Michael J. Landis

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http://landislab.org

September 23, 2022

Education

Ph.D. Integrative Biology *2015*
Designated Emphasis in Computational & Genomic Biology
University of California, Berkeley, CA
Dissertation: Phylogenetic Inference for Biogeographic and Quantitative Trait Evolution

B.S. Computer Science *2005*
California State University, Long Beach, CA

Employment

Assistant Professor *2019—Present*
Department of Biology
Washington University, St. Louis, MO

Research Interests

· Evolutionary biology
· Phylogenetics and systematics
· Historical biogeography
· Probabilistic models and stochastic processes
· Inference methods

Research Experience

Postdoctoral fellow, *Yale University*, New Haven, CT *2016—2019*
Postdoctoral researcher, *Iowa State University*, Ames, IA *2016*
Graduate researcher, *University of California*, Berkeley, CA *2010—2015*
Bioinformatician, *Children's Hospital of Oakland*, Oakland, CA *2009—2010*

Fellowships & Awards

Yale Donnelley Postdoctoral Environmental Fellowship (resumed) *2019*
NSF Postdoctoral Research Fellowship *2017—2018*
Yale Donnelley Postdoctoral Environmental Fellowship *2016*
Ernst Mayr Award (Society of Systematic Biologists) *2016*
UC Berkeley Integrative Biology Summer Research Award *2015*
UC Berkeley Computational Biology Travel Award *2012, 2015*
National Evolutionary Synthesis Center Graduate Student Fellowship *2013*
Google Summer of Code Student Fellowship *2012*

Grants

NSF-DEB 2040347 "Modeling the Origin and Evolution of Hawaiian Plants" *2021—2024*
Awarded $547,408 to MJL as Lead PI

Manuscripts – Published

1. Donoghue MJ, Eaton DAR, Maya-Lastra CA, **Landis MJ**, Sweeney PJ, Olson, ME, Cacho NI, Moeglin MK, Gardner JR, Heaphy NM, Castorena M, Segovia Rivas A, Clement WL, Edwards EJ. 2022. Replication radiation of a plant clade along a cloud forest archipelago. *Nature Ecology and Evolution.* doi:10.1038/s41559-022-01823-x.
2. Wendt EW, Malabarba LR, ‡Braga MP, Boeger WA, **Landis MJ**, Carvalho TP. Phylogeny, species delimitation, and ecological and morphological diversity of Characithecium (Monogenoidea: Dactylogyridae). 2022. *Parasitology* 149: 700–716.
3. **Landis MJ**, Quintero I, Muñoz MM, Zapata F, Donoghue MJ. Phylogenetic inference of where species spread or split across barriers. 2022. *Proceedings of the National Academy of Sciences* 119: e2116948119.
4. Tribble CM, Freyman WA, Lim JY, **Landis MJ**, Barido-Sottani J, Kopperud BT, Höhna S, May MR. 2022. RevGadgets: an R Package for visualizing Bayesian phylogenetic analyses from RevBayes. *Methods in Ecology and Evolution* 13: 314–323.
5. Höhna S, **Landis MJ**, and Huelsenbeck JP. 2017. Parallel power posterior analyses for fast computation of Bayes factors in phylogenetics. *PeerJ*: 9:e12438.
6. ‡Braga MP, Janz N, Nylin S, Ronquist F, and **Landis MJ**. 2021. Phylogenetic reconstruction of ancestral ecological networks through time for pierid butterflies and their host plants. *Ecology Letters* 24: 2134-–2145.
7. **Landis MJ**, Edwards EJ, and Donoghue MJ. 2021. Modeling phylogenetic biome shifts on a planet with a past. *Systematic Biology.* 70: 86–107.
8. **Landis MJ**, Eaton DAR, Clement WL, Park B, Spriggs EL, Sweeney PW, Edwards EJ, and Donoghue MJ. 2021. Joint phylogenetic estimation of geographic movements and biome shifts during the global diversification of *Viburnum*. *Systematic Biology.* 70: 67–85.
9. ‡Braga MP, **Landis MJ**, Nylin S, Janz N, and Ronquist F. 2020. Bayesian inference of ancestral host-parasite interactions under a phylogenetic model of host repertoire evolution. *Systematic Biology* 69: 1149—1162.
10. Field DJ, Berv JS, Hsiang AY, Lanfear J, Landis MJ, Dornberg A. 2020. Timing the extant avian radiation: The rise of modern birds, and the importance of modeling molecular rate variation. *Bulletin of the American Museum of Natural History* 440: 159–181.
11. Kim AS, Zimmerman O, Nelson CA, Basore K, Zhang R, Desai C, Bullock C, Durnell L, Deem SL, Oppenheimer J, Shapiro B, Wang T, Coyne CB, Handley SA, §**Landis MJ**, §Fremont DH, and §Diamond MS. 2020. A sequence insertion in the Mxra8 receptor of Bovinae family members confers resistance to alphavirus infection. *Cell Host & Microbe* 27: 428-440.
12. Quintero I and **Landis MJ** 2019. Interdependent phenotypic and biogeographic evolution driven by biotic interactions. *Systematic Biology* 69: 739–755.
13. **Landis MJ**, Freyman WA, and Baldwin BG. 2018. Retracing the Hawaiian silversword radiation despite phylogenetic, biogeographic, and paleogeographic uncertainty. *Evolution* 72: 2343–2359.
14. Park B, Sinnott-Armstrong M, Schlutius C, Zuluaga, J-CP, Spriggs EL, Simpson RG, **Landis MJ**, Sweeney PW, Eaton DAR, and Donoghue MJ. 2018. Sterile marginal flowers increase visitation and fruit set in the hobblebush (*Viburnum lantanoides*, Adoxaceae) at multiple spatial scales. *Ann. Bot.* 123: 381-390.

