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植物学专业



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简历:

1990年9月–1994年6月, 中科院昆明植物研究所, 实验员

1994年7月–1999年3月, 中科院昆明植物研究所, 助理实验师

1999年4月–2006年6月, 中科院昆明植物研究所, 实验师

2006年7月–2008年10月, 中科院昆明植物研究所, 副研究员

2008年11月–2011年12月, 中科院西双版纳热带植物园, 副研究员

2012年1月–2012年3月, 中科院西双版纳热带植物园, 研究员

2012年4月–迄今, 中科院昆明植物研究所, 研究员

研究领域:

兰科植物生物学

植物生理生态学

资源植物产业化关键技术研发

获奖及荣誉:

2016年, “中国杓兰亚科植物的生态适应及繁殖生物学”获云南省自然科学二等奖 (第二完成人)

2011年, 获“中国科学院王宽诚西部学者突出贡献” (个人奖)

2005年, “高山花卉杓兰属和角蒿属植物的引种选育及栽培示范”获云南省科技进步三等奖 (第四完成人)

代表论著:

代表性论著(*通讯作者):

1. Yang Y-J, Zhang S-B, Wang J-H*, Huang W*. 2020. The decline in photosynthetic rate upon transfer from high to low light is linked to the slow kinetics of chloroplast ATP synthase in *Bletilla striata*. *Photosynthesis Research*, <https://doi.org/10.1007/s1120-020-00725-y>
2. Wang J-H, Cai Y-F, Li S-F, Zhang S-B*. 2020. Photosynthetic acclimation of rhododendrons to light intensity in relation to leaf water-related traits. *Plant Ecology*, <https://doi.org/10.1007/s11258-020-01019-y>
3. Huang W, Yang Y-J, Zhang S-B*. 2019. The role of water-water cycle in regulating the redox state of photosystem I under fluctuating light. *Biochimica et Biophysica Acta (BBA) – Bioenergetics* 1860: 383–390.
4. Cai Y-F, Wang J-H, Zhang L, Song J, Peng L, Zhang S-B*. 2019. Physiological and transcriptomic analysis highlight key metabolic pathways in relation to drought tolerance in *Rhododendron delavayi*. *Physiology and Molecular Biology of Plants* 25: 991–1008.
5. Li J-W, Zhang S-B*. 2019. Physiological responses of orchid pseudobulbs to drought stress are related to their age and plant life form. *Plant Ecology* 220: 83–96.
6. Yang Y-J, Zhang S-B*, Huang W*. 2019. Photosynthetic regulation under fluctuating light in young and mature leaves of the CAM plant *Bryophyllum pinnatum*. *Biochimica et Biophysica Acta (BBA) – Bioenergetics* 1860: 469–477.
7. Huang W, Yang Y-J, Zhang S-B*. 2019. Photoinhibition of photosystem I under fluctuating light is linked to the insufficient ΔpH upon a sudden transition from low to high light. *Environmental and Experimental Botany* 160: 112–119.
8. Qin J, Zhang W, Ge Z-W*, Zhang S-B*. 2019. Molecular identifications uncover diverse fungal symbionts of *Pleione* (Orchidaceae). *Fungal Ecology* 37: 19–29.
9. Li J-W, Chen X-D, Hu X-Y, Ma L, Zhang S-B*. 2018. Comparative physiological and proteomic analyses reveal different adaptive strategies by *Cymbidium sinense* and *C. tracyanum* to drought. *Planta* 247:69–97.
10. Zhang S-B*, Yang Y-J, Li J-W, Qin J, Zhang W, Huang W, Hu H. 2018. Physiological diversity of orchids. *Plant Diversity* 40:196–208.

