

Curriculum Vitae

Miao Sun

Contact Information

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Positions

- **Postdoctoral Research Fellow (2019.10 ~ present)**
Department of Bioscience, Aarhus University
Advisor: Dr. Wolf L. Eiserhardt
- **Postdoctoral Research Fellow (2016 ~ 2019.8)**
Florida Museum of Natural History, University of Florida
Advisor: Dr. Pamela S. Soltis
- **Postdoctoral Research Fellow (2015 ~ 2016)**
Department of Biology, University of Florida
Advisor: Dr. Douglas E. Soltis
- **Research Assistant (2014.07 ~ 2015.01)**
State Key Laboratory of Systematic and Evolutionary Botany
Institute of Botany, Chinese Academy of Sciences
Advisor: Dr. Zhiduan Chen

Research Interests

A phylogenetic tree is a pivotal framework for solving fundamental issues in biology. My long-term research goal is to use a robust phylogeny to elucidate patterns of evolutionary radiations in angiosperms and to address the causes of plant diversification using the tools of comparative biology.

Education

- 2009 ~ 2014, PhD in Botany, Institute of Botany, Chinese Academy of Sciences
- 2006 ~ 2009, Master of Botany, Institute of Botany, Chinese Academy of Sciences
- 2002 ~ 2006, Bachelor of Environmental Science, College of Resources and Environment, Beijing Forestry University

Research Skills

- **Taxonomic skills:**

Able to identify most seed plants at genera level or at least family level and expert in *Elaeagnus* (Elaeagnaceae), familiar with International Code of Botanical Nomenclature and mastering the process of compressing specimens

- **Molecular biology skills:**

DNA extraction, clone, PCR, sequencing, genome assembling, and genome size measurement
Experienced in Target Enrichment data analyses using aTRAM and HybPiper, and gene tree congruence visualization using Phyparts and Pycharts.

- **Bioinformatical skills:**

- Experienced with standard biological software and genome dataset analysis (e.g., probe design, genome assembly)
- Proficient in Shell, R, git, Perl, and Python programming languages, familiar with SQL, version control (git), experienced in applied programming for biological data analysis and reproducible data science.

- **Language skills:**

Fluent spoken and written Chinese and English

Honors & Awards

- 2017: Certified Instructor of Software Carpentry, and qualified to teach Software Carpentry's core curriculum.
- 2006 ~ 2014: First-class Scholarship for Graduate Student of Chinese Academy of Sciences
- 2008: Honored as a science popularization volunteer
- 2004 ~ 2005: Second Scholarships for Excellent Academic Score BFU and National Grants.
- 2003: Third Scholarships for Excellent Academic Score and National second-class scholarship.
- 2002: Chinese scholarship.

Publications

*equally contributing author; 27 publications, h-index 9; **460** total citations according to Google Scholar

Papers:

1. Shimai H, Setoguchi P, Roberts D, **Sun M**. (In prep.) Phylogeny and biogeography of the genus *Pinguicula* L. (Lentibulariaceae) based on nuclear ribosomal DNA and chloroplast DNA.
2. **Sun M**, Folk FA, Gitzendanner MA, Smith SA, Germain-Aubrey C, Guralnick RP, Soltis PS, Chen ZD, Soltis DE. Exploring the phylogeny and diversification of rosids with a five-locus supermatrix. *bioRxiv* 694950. doi: 10.1101/694950.
3. Lu LM, Hu HH, Peng DX, Liu B, Ye JF, Yang T, Li HL, **Sun M**, Smith SA, Soltis PS, Soltis DE, Chen ZD. (2020). Noise does not equal bias in assessing the evolutionary history of the angiosperm flora of China: A response to Qian. *Journal of Biogeography* (accepted).
4. **Sun M**, Folk FA, Gitzendanner MA, Soltis PS, Chen ZD, Soltis DE, Guralnick RP. (2020). Recent, accelerated diversification in rosids occurred outside the tropics. *Nature Communications* 11: 3333. doi: 10.1038/s41467-020-17116-5.