15. **Landis MJ** and Schraiber JG. 2017. Pulsed evolution shaped modern vertebrate body sizes. *Proceedings of the National Academy of Sciences* 114: 13224–13229.
16. Höhna S, **Landis MJ**, Heath TA. 2017. Phylogenetic inference using RevBayes. *Current Protocols in Bioinformatics* 57:6.16.1–6.16.34.
17. **Landis, MJ** Biogeographic dating of speciation times using paleogeographically informed processes. 2017. *Systematic Biology* 66:128–144.
18. Höhna S, **Landis MJ**, Heath TA, Boussau B, Lartillot N, Moore BR, Huelsenbeck JP, and Ronquist F. 2016. RevBayes: Bayesian phylogenetic inference using graphical models and an interactive model-specification language. *Systematic Biology* 65:726-736.
19. Schraiber JG and **Landis MJ**. 2015. Sensitivity of quantitative traits to mutational effects and number of loci. *Theoretical Population Biology* 102:85–93.
20. Höhna S, Heath TA, Boussau B, **Landis MJ**, Ronquist F, and Huelsenbeck JP. 2014. Probabilistic graphical model representation in phylogenetics. *Systematic Biology* 63:753–771.
21. **Landis MJ** and Bedford T. 2014. Phylowood: interactive web-based animations of biogeographic and phylogeographic histories. *Bioinformatics* 30:123–124.
22. **Landis MJ**, Matzke NJ, Moore BR, and Huelsenbeck JP. Bayesian analysis of biogeography when the number of areas is large. 2013. *Systematic Biology* 62:789–804.
23. ***Landis MJ**, *Schraiber JG, and Liang M. 2013. Phylogenetic analysis using Lévy processes: finding jumps in the evolution of continuous traits. *Systematic Biology* 62:193–204.

‡: group postdoc co-author; *: shared first author

Manuscripts – Accepted

1. Dismukes W, ‡Braga MP, Hembry DH, Heath TA, **Landis MJ**. Cophylogenetic methods to untangle the evolutionary history of ecological interactions. *Under review at Annual Reviews of Ecology, Evolution, and Systematics.*

Book Chapters – Published

1. **Landis MJ**. Biogeographic dating of phylogenetic divergence times using priors and processes. 2020. In Ho SYW (ed.), *The Molecular Evolutionary Clock: Theory and Practice*. Springer.

