014. Cycad (Cycadales) chromosome numbers are not correlated with genome size. *International Journal of Plant Sciences* 175 (9): 986–997.
- Little, D.P. 2014. A DNA mini–barcode for land plants. *Molecular Ecology Resources* 14 (3): 437–446.
- Salinas, N.R. and D.P. Little. 2014. 2matrix: a utility for indel coding and phylogenetic matrix concatenation. *Applications in Plant Sciences* 2 (1): 1300083.
- Little, D.P. and M.L. Jeanson. 2013. DNA barcode authentication of saw palmetto herbal dietary supplements. *Scientific Reports* 3: 3518.
- Little, D.P., P. Knopf, and C. Schulz. 2013. DNA barcode identification of Podocarpaceae—the second largest conifer family. *PLoS ONE* 8 (11): e81008.
- Okunji, C.O., G.I. Giancaspro, N. Sarma, D.H. Reynaud, and D.P. Little. 2013. DNA–based methods for authentication of articles of botanical origin. *Pharmacopeial Forum* 39 (5).
- Meyer, R.S., S. Knapp, A. Litt, K.G. Karol, D.P. Little, and M. Nee. 2013. Reply to J. Samuels: Taxonomic notes on several wild relatives of *Solanum melongena* L. *Molecular Phylogenetics and Evolution* 69 (1): 306–307.
- Hall, G.S. and D.P. Little. 2013. Within–host competition between barley yellow dwarf–PAV and –PAS. *Virus Research* 174 (1–2): 148–151.
- Salinas, N.R. and D.P. Little. 2012. Electric LAMP: virtual Loop–mediated isothermal AMPLification. *ISRN Bioinformatics* 2012: 696758.
- Baker, D.A., D.Wm. Stevenson, and D.P. Little. 2012. DNA barcode identification of black cohosh herbal dietary supplements. *The Journal of AOAC International* 95 (4): 1023–1034.
- Knopf, P., C. Schulz, D.P. Little, T. Stützel, and D.W. Stevenson. 2012. Relationships within Podocarpaceae based on DNA sequence, anatomical, morphological, and biogeographical data. *Cladistics* 28 (3): 271–299.
- Meyer, R.S., K.G. Karol, D.P. Little, M.H. Nee, and A. Litt. 2012. Phylogeographic relationships among Asian eggplants and new perspectives on eggplant domestication. *Molecular Phylogenetics and Evolution* 63 (3): 685–701.

Griffith, M.P., M.A. Calonje, D.Wm. Stevenson, C.E. Husby, and D.P. Little. 2012. Time, place, and relationship: cycad phenology in phylogenetic and biogeographic context. *Memoirs of The New York Botanical Garden* 106 (1): 59–81.

Lee, E.K., A. Cibrian–Jaramillo, S.–O. Kolokotronis, M.S. Katari, A. Stamatakis, M. Ott, J.C. Chiu, D.P. Little, D.Wm. Stevenson, W.R. McCombie, R.A. Martienssen, G. Coruzzi, and R. DeSalle. 2011. A functional phylogenomic view of seed plants. *PLoS Genetics* 7 (12): e1002411.

Jeanson, M.L., J.–N. Labat, and D.P. Little. 2011. DNA Barcoding: a new tool for palm taxonomists? *Annals of Botany* 108 (8): 1445–1451.

Nagalingum, N.S., C.R. Marshall, T.B. Quental, H.S. Rai, D.P. Little, and S. Mathews. 2011. Recent synchronous radiation of a living fossil. *Science* 334 (6057): 796–799.

Little, D.P. 2011. DNA barcode sequence identification incorporating taxonomic hierarchy and within taxon variability. *PLoS ONE* 6 (8): e20552.

Stoeckle, M.Y., C.C. Gamble, R. Kirpekar, G. Young, S. Ahmed, and D.P. Little. 2011. Commercial teas highlight plant DNA barcode identification successes and obstacles. *Scientific Reports* 1: 42.

Little, D.P., P. Thomas, H.T. Nguyễn, and L.K. Phan. 2011. Before it had a name: diagnostic characteristics, geographic distribution, and the conservation of *Cupressus tonkinensis* (Cupressaceae). *Brittonia* 63 (2): 171–196. [erratum: *Brittonia* 64 (1): 102.]

Hollingsworth, P.M., S.W. Graham, and D.P. Little. 2011. Choosing and using a plant DNA barcode. *PLoS ONE* 6(5): e19254.

Schulz, C., D.P. Little, D.Wm. Stevenson, A. Nowogrodzki, and D. Paquiot. 2010. Growth and care instructions of a new model species—the lycophyte *Selaginella apoda*. *American Fern Journal* 100 (3): 167–171.