5. **Sun M**, Folk FA, Gitzendanner MA, Soltis PS, Chen ZD, Soltis DE, Guralnick RP. (2020). Estimating rates and patterns of diversification with incomplete sampling: A case study in the rosids. *American Journal of Botany* 107(6): 1–15. doi: 10.1002/ajb2.1479 (also see *bioRxiv* 749325).
6. Lichman BR, Godden GT, Hamilton JP, Lira Palmer L, Kamileen MO, Zhao D, Vaillancourt B, Wood J, **Sun M**, Henry LK, Lopez CR, Dudareva N, Soltis DE, Soltis PS, Buell CR, O'Connor SE. (2020). The evolutionary origins of the cat attractant nepetalactone in catnip. *Science Advances* 6: eaba0721. doi: 10.1126/sciadv.aba0721.
7. Mu XY, Tong L, **Sun M**, Zhu YX, Wen J, Lin QW, Liu B. (2020). Phylogeny and divergence time estimation of the walnut family (Juglandaceae) based on nuclear RAD-Seq and chloroplast genome data. *Molecular Phylogenetics and Evolution* 147: 106802. doi: 10.1016/j.ympev.2020.106802.
8. Xue B, Guo X, Landis JB, **Sun M**, Tang CC, Soltis PS, Soltis DE, R.M.K. Saunders RMK. (2019). Accelerated diversification correlated with functional traits shapes extant diversity of the early divergent angiosperm family Annonaceae. *Molecular Phylogenetics and Evolution* 142: 106659. doi: 10.1016/j.ympev.2019.106659.
9. Li DJ, Lauren Trotta L, Marx HE, Allen JM, **Sun M**, Soltis DE, Soltis PS, Guralnick RP, Baiser BH. (2019). For comparing phylogenetic diversity among communities, go ahead and use synthesis phylogenies. *Ecology*. doi: 10.1002/ecy.2788.
10. Yang T, Tedersoo L, Soltis PS, Soltis DE, Gilbert JA, **Sun M**, Shi Y, Wang HF, Li YT, Zhang J, Chen ZD, Lin HY, Zhao YP, Fu CX, Chu HY. (2018). Phylogenetic imprint of woody plants on the soil mycobiome in natural mountain forests of eastern China. *The ISME Journal* 13: 686–697.
11. Marodiev EV, **Sun M**, Schroder L, Steadman DW, Ebach MC. (2018). Moving from modern toward post-modern science: comment on “An integrated assessment of the vascular plants of the Americas.” *Phytotaxa* 351: 96–98.
12. Folk RA, **Sun M**, Soltis PS, Smith SA, Soltis DE, and Robert P. Guralnick. (2018). Challenges of comprehensive taxon sampling in comparative biology: Wrestling with Rosids. *American Journal of Botany* 105(3): 433–445.
13. Lu LM, Mao L, Yang T, Ye JF, Liu B, Li HL, **Sun M***, Miller JT, Mathews S, Hu HH, Niu YT, Peng DX, Chen YH, Smith SA, Chen M, Xiang KL, Le CT, Dang VC, Lu AM, Soltis PS, Soltis DE, Li JH, Chen ZD. (2018). Evolutionary history of the angiosperm flora of China. *Nature* 554: 234–238. doi: 10.1038/nature25485.
14. Mu XY, **Sun M**, Yang PF, Lin QW. (2017). Unveiling the identity of Wenwan walnuts and phylogenetic relationships of Asian Juglans species using restriction site-associated DNA-sequencing. *Frontiers in Plant Science* (8): 1708. doi: 10.3389/fpls.2017.01708
15. Hodel RG, Gitzendanner MA, Germain-Aubrey CC, Liu X, Crowl AA, **Sun M**, Landis JB, Segovia-Salcedo MC, Douglas NA, Chen SC, Soltis DE, Soltis PS. (2016). A new resource for the development of SSR markers: Millions of loci from a thousand plant transcriptomes. *Applications in Plant Sciences* 4(6): 1600024.
16. Hodel RG, Segovia-Salcedo MC, Landis JB, Crowl AA, **Sun M**, Liu XX, Gitzendanner MA, Douglas NA, Germain-Aubrey CC, Chen SC, Soltis DE, Soltis PS. (2016). The report of my death was an exaggeration: A review for researchers using microsatellites in the 21st century. *Applications in Plant Sciences* 4(6): 1600025.
17. Chen ZD, Yang T, Li Lin, Lu LM, Li HL, **Sun M**, Liu B, Chen M, Niu YT, Ye JF, Cao ZY, Liu HM, Wang XM, Wang W, Zhang JB, Meng Z, Cao W, Li JH, Wu SD, Zhao HL, Liu ZJ, Du ZY, Wang QF, Guo J, Tan XX, Su JX, Zhang LJ, Yang LL, Liao YY, Li MH, Zhang GQ, Chung SW, Zhang J, Xiang KL, Li RQ, Soltis DE, Soltis PS, Zhou SL, Ran JH, Wang XQ, Jin XH, Chen YS, Gao TG, Li JH, Zhang SZ, Lu AM. (2016). Tree of life for the genera of Chinese vascular plants. *Journal of Systematics and Evolution* 54(4): 227–306.