11. Huang W, Tikkanen M, Zhang S-B*. 2018. Photoinhibition of photosystem I in *Nephrolepis falciformis* depends on reactive oxygen species generated in the chloroplast stroma. *Photosynthesis Research* 137: 129–140.
12. Huang W, Tikkanen M, Cai Y-F, Wang J-H, Zhang S-B*. 2018. Chloroplastic ATP synthase optimizes the trade-off between photosynthetic CO₂ assimilation and photoprotection during leaf maturation. *Biochimica et Biophysica Acta (BBA) – Bioenergetics* 1859: 1067–1074.
13. Huang W, Zhang S-B*, Liu L*. 2018. Moderate photoinhibition of photosystem II significantly affects linear electron flow in the shade-demanding plant *Panax notoginseng*. *Frontiers in Plant Science* 9: 637.
14. Huang W, Quan X, Zhang S-B*, Liu T*. 2018. In vivo regulation of proton motive force during photosynthetic induction. *Environmental and Experimental Botany* 148: 109–116.
15. Zhang W, Qin J, Yang R, Yang Y, Zhang S-B*. 2018. Two new natural hybrids in the genus *Pleione* (Orchidaceae) from China. *Phytotaxa* 350: 247–258.
16. Yang Z-H, Huang W, Yang Q-Y, Chang W, Zhang S-B*. 2018. Anatomical and diffusional determinants inside leaves explain the difference in photosynthetic capacity between *Cypripedium* and *Paphiopedilum*, Orchidaceae. *Photosynthesis Research* 136:315–328.
17. Zhang F-P, Yang Y-J, Yang Q-Y, Zhang W, Brodribb TJ, Hao G-Y, Hu H*, Zhang S-B*. 2017. Floral mass per area and water maintenance traits are correlated with floral longevity in *Paphiopedilum* (Orchidaceae). *Frontiers in Plant Science* 8: 501.
18. Huang W, Yang Y-J, Zhang J-L, Hu H, Zhang S-B*. 2017. Superoxide generated in the chloroplast stroma causes photoinhibition of photosystem I in the shade-establishing tree species *Psychotria henryi*. *Photosynthesis Research* 132: 293–303.
19. Zhang W, Huang W, Zhang S-B*. 2017. The study of a determinate growth orchid highlights the role of new leaf production in photosynthetic light acclimation. *Plant Ecology* 218: 997–1008.
20. Yang Y-J, Chang W, Huang W, Zhang S-B, Hu H. 2017. The effects of chilling-light stress on photosystems I and II in three *Paphiopedilum* species. *Botanical Studies* 58: 53.
21. Huang W, Yang Y-J, Hu H*, Zhang S-B*. 2016. Response of the water–water cycle to the change in photorespiration in tobacco. *Journal of Photochemistry & Photobiology, B: Biology* 157: 97–104.
22. Huang W, Yang Y-J, Zhang J-L, Hu H, Zhang S-B*. 2016. PSI photoinhibition is more related to electron transfer from PSII to PSI rather than PSI redox state in *Psychotria rubra*. *Photosynthesis Research* 129: 85–92.
23. Huang W, Yang Y-J, Zhang S-B*. 2017. Specific roles of cyclic electron flow around photosystem I in photosynthetic regulation in immature and mature leaves. *Journal of Plant Physiology* 209: 76–83.
24. Li J-W, Zhang S-B*. 2016. Differences in the responses of photosystems I and II in *Cymbidium sinense* and *C. tracyanum* to long-term chilling stress. *Frontiers in Plant Science* 6: 1097.
25. Yang S-J, Sun M, Yang Q-Y, Ma R-Y, Zhang J-L, Zhang S-B*. 2016. Two strategies by epiphytic orchids for maintaining water balance: thick cuticles in leaves and water storage in pseudobulbs. *AoB Plants* 8: plw046.