Hall, G.S., J.S. Peters, D.P. Little, and A.G. Power. 2010. Plant community diversity influences vector behaviour and *Barley yellow dwarf virus* population structure. *Plant Pathology* 59 (6): 1152–1158.

Little, D.P. 2010. A unified index of sequence quality and contig overlap for DNA barcoding. *Bioinformatics* 26 (21): 2780–2781.

Schulz, C., D.P. Little, D.Wm. Stevenson, D. Bauer, C. Moloney, and T. Stützel. 2010. An overview of the morphology, anatomy, and life cycle of a new model species—the lycophyte *Selaginella apoda* (L.) Spring. *International Journal of Plant Sciences* 171 (7): 693–712. [cover illustration]

Cibrián–Jaramillo, A., J.E. De la Torre–Bárcena, E.K. Lee, M.S. Katari, D.P. Little, D.W. Stevenson, R. Martienssen, G.M. Coruzzi, and R. DeSalle. 2010. Using phylogenomic patterns and gene ontology to identify proteins of importance in plant evolution. *Genome Biology and Evolution* 2: 225–239.

CBOL Plant Working Group: Hollingsworth, P.M., L.L. Forrest, J.L. Spouge, M. Hajibabaei, S. Ratnasingham, M. van der Bank, M.W. Chase, R.S. Cowan, D.L. Erickson, A.J. Fazekas, S.W. Graham, K.E. James, K.-J. Kim, W.J. Kress, H. Schneider, J. van Alphen Stahl, S.C.H. Barrett, C. van den Berg, D. Bogarin, K.S. Burgess, K.M. Cameron, M. Carine, J. Chacón, A. Clark, J.J. Clarkson, F. Conrad, D.S. Devey, C.S. Ford, T.A.J. Hedderson, M.L. Hollingsworth, B. C. Husband, L.J. Kelly, P.R. Kesanakurti, J.S. Kim, Y.D. Kim, R. Lahaye, H.-L. Lee, D.G. Long, S. Madriñán, O. Maurin, I. Meusnier, S.G. Newmaster, C.-Wu Park, D.M. Percy, G. Petersen, J.E. Richardson, G.A. Salazar, V. Savolainen, O. Seberg, M.J. Wilkinson, D.-K. Yi, and D.P. Little. 2009. A DNA barcode for land plants. *Proceedings of the National Academy of Sciences* 106 (31): 12794–12797.

Martin, C.V., D.P. Little, R. Goldenberg, and F.A. Michelangeli. 2008. A phylogenetic evaluation of *Leandra* (Miconieae, Melastomataceae): a polyphyletic genus where the seeds tell the story, not the petals. *Cladistics* 24 (3): 315–327.

Hall, G.S. and D.P. Little. 2007. Relative quantitation of virus population size in mixed genotype infections using sequencing chromatograms. *The Journal of Virological Methods* 146 (1–2): 22–28.

Sass, C., D.P. Little, D.Wm. Stevenson, and C.D. Specht. 2007. DNA Barcoding in the Cycadales: testing the potential of proposed barcoding markers for species identification of cycads. *PLoS ONE* 2 (11): e1154.

Douglas, A. Wm., D.Wm. Stevenson, and D.P. Little. 2007. Ovule development in *Ginkgo biloba* L. with emphasis on the collar and nucellus. *International Journal of Plant Sciences* 168 (9): 1207–1236. [cover illustration]

Little, D.P., R.C. Moran, E.D. Brenner, and D.Wm. Stevenson. 2007. Nuclear genome size in *Selaginella*. *Genome* 50 (4): 351–356. [cover illustration]

Little, D.P. and D.Wm. Stevenson. 2007. A comparison of algorithms for identification of specimens using DNA barcodes: examples from gymnosperms. *Cladistics* 23 (1): 1–21. [cover illustration]

Little, D.P. 2006. Evolution and circumscription of the true cypresses (Cupressaceae: *Cupressus*). *Systematic Botany* 31 (3): 461–480.

Davis, J.I, K.C. Nixon, and D.P. Little. 2005. The limits of conventional cladistic analysis. Pp. 119–147 in V.A. Albert, ed. *Parsimony, Phylogeny, and Genomics*. Oxford: Oxford University Press.

Little, D.P., A.E. Schwarzbach, R.P. Adams, and C.F. Hsieh. 2004. The circumscription and phylogenetic relationships of *Callitropsis* and the newly described genus *Xanthocyparis* (Cupressaceae). *American Journal of Botany* 91 (11): 1872–1881.

Little, D.P. 2004. Documentation of hybridization between Californian cypresses: *Cupressus macnabiana* × *sargentii*. *Systematic Botany* 29 (4): 825–833.