18. Li HL, Wang W, Li RQ, Zhang JB, **Sun M**, Naeem R, Su JX, Xiang XG, Mortimer PE, Li DZ, Hyde KD, Xu JC, Soltis DE, Soltis PS, Li JH, Zhang SZ, Wu H, Chen ZD, Lu AM. (2016). Global versus Chinese perspectives on the phylogeny of the N-fixing clade. *Journal of Systematics and Evolution* 54(4): 392-399.
19. **Sun M**, Naeem R, Su JX, Burleigh GJ, Solits DE, Soltis PS, Chen ZD. (2016). Phylogeny of the *Rosidae*: A dense taxon sampling analysis. *Journal of Systematics and Evolution* 54(4): 363-391.
20. **Sun M**, Solits DE, Soltis PS, Zhu XY, Burleigh GJ, Chen ZD. (2015). Deep phylogenetic incongruence in the angiosperm clade *Rosidae*. *Molecular Phylogenetics and Evolution* 83: 156-166.
21. Wang B, Zhang Y, Wei P, **Sun M**, Ma X, Zhu X. (2015). Identification of nuclear low-copy genes and their phylogenetic utility in rosids. *Genome* 57(10): 150203143525007.
22. Lu LM, **Sun M**, Zhang JB, Li HL, Lin L, Yang T, Chen M, Chen ZD. (2014). Tree of life and its applications. *Biodiversity Science* 22: 3-20.
23. **Sun M**, Lin Q. (2010). A revision of *Elaeagnus* L. (Elaeagnaceae) in mainland China. *Journal of Systematics and Evolution* 48(5): 356-390.
24. **Sun M**, Lin Q, Sun Q, Bei SQ, Li HL, Yang ZR. (2008). Validation of eight names of Chinese taxa in Ranunculaceae, Rosaceae and Scrophulariaceae. *Kew Bulletin* 64: 573-575.
25. **Sun M**, Lin Q. (2008). Lectotypification of five scientific names in Rosaceae. *Guihaia* 28: 295-297. (In Chinese)
26. Lin Q, Bei SQ, Li HL, Cao ZY, Sun Q, **Sun M**, Yang ZR. (2008). Lectotypification of twenty names of Chinese taxa in Angiospermae. *Bulletin of Botanical Research* 5: 534-539.
27. Lin Q, Sun Q, **Sun M**, Bei SQ, Li HL. (2007). Lectotypification of twenty-eight names of Chinese taxa in Angiospermae. *Acta Botanica Boreali-occidentalia Sinica*, 27: 1247-1255.