Research Software

RevBayes, phylogenetic inference using graphical models	`revbayes.github.io`
BayArea, Bayesian biogeographic inference for many areas	`github.com/mlandis/bayarea`
pulsR, simulate and fit macroevolutionary trait models	`github.com/Schraiber/pulsR`
creepy-jerk, Bayesian inference of evolutionary jumps in traits	`github.com/mlandis/creepy-jerk`
Phylowood, interactive biogeographic animations	`mlandis.github.io/phylowood`
qtc, quantitative trait evolution under the coalescent	`github.com/Schraiber/quant_trait_coalescent`

Presentations – Invited

Meeting of Systematics, Biogeography, and Evolution (virtual)	*2022*
Melinda Denton Endowed Seminar on Plant Systematics*, University of Washington	*2022*
Ecology and Evolution Seminar*, University of Minnesota, Minneapolis (virtual)	*2022*

Biodiversity Research Center Seminar, University of British Columbia, Vancouver (virtual) *2022*
European Society of Evoutionary Biologists, Satellite Meeting (virtual) *2021*
Biology Seminar, University of Nebraska, Lincoln (virtual) *2021*
Statistics Seminar, Washington University in St. Louis (virtual) *2021*
Biology Seminar, University of Missouri, St. Louis (virtual) *2020*
Living Earth Collaborative Seminar, Washington University in St. Louis (virtual) *2020*
St. Louis Ecology, Evolution & Conservation Seminar, Lewis & Clark Community College *2019*
Biological Sciences Seminar, Auburn University *2019*
Plant Biology Seminar, University of Georgia *2018*
Evolution & Systematics Seminar, University of Connecticut *2018*
Phyloseminar, an online society-sponsored seminar (`http://phyloseminar.org/`) *2018*
Department of Biology Seminar, University of Oregon *2018*
Department of Biology Seminar, Washington University in St. Louis *2018*
Symposium on Computational Paleobiology, Geological Society of America Meeting in Seattle *2017*
Systematics Seminar, Swedish Museum of Natural History *2017*
Computational Genomics Seminar, Temple University *2016*
Symposium on Parametric Biogeography, Evolution Conference in Guaruja, Brazil *2015*
Phylogenetics & Evolutionary Biology Seminar, North Carolina State University *2013*
Workshop on Mathematics for an Evolving Biodiversity, University of Montréal *2013*
Center for Population Genomics Seminar, UC Davis *2013*
graduate student invited, *****

Presentations – Contributed

Evolution Conference (virtual) *2021*
Midcontinent Paleobotanical Colloquium (virtual) *2020*
Evolution Conference in Providence *2019*
Yale Institute for Biospheric Studies Seminar *2019*
External Advisory Board Meeting, Yale Institute for Biospheric Studies *2017*
Evolution Conference in Portland *2017*
Ernst Mayr Symposium, Evolution Conference in Austin *2016*
Evolution Conference in Snowbird *2013*
Center for Theoretical Evolutionary Genomics, UC Berkeley *2013*
Center for Theoretical Evolutionary Genomics, UC Berkeley *2012*
Evolution Conference in Ottawa *2012*

Professional Reviews

Journals: *American Journal of Botany, Annals of Botany, Bioinformatics, BMC Evolutionary Biology, Evolution, Genome Biology & Evolution, Journal of Biogeography, Methods in Evolution & Ecology, Methods in Ecology & Evolution, Molecular Biology & Evolution, Molecular Phylogenetics & Evolution, Nature Communications, New Phytologist, Paleobiology, Proceedings of the Royal Society B, Proceedings of the National Academy of Sciences USA, Systematic Biology, Trends in Ecology & Evolution, Zoological Journal of the Linnean Society*

Grants: *NSF reviewer, SSB Ernst Mayr applications, SSB graduate award grants*

University Service

Committee member for WUSTL Biology Curriculum Committee *2019—Present*

Committee member for EEPB Steering Committee *2019—Present*

Committee member for EEPB Admissions Committee *2019—Present*

Faculty mentor for WUSTL Chapter within the Society for Advancement of Chicanos/Hispanics and Native Americans in Science *2021—Present*

Committee member for WUSTL Hiring Committee for Urban Biology and Environmental Justice *2021*