Tehler, A., D.P. Little, and J.S. Farris. 2003. The full-length phylogenetic tree from 1551 ribosomal sequences of chitinous fungi. *Mycological Research* 107 (8): 901–916.

Little, D.P. and D.S. Barrington. 2003. Major evolutionary events in the origin and diversification of the fern genus *Polystichum* (Dryopteridaceae). *American Journal of Botany* 90 (3): 508–514.

CONTRIBUTED PAPERS—COMPUTER PROGRAMS

Salinas, N.R. and D.P. Little. 2024. BAD2matrix: A Python script for merging and translating FASTA alignments. Program distributed by the author.

Little, D.P. 2019. QUAESITOR: a tool to locate Latin scientific names in vernacular text. Program distributed by the author.

Salinas, N.R. and D.P. Little. 2013. 2matrix: a utility for indel coding and phylogenetic matrix concatenation. Program distributed by the authors.

Little, D.P. 2012. BRONX: Barcode Recognition Obtained with Nucleotide eXposés 2.0. Program distributed by the author.

Salinas, N.R. and D.P. Little. 2012. eLAMP: virtual Loop-mediated isothermal AMPLification. Program distributed by the authors.

Little, D.P. 2010. B: an index of sequence quality and contig overlap for DNA barcoding. Program distributed by the author.

Little, D.P. 2009. Simple pairwise matching for DNA barcoding. Program distributed by the author.

Little, D.P. 2009. BRONX: Barcode Recognition Obtained with Nucleotide eXposés. Program distributed by the author.

Little, D.P. 2007. degenbar: a simple SIDE (Sequence IDentification Engine). Program distributed by the author.

Little, D.P. 2007. DOME ID (Diagnostic Oligo Motifs for Explicit IDentification): a simple SIDE (sequence identification engine). Program distributed by the author.

Little, D.P. 2007. ATIM (Alignment-free Tree-based Identification Method): a simple SIDE (sequence identification engine). Program distributed by the author.

Little, D.P. and G.S. Hall. 2006. polySNP: an analysis tool for quantitative sequencing. Program distributed by the authors.

Little, D.P. 2005. 2xread: a simple indel coding tool. Program distributed by the author.

CONTRIBUTED PAPERS—SELECTED CONFERENCE PRESENTATIONS

Little, D.P. 2015. Automating revisionary systematic studies with *Monographia*. Biodiversity Information Standards (a.k.a. Taxonomic Databases Working Group [TDWG]).

Little, D.P. 2014. *Monographia*: open–source software to automate revisionary systematic studies. Annual meeting of the American Society of Plant Taxonomists and the Botanical Society of America.

Little, D.P. 2011. APB: a pipeline for DNA barcode sequences. Fourth International Barcode of Life Conference.

Stoeckle, M.Y., C.C. Gamble, R. Kirpekar, G. Young, S. Ahmed, and D.P. Little. 2011. Commercial teas highlight plant DNA barcode identification successes and obstacles. Fourth International Barcode of Life Conference.

Little, D.P. and D.Wm. Stevenson. 2010. DNA barcoding gymnosperms: a tool for automated plant identification. Annual meeting of the American Society of Plant Taxonomists and the Botanical Society of America.

Little, D.P. 2009. Of plants & fungi. Third International Barcode of Life Conference.

Little, D.P. 2009. The other 30%: the search for improbable paradoxical sequences. Third International Barcode of Life Conference.

Little, D.P., J. Deutsch, A. Dutton, S. Margheim, R. Peery, L.A. Raubeson, and D.Wm. Stevenson. 2008. Cycads in the gymnosperm tree of life. Annual meeting of the American Society of Plant Taxonomists and the Botanical Society of America.

Little, D.P. and D.Wm. Stevenson. 2008. Cycads in the gymnosperm tree of life. VIII International Cycad Conference.

Little, D.P. and D.Wm. Stevenson. 2008. DNA barcoding in cycads: progress and problems. VIII International Cycad Conference.

Little, D.P. 2007. Diagnostic characteristics, habitat specificity, and the conservation of *Cupressus tonkinensis* (Cupressaceae). Annual meeting of the American Society of Plant Taxonomists and the Botanical Society of America.

Little, D.P. and K.C. Nixon. 2007. Speed and accuracy in sequence alignment. Annual meeting of the Willi Hennig Society.

Little, D.P. 2006. Evolution and circumscription of the true cypresses (Cupressaceae: *Cupressus*). 17th International Symposium of Biodiversity and Evolutionary Biology.

Little, D.P. and D.Wm. Stevenson. 2006. A comparison of algorithms for identification of specimens using DNA barcodes: examples from gymnosperms. Annual meeting of the Willi Hennig Society.