Book chapters:

1. **Sun M** et al. (2020). Malvaceae, Malpighiaceae, Celastraceae. In: Chen ZD, Lu AM, Liu B et al. eds. *Tree of Life for Chinese Vascular Plants*, Science Press, Beijing
2. **Sun M** et al. (2018). Malvaceae, Malpighiaceae, Celastraceae. In: Li DZ, Chen ZD, Wnag H, Lu AM eds. *Flora of Genera and Families of China Vascular Plants*, Science Press, Beijing
3. **Sun M** et al. (2018). Malvaceae, Malpighiaceae, Celastraceae. In: Li DZ, Chen ZD, Wnag H, Lu AM eds. *Dictionary of Genera and Families of China Vascular Plants*, Science Press, Beijing
4. **Sun M**, Peng H. (2016). Elaeagnaceae. In: Liu B, Lin QW eds. *Higher Plants of China in Color*, Volume 5, Angiosperms: Euphorbiaceae — Cornaceae, Science Press, Beijing, China
5. **Sun M** et al. (2015). In: Lin Q, Yang ZR eds. *Types Specimens in China National Herbarium (PE)*, Volume 6, Angiospermae, Henan Science and Technology Press, Henan, China
6. **Sun M** et al. (2015). In: Lin Q, Yang Y, Yang ZR eds. *Types Specimens in China National Herbarium (PE)*, Volume 7, Angiospermae, Henan Science and Technology Press, Henan, China
7. **Sun M** et al. (2015). In: Lin Q, Yang ZR, Lin Y eds. *Types Specimens in China National Herbarium (PE)*, Volume 10, Angiospermae, Henan Science and Technology Press, Henan, China
8. **Sun M**. (2014). Exploring deep phylogenetic incongruence of the COM clade in Rosidae: Phylogenomics approach. [PhD dissertation], Institute of Botany, the Chinese Academy of Sciences, Beijing, China
9. Simpson M. (2012). *Plant Systematics* (2nd Edition) (Chen ZD, Lu AM, **Sun M** Trans.), Science Press, Beijing, China (Original publisher Academic Press)
10. **Sun M**. (2009). Primary Taxonomic Study of *Elaeagnus* (Elaeagnaceae) in Mainland China. [Master thesis], Institute of Botany, the Chinese Academy of Sciences, Beijing, China

Conference Presentations/Posters:

1. **Sun M**, Folk RA, Gitzendanner M, Smith AS, Chen ZD, Solits P, Soltis D. (2020). Phylogenetic and diversification analyses of rosids. *Botany Conference*. (Presentation)
2. Abair A, Godden G, **Sun M**, El-Bahawy A, Soltis D, Soltis P. (2020). Assembling and Dating a Near-Comprehensive Phylogeny of Lamiaceae. *Botany Conference*. (Presentation)
3. **Sun M**. (2019). Build and use large-scale phylogenetic trees. *IBCAS Youth Forum*. (Presentation)
4. **Sun M**. (2018). Building, Using, and Tending the Tree of Life. *Chinese Genomics Meet-up*. (Presentation)
5. **Sun M**, Germain-Aubrey CC, Smith SA, Soltis PS, Chen ZD, Soltis DE. (2018). Exploring the phylogeny and diversification of rosids with a five-locus supermatrix. *The 1st AsiaEvo Conference 2018 (Shenzhen, China)*. Abstract ID: S38. (Poster)
6. Millar J, Collins M, Picardi S, Riemer K, Stucky B, **Sun M**, Ye H. (2018). A Carpentries Culture at the University of Florida. *CarpentryCon 2018* (Dublin, Ireland), Abstract ID: 13. (Poster)
7. **Sun M**, Whitten WM, Gitzendanner MA, Soltis DE, Soltis PS. (2017). Exploring the Applicability of Fluidigm Amplification and NGS Sequencing Using Samples From Multiple Families. *The XIX International Botanical Congress 2017 (Shenzhen, China)*, Abstract ID: T2-12-19. (Poster)
8. **Sun M**, Germain-Aubrey CC, Smith SA, Soltis PS, Chen ZD, Soltis DE. (2017). Exploring the phylogeny and diversification of rosids through a five-gene supermatrix approach. *The XIX International Botanical Congress 2017 (Shenzhen, China)*, Abstract ID: T2-44-15. (Poster)
9. Zhang T, Lichstein JW, **Sun M**. (2017). Functional traits and population dynamics of North American tree species in a phylogenetic and biogeographic context. Annual Meeting of Ecological Society of America (ESA), August 10, 2017 (Portland, USA). Abstract ID: COS135-5. (Poster)
10. Lichstein J, Zhang T, **Sun M**, Mack M, Graves S, Whitten M, Jantzen J, Park J, Bohlman S, Gitzendanner M, Soltis D, Soltis P. (2017). Ecological traits and recent population dynamics of eastern Asian-eastern North American disjunct tree species in North America. *The XIX International Botanical Congress 2017 (Shenzhen, China)*, Abstract ID: T2-12-05. (Presentation)
11. **Sun M**, Germain-Aubrey CC, Gitzendanner MA, Smith SA, Soltis PS, Chen ZD, Soltis DE. (2016). Wrestling with the Rosids I: progress and challenges for phylogenetics of a large, hyper-diverse angiosperm clade. *Botany Conference 2016 (Savannah, Georgia)*, Abstract ID: 404. (Presentation)