Co-chair, Integrative Biology Graduate Student Assembly *2012—2013*

Society Service

Associate Editor for Systematic Biology *2022—Present*

Legacy Committee member for Society for Systematic Biologists *2021—Present*

One-off ERC mentor for Evolution meeting *2021,2022*

Council member for Society for Systematic Biologists *2019—2022*

Editorial board member for Systematic Biology *2018—2022*

Symposium organizer for Society of Systematic Biologists on *The Bright Side of Phylogenetics 2019*

Courses

Instructor, BIOL4220, Practical Bioinformatics, WUSTL *2020—2022*

Instructor, BIOL580, EEPB Graduate Seminar, WUSTL *2021*

Invited Lecturer, BIOL1425, Phylogenetic Biology, Brown University, RI *2016*

Invited Lecturer, IB87, Bioinformatics, UC Berkeley, CA *2014*

Invited Lecturer, EEB101, Macroevolution, UC Davis, CA *2013*

Teaching Assistance

Teaching Assistant, IB200A, Principles of Phylogenetics, UC Berkeley, CA *2012*

Teaching Assistant, IB164, Human Genetics and Genomics, UC Berkeley, CA *2011*

Mentoring & Advising

Postdoctoral (WUSTL)

Fábio Mendes, *Statistical Phylogenetics* *2021—Present*

Ammon Thompson, *Statistical Epidemiology* *2021—Present*

Mariana Braga, *Evolution & Ecology* *2019—2021*

Graduate, member (WUSTL)

Sarah Swiston, *Evolution & Ecology*

Sean McHugh, *Evolution & Ecology* *2021 2021—Present*

Graduate, rotation (WUSTL)

Justin Baldwin, *Evolution & Ecology* *2020*

Aryeh Miller, *Evolution & Ecology* *2020*

Preston Pennington, *Evolution & Ecology* *2022*

Undergraduate (WUSTL)

Yu (Sunny) Zichen, *Mathematics* *2022—Present*

Mihir Shah, *Biomedical Engineering* *2021—Present*

Walker Sexton, *Biology* *2021—Present*

Ernie Ramos, *Mathematics* *2021*

Undergraduate (UC Berkeley)

Bryan Wang, *Mathematics* *2013—2015*

Jaya Narasimhan, *Computer Science* *2012—2014*

Professional Experience

Server administrator, *Varsity Technologies*, San Francisco, CA *2005—2008*

Skills

Programming: C/C++, Python, R, Java, Javascript, MPI, bash, git, tex

Outreach

Instructor, Stay-at-Home RevBayes Workshop (virtual) *2021*

Instructor, Stay-at-Home RevBayes Workshop (virtual) *2020*

Instructor, Molecular Evolution Workshop, Woods Hole, MA *2018—2019*

Instructor, Bodega Phylogenetics Workshop, UC Davis, CA *2014–2015, 2019*

Instructor, RevBayes Workshop, Yale University, New Haven, CT *2019*

Instructor, Fossil tip-dating with RevBayes, GSA Meeting, Seattle, WA *2017*

Instructor, Biogeography with RevBayes, SSB Meeting, Baton Rouge, LA *2017*

Instructor, Introduction to RevBayes, Yale, New Haven, CT *2017*

Teaching Assistant, Molecular Evolution Workshop, Woods Hole, MA *2014—2016*

Instructor, RevBayes Workshop, UC Berkeley, CA *2015*

Instructor, Applied Phylogenetics Workshop, NESCent, NC *2014*

Guest Lecturer, Berkeley High School Science Outreach *2014, 2015*

Guest Lecturer, Bay Area Scientists in Schools *2014*

Tutor, 826 Valencia volunteer for English Language Learners *2009—2010*

Professional Societies

Society of Systematic Biologists *2012–Present*

Society for the Study of Evolution *2017–Present*

Geological Society of America *2017–Present*

International Biogeography Society *2020–Present*

Society for Advancement of Chicanos/Hispanics and Native Americans in Science *2021–Present*

Advisors

John P. Huelsenbeck (UC Berkeley)	PhD advisor
Tracy A. Heath (Iowa State University)	Postdoctoral advisor
Michael J. Donoghue (Yale University)	Postdoctoral advisor