Little, D.P. and D.Wm. Stevenson. 2006. A comparison of algorithms for identification of specimens using DNA barcodes: examples from gymnosperms. Annual meeting of the American Society of Plant Taxonomists and the Botanical Society of America.

Little, D.P. 2006. Transfusion tracheid pitting in Cupressoideae with particular attention to *Callitropsis* and *Cupressus* (Cupressaceae). Annual meeting of the American Society of Plant Taxonomists and the Botanical Society of America.

Little, D.P. 2003. Preliminary documentation of hybridization between species of New World *Cupressus* (Cupressaceae). Annual meeting of the American Society of Plant Taxonomists and the Botanical Society of America.

Nixon, K.C. and D.P. Little. 2003. The use of optimality criteria in DNA sequence alignment and its application in a new computer program. Annual meeting of the American Society of Plant Taxonomists and the Botanical Society of America.

Nixon, K.C. and D.P. Little. 2003. The use of optimality criteria in DNA sequence alignment and its application in a new computer program. Annual meeting of the Willi Hennig Society.

Little, D.P. 2002. Phylogeny and species circumscription in Cupressoideae (Cupressaceae) with special reference to *Cupressus*. Annual meeting of the American Society of Plant Taxonomists and the Botanical Society of America.

Little, D.P. and K.C. Nixon. 2002. Speed, efficiency, and more data in cladistic analysis. Annual meeting of the American Society of Plant Taxonomists and the Botanical Society of America.

Little, D.P. 2000. Phylogenetic relationship and monophyly of *Cupressus* and *Chamaecyparis* (Cupressaceae): molecular and organismal evidence. American Journal of Botany 87 (6 supplement): 139.

CONTRIBUTED PAPERS—SELECTED INVITED TALKS

2024. *Herbariograph*: a deep-learning tool for filtering herbarium specimen images. New York Botanical Garden.

2024. Artificial Intelligence for specimen identification from hyperspectral images. New York Botanical Garden.

2024. Introducing the *Herbariograph* image dataset. Cornell BreakThrough Tech AI.

2021. Novel tools to better understand biodiversity. New York Botanical Garden.

2018. Identification of herbal products using DNA sequences. DNA Standards for Botanical

Identification Workshop (United States Pharmacopeial Convention).

2017. DNA identification of herbal products. American Herbal Products Association Botanical Congress.

2016. *Monographia*: a tool to automate revisionary systematics. American Museum of Natural History.

2016. Botany at the New York Botanical Garden. Taft School.

2015. Confirming species identity of herbal dietary supplements, an example from Devil's Claw. United States Pharmacopeial Convention (USP) Adulteration and Fraud Workshop.

2014. Botanical species authentication using DNA barcoding. United States Pharmacopeial Convention (USP) Workshop on DNA Methods for Quality Control of Botanical Products.

2014. DNA identification of herbal products. American Herbal Products Association Botanical Congress.

2014. Bayesian inference of phylogenetic trees. Universidad Nacional Autónoma de México.

2014. Cupressaceae: morphology, molecules, and phylogeny. Universidad Autónoma del Estado de Hidalgo (Tulancingo).

2014. What you can, and cannot, learn from DNA barcoding. New York Botanical Garden.

2012. Plant DNA barcoding: from markers to applications. American Museum of Natural History.

2012. Plant DNA barcoding: from markers to applications. Ohio University, Department of Environmental and Plant Biology.

2012. DNA barcode techniques for the identification of herbal dietary supplement constituents. United States Pharmacopeial Convention (USP) Science and Standards Symposium.

2012. The use of DNA barcode techniques to identify the constituents of herbal dietary supplements. International Congress on Natural Products Research.

2012. The use of DNA barcode techniques to identify constituents of teas and herbal dietary supplements. Annual meeting of the Mycological Society of America.

2012. DNA barcode techniques to identify constituents of herbal products. 12th Annual Oxford International Conference on the Science of Botanicals.

2012. Plant DNA barcoding: markers to applications. Rutgers University.

2011. DNA barcoding: a tool for automated plant identification. Hostos–Lincoln Academy.

2011. Barcode Recognition Obtained with Nucleotide eXposés (BRONX). Chicago Workshop for

the Data Analysis Working Group.

2010. The evolutionary context of Tecate cypress: what we can learn from near relatives. Tecate Cypress Symposium.

2010. Red (*Thuja plicata*) and yellow cedar (*Callitropsis nootkatensis*): phylogeny, nomenclature, and organismal character evolution. A Tale of Two Cedars.