Classes Audited

- **2018**
 - RSSIG - R Social Sciences Interest Group
 - Phylogenetics Systematics (*BOT6935/ZOO6927*)
 - Computational Tools for Research (*ZOO6927/ZOO4926*)
 - the Origin of Species Reading Group (*BOT6935/ZOO6927*)
- **2017**
 - Grant Writing Seminar (*ZOO6927/BOT6935*)
 - Principles of Systematic Biology (*BOT6726/ZOO6927*)
 - Niche Modelling (*ZOO6927*)
- **2016**
 - Data & Analysis in Natural Sciences (*ZOO6927/ZOO4926//GLY6932/GLY4930*)
 - Phylogenomics (*BOT6935/ZOO6927*)
 - Practical Computational Biology (*ZOO4926/ZOO6927*)
- **2015**
 - Taxonomy of Vascular Plants (*BOT5725C*)
 - Principles of Systematic Biology (*BOT6726/ZOO6927*)

Fieldwork Experience

- **2015**
 - Worked in Mountain Lake Biological Station (Virginia State) with Jeremy Lichstein (Department of Biology, University of Florida) and other ecologists collecting DNA, metabolites, RNA materials

from canopy trees and understory communities, soil samples, and other microbial materials for **Dimensions US-China Project** (*Collaborative Research: How historical constraints, local adaptation, and species interactions shape biodiversity across an ancient floristic disjunction Dimensions*).

- Participated in Talladega National Forest (Alabama State) with Doug Soltis and Pam Soltis (Florida Museum of Natural History, University of Florida) and other ecologists for material collection and first hand data generation for **Dimensions US-China Project**.
- Worked in Ordway Biological Station (Florida State) with Mark Whitten, Eric Triplets, and other ecologists for material collection and first hand data generation for **Dimensions US-China Project**.
- **2012**
 - Trip to southern Yunnan along Myanmar border with Pam S. Soltis and Doug E. Soltis, collecting materials for Tree of life — China Project.
 - Trip to Hainan tropical rain forest with Doug E. Soltis, collecting materials of Tree for life — China Project.
- **2006 ~ 2011**
 - Joined in the expedition team of national herbarium (PE) for collection many times, successively visited a series of biodiversity hotspots, such as Hubei, Chongqing, Guangxi, Sichuan, Xizang, etc.