2009. DNA barcoding: a tool for automated plant identification. El Centro de Investigación Científica de Yucatán.

2009. DNA barcoding: a tool for automated plant identification. Rutgers University.

2009. Teenage mutant ninja conifers. American Conifer Society.

2009. treeBOL: a collaborative effort for plant DNA barcoding. MexBoL inaugural meeting.

2008. treeBOL: a collaborative effort for plant DNA barcoding. ARBoL inaugural meeting.

2008. Regions of DNA sequence that evolve like barcodes of life. Lehman College, City University of New York.

2008. treeBOL: a collaborative effort for plant DNA barcoding. New York State Genetics Task Force.

2007. DNA Barcode sequence identification incorporating taxonomic hierarchy and within taxon variability. Second International Barcode of Life Conference.

2007. Bayesian inference of phylogenetic trees. Cornell University.

2007. Evolution and circumscription of the true cypresses. Montgomery Botanical Center.

2007. Evolution and circumscription of the true cypresses. New York Botanical Garden.

2006. A comparison of algorithms for identification of specimens using DNA barcodes. International DNA Barcode Conference, Paris Workshop for the Data Analysis Working Group.

2004. Evolution and circumscription of the true cypresses (Cupressaceae: *Cupressus*). University of Vermont, Department of Botany.

PEER REVIEW

American Journal of Botany, Asian Biomedicine, Australian Journal of Botany, Bioinformatics, Biology Letters, BMC BioData Mining, BMC Bioinformatics, BMC Evolutionary Biology, Botanical Journal of the Linnean Society, Botanical Review, Botanical Studies, Botany, Brittonia, Economic Botany, Cladistics, Economic Botany, Evolution, Gene, Genetica, Genome Biology and Evolution, HerbalGram, Heredity, International Journal of Plant Sciences, Journal of AOAC, Journal of

Dietary Supplements, Journal of Systematics and Evolution, The Journal of the Torrey Botanical Society, Memoirs of The New York Botanical Garden, Methods in Ecology and Evolution, Mitochondrial DNA, Molecular Ecology Resources, Molecular Phylogenetics and Evolution, New Phytologist, Novon, Nucleic Acids Research, Philosophical Transactions B, Phytion, Plant Cell Reports, Plant Molecular Biology, Plant Systematics and Evolution, PLoS Genetics, PLoS ONE, Proceedings of the Academy of Natural Sciences, Proceedings of the National Academy of Sciences, Science, SIDA Contributions to Botany, Systematic Botany, and Taxon.

2014–2017. Associate academic editor. PLoS ONE.

2020–2022. Associate academic editor. Brittonia.

2024–2025. Guest Associate academic editor. New Phytologist.

2025. Guest Associate academic editor. Plants, People, Planet.

MENTORING AND ADVISING—HIGH SCHOOL LEVEL

Acevedo, E. 2019. Transfusion trachid anatomy of *Callitropsis macnabiana* (Cupressaceae). Taft School.

Aguilar, L. 2024–2025. Hyperspectral leaf reflectance for plant identification. Hostos–Lincoln Academy.

Aguilar, L., K. Davis, N. Valdez, and Z. Vetsch. 2023–2024. Demonstrating the efficacy of airborne eDNA by detecting locally extinct mesic and riparian species in an urban forest. Hostos–Lincoln Academy.

Almonte, N., J. Bailon, and J.L. Martino. 2016–2017. Barcoding roots to quantify biodiversity at the margin of a small urban forest. Hostos–Lincoln Academy. [Award winning Urban Barcode Program team.]

Anderson, A. 2017. Efficient and effective electronic identification keys. Taft School.

Baez, S., R. Bermejo, and J.H. Estacio. 2015–2016. Management of an invasive species, *Corydalis incisa*, along the Bronx River. Hostos–Lincoln Academy. [Award winning Urban Barcode Program team.]

Bashir, F., T. Dilleuth, and Z. Vetsch. 2022–2023. Wild versus introduced species: the efficiency of forest eDNA surveys. Hostos–Lincoln Academy.

Chen, J. 2016. A universal *matK* mini–barcode. Bronx High School of Science.

Chen, S. 2007–2008. Elucidating the mode of plastid inheritance in gymnosperms. Hunter Scholars Program.

Chen, S., E. Gould, D. Straus, and A. Tung. 2007. Elucidating the mode of plastid inheritance in

gymnosperms. New York Academy of Science.

Chen, V. 2024. Hyperspectral leaf reflectance for plant identification. Stuyvesant High School.

Chu, A. 2012. DNA Barcode primer design. Bronx High School of Science.

Dipto, S. 2016. Machine learning to distinguishing between plant and fungal 5.8S DNA sequences. Bronx High School of Science.

Estacio, J., H. Frempong, L. Ortigoza, and L. Velazquez. 2014–2015. In search of invasive plants species: using DNA barcode to survey seed distribution along the Bronx River. Hostos–Lincoln Academy.

Estrella, M., R. Lorianny, and S. Salas. 2016–2017. Barcoding roots to quantify biodiversity in the center of a small urban forest. Hostos–Lincoln Academy.

Estrella, M. and S. Salas. 2017–2018. Winter is coming: vernalization and seed bank germination. Hostos–Lincoln Academy.

Garay, R., L. Rodriguez, and H. Rosa. 2018–2019. Application of epigenetics to identify plant organs in herbal supplements. Hostos–Lincoln Academy.

Gaynor, K., A. Leiva, S. Marino, and Z. Vetsch. 2021–2022. Capturing airborne eDNA in an old growth forest fragment in New York City. Hostos–Lincoln Academy.

Jain, A. 2013. The effects of *Phytoplasma* infection on the leaf morphology of *Juniperus chinensis*. Bronx High School of Science.

Katari, A. 2022. Optimizing computer vision models for edge devices. Stuyvesant High School.

Kim, J. 2016. New rapid algorithms for modeling plant geographic distributions. Bronx High School of Science.

Kleiser, G. 2012. DNA barcoding of devil’s claw dietary supplements. Trinity School.

Levy, E. 2015. Rapid plant DNA extraction sans laboratory equipment. Taft School.

Lin, V. 2016. Electronic identification keys incorporating variable character definitions. Bronx High School of Science.

Mahairas, D. 2023. CONJURE herbarium specimen image search. Bronx High School of Science.

Martino, J.L. 2017–2018. Optimizing ddRADseq for *Hesperocyparis*. Hostos–Lincoln Academy.

Mitamura, E. 2011. A generic–level DNA barcode reference database of vascular plants. The Masters School.

Mitamura, E. 2010. DNA barcoding the flora of the northeastern United States and Adjacent

Canada. The Masters School.

Ramarolahy, N. 2017–2018. Breaking dormancy by cooling seeds. Hostos–Lincoln Academy.

Rubin, Z. 2014–2015. The origin of *Cupressus ×notabilis* revisited. Edgemont High School.

Shanker, J. 2008–2009. DNA barcoding of herbal supplements. Foxlane High School.

Tan, G. 2012. Rapid plant DNA extraction. Bronx High School of Science. Taft School.

Vaidya, N. 2011. A generic–level DNA barcode reference database of vascular plants. Nyack Public Schools.

Yang, I. 2023. Testing the utility of leaf reflectance for species identification. Taft School.

Yeh, D. 2010. DNA barcoding the flora of the northeastern United States and Adjacent Canada. Herricks High School.

Yip, M. 2012. Automated statistical models of plant DNA barcode markers. Bronx High School of Science.

Zhao, N. 2011. Statistical models of plant DNA barcode markers. Bronx High School of Science.

MENTORING AND ADVISING—UNDERGRADUATE LEVEL

Kepecs, B. 2016. Towards a phylogeny of *Xyris* (Xyridaceae). Columbia University.

Koenemann, D.M. 2008. Cycad phylogeny as inferred from whole plastid genome sequences. University of Vermont.

Mimoso, M. 2012. DNA barcoding of garlic dietary supplements. New York University.

Mimoso, M. 2011. A generic–level DNA barcode reference database of vascular plants. New York University.

Query, N. 2011. A generic–level DNA barcode reference database of vascular plants. City University of New York, Lehman College.

Rothman, N. 2008. The origin of *Cupressus ×notabilis* revisited. Vassar College.

Yuen, K. 2008. DNA barcoding the flora of the northeastern United States and Adjacent Canada. John Jay College of Criminal Justice.

MENTORING AND ADVISING—POSTGRADUATE LEVEL

- Belardi, C. 2022. VERDEX: estimating plant α and β biodiversity via remote sensing.
- Diaz–Silveira, G.L. 2013. Phylogenetics of Pedaliaceae.
- Durkin, L. 2017. Efficient and effective electronic keys.
- Kim, K. 2021. Sólársteinn: an AI for mobilizing geographic data from natural history collections.
- Kim, K. 2017–2020. Towards a phylogeny of *Xyris* (Xyridaceae).
- Nguyen, H.U. 2010. DNA barcoding the flora of the northeastern United States and Adjacent Canada.
- Santiago, M. 2013. DNA barcode authentication of elder berry herbal dietary supplements.
- Terradista, C. 2017–2018. Developing a specimens interface for *Monographia*
- Thalken, R. 2022. QUAESITOR2: a tool to locate Latin scientific names and authors in vernacular text.
- Yasumaru, E. 2014–2017. Optimizing the *Monographia* database.