Academic Activities

- **2020**
 - Introduction to Python’s NumPy library
 - Introduction to Command Line Meeting Information; Research Computing on the Great Lakes Cluster; Advanced research computing on the Great Lakes Cluster
 - PSC Bioinformatics Workshop - Snakemake Workflows
Workflow management, version control via Git and Bitbucket, build a reproducible and adaptable pipeline using Snakemake - Wendell Pereira
 - Virtual seminar: *Modern Systematics and Illuminating Hidden Relationships of Plants* - Tony Reznicek
Description: This will be a review and update of the impact on Michigan Flora (and plant classification generally) of recent work in molecular systematics. This meeting is being held jointly with Matthaei Botanical Gardens Herb Study Group.
 - Co-organizer and member of the COVID-19 HPC Consortium
 - Visiting Scholar at on Ecology and Evolutionary Biology (EEB) Dept., University of Michigan (UM) [March 2020 – August 2020; Ann Arbor, Michigan, USA]
- **2019**
 - Plantae Seminar: How to Be an Effective Mentor organized by Plantae Community
 - Biodiversity Research Coordinate Networking
 - UF Biodiversity Institute and IFAS Geospatial Workshop
 - 3rd Annual Collaborations in Biodiversity Symposium
 - Data Carpentry Workshop: Genomics
 - Data Science and Informatics (DSI) Spring Symposium 2019 at UF
 - Participated in Writing Workshop at UF Biodiversity Institute
Instructed by Dr. Nancy DeJoy, Associate Professor *Michigan State University*
 - Research Lightning Talks at Florida Museum of Natural History

- **2018**
 - Co-organizer and co-translator of The Great Tree of Life
 - Co-organizer of Research Bazaar event
 - Instructor and Helper of a serial of “Software and Data Carpentry Workshops” events
 - Instructor for Precollegiate Education and Training event
 - co-translated TreeTender movie into Chinese language for public education
 - Digital outreach with 4th and 5th graders from Bunker Hill Elementary School in D.C
- **2017**
 - Board member of UF Carpentries Club
 - Organizer of several Tree of Life pop-up tent events (UF campus, FLMNH public museum, local brew-pub)
 - Helper of Research Computing Training at UF Information Technology, Research Computing (University of Florida)
 - Coordinated with the 100-year anniversary exhibit celebration of FLMNH
 - Organizer of One Tree one Planet Encore
 - Judge for Graduate Student Research Day
 - Instructor and Helper in several “Software Carpentry Workshop” events
 - Instructor for the 54th Florida Regional Junior Science, Engineering, and Humanities Symposium
- **2016**
 - Volunteer Tree of Life Pop-Up Science! Florida Museum of Natural History
 - Member of Botanical Society of America
 - Oral Talk “Wrestling with the Rosids I: progress and challenges for phylogenetics of a large, hyper-diverse angiosperm clade.” in the annual Botany Conference (Savannah, Georgia)
 - Table volunteer for iDigBio at BSA meeting
 - Organizing volunteer, iDigBio workshop: Using Digitized Herbarium Data in Research: A Crash Course
- **2015 ~ 2010**
 - Training college students for taxonomic skills
 - Speaker of the conference about dioecious plants in Angiosperm in Peking University
 - Participate in the evaluation of “Red List of China Higher Plants” as a taxonomy expert
 - Contributed to develop a “Molecular Data and Application Environment” website and a winner for the best of website name and domain name, “Darwin Tree” and “<http://www.darwintree.cn/>”, respectively

Service

- Peer reviews for: *South African Journal of Botany*, *Evolutionary Bioinformatics*, *Journal of Systematics and Evolution*, *International Journal of Tropical Biology and Conservation*, *Plant Physiology and Biochemistry*, *Taxon*, *Scientific Reports*, *Botany*, *PeerJ*, *Journal of Agriculture and Rural Development in the Tropics and Subtropics*, and *Phytotaxa*.
- Certified Instructor of Software Carpentry (The Carpentries; taught classes of >400 students)
- Board member of UF Carpentries Club (a workshop series to teach informatics skills)
- Judge for Graduate Student Research Day at University of Florida
- Judge Graduate Student Research Grant proposals for American Society of Plant Taxonomists
- Educator Summer Science Institute Tree of Life for high school teacher
- Volunteer Tree of Life Pop-Up Science
- Member of Botanical Society of America
- Table volunteer for iDigBio events

- Taxonomic instructor for training college students
- Board member of “*Red List of China Higher Plants*” evaluation committee

References contact information

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8000 Aarhus C, Denmark
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Zhiduan Chen (PhD advisor)

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Matthew A. Gitzendanner (Bioinformatics Mentor)

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