MENTORING AND ADVISING—GRADUATE LEVEL

- Ahmad, A. 2009. Systematics of *Hymenocallis* Salisb. (Amaryllidaceae). Plant biology Ph.D. program. Committee member. City University of New York.
- Avila, F.A. 2027. Systematics of Asteraceae. Plant biology Ph.D. program. Committee chair. City University of New York.
- Cavaliere, D. 2015. Phylogenetic analyses of Martyniaceae and morphological analyses of trichomes. Master of Arts in Biology. Thesis advisor. City University of New York.
- Clabby, T. 2022. Sólársteinn: an AI for mobilizing geographic data from natural history collections. Master of Science in Biology. New York University.
- Diaz–Silveira, G.L. 2015. DNA barcode authentication of devil's claw herbal supplements. Master of Science in Biology. Thesis advisor. New York University.
- Dorey, J. 2019. Systematics of *Carex* (Cyperaceae). Plant biology Ph.D. program. Committee member. City University of New York.

Doyle, V.P. 2012. *Colletotrichum gloeosporioides* s.l. in North America: sex, host, and habitat-mediated diversity in a plant-associated ascomycete. Plant biology Ph.D. program. Committee member. City University of New York.

Hernández León, S. 2020. Identificación taxonómica de coníferas en el estado de Hidalgo mediante herramientas moleculares y morfológicas. Ph.D. program. Committee member. Universidad Autónoma Del Estado De Hidalgo.

Huang, Y.-Y. 2010. Systematics of Lecythidoideae (Lecythidaceae): with emphasis on *Bertholletia*, *Corythophora*, *Eschweilera*, and *Lecythis*. Plant biology Ph.D. program. Committee member. City University of New York.

Huish, R.D. 2009. The sustainable management and conservation of *Santalum yasi* (sandalwood) in Fiji and Tonga: a combined ecological and genetic approach. Plant biology Ph.D. program. Committee member. City University of New York.

Kitalong, C. 2014. Ethnomedical, ecological, and phytochemical studies of the Palauan flora. Plant biology Ph.D. program. Committee member. City University of New York.

Meyer, R.S. 2012. Chemical, genetic, and ethnobotanical diversity in Asian eggplant. Plant biology Ph.D. program. Committee member. City University of New York.

Morcol, T. 2021. Three LC-MS plant metabolomics studies of hop (*Humulus*) species: Wild *H. neomexicanus*, drought stress, and agricultural terroir. Plant biology Ph.D. program. Committee member. City University of New York.

Paradiso, L. 2024. The spontaneous flora of New York City; and systematics of *Larix* (Pinaceae). Plant biology Ph.D. program. Committee chair. City University of New York.

Rodrigues-Vaz, C. 2019. Systematics and ecology of the Andean neotropical *Schefflera* (Araliaceae) with globose capitate inflorescence. Plant biology Ph.D. program. Committee member. City University of New York.

Salinas, N.R. 2015. Systematics and biogeography of *Orthaea* Klotzsch (Ericaceae: Vaccinieae). Committee member. City University of New York.

Simpson, J. 2012. Phylogeny and population genetics of the endangered dwarf bear-poppy, *Arctomecon humilis* Coville (Papaveraceae) using microsatellite markers. Plant biology Ph.D. program. Committee member. City University of New York.

Sondervan, V. 2025. From spores to seeds: a quantitative approach to identify genes involved in seed evolution. Biology Ph.D. program. Committee member. New York University.

Thurau, E. 2025. Ecometabolomics and food selection in primates. Physical Anthropology Ph.D. program. Committee member. City University of New York.

Virnig, A. 2017. From metabolic systems to human systems: an interdisciplinary approach to studying the Neotropical blueberries (Vaccinieae, Ericaceae). Plant biology Ph.D. program. Committee member. City University of New York.

Zumajo, C. 2021. Evolution and development of the seed coat in gymnosperms. Plant biology Ph.D. program. Committee member. City University of New York.

MENTORING AND ADVISING—POST DOCTORAL LEVEL

Law, F.Y.Y. 2021–present. VERDEX: estimating plant α and β biodiversity via remote sensing.

Park, J. 2021–present. Machine learning for automated specimen identification.

Salinas, N.R. 2021–present. Machine learning for genome functional annotation.

Wilson, S. 2019–2020. Machine learning for genome functional annotation.

FIELD WORK

Alaska (1995, 2007, 2008), Argentina (2004), Arizona (2002), Australia (2011), Brazil (2010), British Columbia (2008), California (2000, 2008, 2010, 2011), China (2002), Costa Rica (1999, 2005), México (2002, 2009, 2014), Myanmar (2015, 2016, 2018), Nepal (2001), New Jersey (2003), Oregon (1999), and Vietnam (2005).

FUNDING

Little, D.P. and K. Armstrong. 2024. Amazon Research Awards. VERDEX: remote sensing of plant biodiversity. \$50,000+\$40,000.

Little, D.P., B.A. Ambrose, F.A. Michelangeli, and K. Watson. 2021. National Science Foundation. EAGER: Artificial Intelligence (AI) to accelerate plant species discovery. DEB 2054684. \$299,754.

Little, D.P., K. Armstrong, and T. Clabby. 2021. Microsoft AI for Earth. *Sólarsteinn*: an AI for mobilizing geographic data from natural history collections. \$15,000.

Ambrose, B.A., D.P. Little, and F.A. Michelangeli. 2018. National Science Foundation. MRI Acquisition—Advancing plant and fungal research at NYBG with a modern Scanning Electron Microscope. DBI 1828479. \$162,275.

McCombie, W.R., G.M. Coruzzi, D.P. Little, M.C. Schatz, and D.W. Stevenson. 2018. National Science Foundation. Living Fossils: Applying advances in single molecule sequencing to decode large and complex genomes of ancient plant lineages. IOS 1758800. \$3,936,179.

Litt, A., N. Pabon–Mora, and D.P. Little. 2015. National Science Foundation. Functional evolution of the *FRUITFULL* gene lineage in the tomato family (Solanaceae). IOS 1456109. \$667,655.

Little, D.P., G. Amato, G.M. Plunkett, and J.S. Miller. 2010. Alfred P. Sloan Foundation. Protecting biodiversity through training in DNA barcoding. \$1,600,000.

Campbell, L.M. and D.P. Little. 2009. National Science Foundation. U.S.–Brazil research planning visit: Phylogenetic systematics of Xyridaceae (Poales)—towards a monograph of the yellow-eyed grasses. OISE 0943417. \$4,594.

Little, D.P. and A. Litt. 2009. National Science Foundation. MRI: Acquisition of a high performance computer cluster for The New York Botanical Garden. DBI 0922799. \$432,284.

Little, D.P. 2004. Cornell University, Bailey Hortorium. H.E. Moore fund. \$2,000.

Little, D.P. 2003. Cornell University, Einaudi Center. Lam family travel award. \$2,000.

Nixon, K.C. and D.P. Little. 2002. National Science Foundation. Doctoral Dissertation: Systematics of *Cupressus* and *Chamaecyparis* (DEB 0206092). \$9,500.

Little, D.P. 2002. Cornell University, Einaudi Center. Southeast Asia travel award. \$1,600.

Little, D.P. 2001. Cornell University, Einaudi Center. Southeast Asia travel award. \$1,900.

Little, D.P. 2001. American Society of Plant Taxonomists. Graduate research award. \$500.

Little, D.P. 2000. Cornell University, Graduate College. Domestic research award. \$1,075.

Little, D.P. 2000. Cornell University, Bailey Hortorium. Clausen fund. \$4,500.

Little, D.P. 1997. University of Vermont. HELiX Undergraduate Research Mini Grant. \$500.

TEACHING

2010, 2012, 2014, 2017, 2020, 2022, 2023. Lecturer. City University of New York, Graduate Center. Phytoinformatics (BIOL 75302/79303/79304). 7 semesters.

2005, 2007, 2008. Lecturer. New York Botanical Garden. Gymnosperm Morphology (BOT 443). 3 semesters.

2001, 2003. Teaching Assistant. Cornell University. Phylogenetic systematics (BioPI 440). 2 semesters.

1998–2000. Teaching Assistant. Cornell University. Introductory biology for majors (BioG 103–104). 4 semesters.

1998, 2000, 2005. Teaching Assistant. University of Vermont. Tropical Plant Systematics, Field Trip to Costa Rica (BOT 232). 3 trips.

1998. Teaching Assistant. University of Vermont. Flowering plant systematics (BOT 109). 1 semester.

TEACHING AWARDS

2003. Cornell University. Golden Apple teaching award.

UNDERGRADUATE HONORS

Dean's List (8 semesters), and Alpha Zeta First Year Proficiency Award.

UNDERGRADUATE AWARDS

Craig Parent, Teacher, and Student Association Continuing Education Scholarship (twice); Craig School Board Continuing Education Scholarship (twice); University of Vermont Grant; Vermont Bird and Botanical Club Annual Meeting Scholarship; Richard H. Holzer Memorial Foundation Scholarship (twice); New England Farm and Garden Association Scholarship (thrice); The Lucretia D. Jephson Education Trust Scholarship; Craig Teacher's Association Scholarship; Craig City School Board Scholarship; Alaska Native Sisterhood Scholarship; and Craig Moose Lodge Scholarship.