26. Zhang F-P, Huang J-L, Zhang S-B. 2016. Trait evolution in the slipper orchid *Paphiopedilum* (Orchidaceae) in China. *Plant Signaling & Behavior* 11: e1149668.
27. Zhang F-P, Yang Q-Y, Wang G, Zhang S-B*. 2016. Multiple functions of volatiles in flowers and leaves of *Elsholtzia rugulosa* (Lamiaceae) from southwestern China. *Scientific Reports* 6: 27616.
28. Zhang W, Hu H, Zhang S-B*. 2016. Divergent adaptive strategies by two co-occurring epiphytic orchids to water stress: escape or avoidance? *Frontiers in Plant Science* 7:588.
29. Zhang S-B, Dai Y, Hao G-Y, Li J-W, Fu X-W, Zhang J-L. 2015. Differentiation of water-related traits in terrestrial and epiphytic *Cymbidium* species. *Frontiers in Plant Science* 6: 260.
30. Zhang S-B, Chen W-Y, Huang J-L, Bi Y-F, Yang X-F. 2015. Orchid species richness along elevational and environmental gradients in Yunnan, China. *PLoS ONE* 10: e0142621.
31. Huang W, Hu H, Zhang S-B*. 2015. Photorespiration plays an important role in the regulation of photosynthetic electron flow under fluctuating light in tobacco plants grown under full sunlight. *Frontiers in Plant Science* 6: 621.
32. Huang W, Yang Y-J, Hu H, Zhang S-B*. 2015. Different roles of cyclic electron flow around photosystem I under sub-saturating and saturating light intensities in tobacco leaves. *Frontiers in Plant Science*. 6: 923.
33. Zhang F-P, Zhang J-J, Yan Y, Hu H, Zhang S-B. 2015. Variations in seed micromorphology of *Paphiopedilum* and *Cypripedium* (Cypripedioideae, Orchidaceae). *Seed Science Research* 25: 395–401.
34. Sun M, Yang S-J, Zhang J-L, Bartlett M, Zhang S-B*. 2014. Correlated evolution in traits influencing leaf water balance in *Dendrobium* (Orchidaceae). *Plant Ecology* 215: 1255–1267.
35. Hu J, Yang Q-Y, Huang W, Zhang S-B*, Hu H*. 2014. Effects of temperature on leaf hydraulic architecture of tobacco plants. *Plant* 240: 489–496.
36. Zhang S-B, Sun M, Cao K-F, Hu H, Zhang J-L. 2014. Leaf photosynthetic rate of tropical ferns is evolutionarily linked to water transport capacity. *PLoS ONE* 9: e84682.
37. Zhang S-B, Cao K-F, Fan Z-X, Zhang J-L. 2013. Potential hydraulic efficiency in angiosperm trees increases with growth-site temperature but has no trade-off with mechanical strength. *Global Ecology and Biogeography* 22: 971–981.
38. Zhang W, Huang W, Yang Q-Y, Zhang S-B*, Hu H*. 2013. Effect of growth temperature on the electron flow for photorespiration in leaves of tobacco grown in the field. *Physiologia Plantarum* 149: 141–150.
39. Wang J-H, Li S-C, Sun M, Huang W, Cao H, Xu F, Zhou N-N, Zhang S-B*. 2013. Differences in the stimulation of cyclic electron flow in two tropical ferns under water stress are related to leaf anatomy. *Physiologia Plantarum* 147: 283–295.
40. Zhang S-B, Zhang J-L, Slik JWF, Cao K-F. 2012. Leaf element concentrations of terrestrial plants across China are influenced by taxonomy and the environment. *Global Ecology and Biogeography* 21: 809–818.
41. Zhang S-B, Guan Z-J, Sun M, Cao K-F, Hu H. 2012. Evolutionary association of stomatal traits with leaf vein density in *Paphiopedilum*, Orchidaceae. *PLoS ONE* 7: ppe40080.

42. Zhang S-B, Yin L-X. 2012. Plasticity in photosynthesis and functional leaf traits of *Meconopsis horridula* var. *racemosa* in response to growth irradiance. *Botanical Studies* 53: 335–343.
43. Zhang S-B, Slik JWF, Zhang J-L, Cao K-F. 2011. Spatial patterns of wood traits in China are controlled by phylogeny and environments. *Global Ecology and Biogeography* 20: 241–250.
44. Zhang S-B, Guan Z-J, Chang W, Hu H, Yin Q, Cao K-F. 2011. Slow photosynthetic induction and low photosynthesis in *Paphiopedilum armeniacum* are related to its lack of guard cell chloroplast and peculiar stomatal anatomy. *Physiologia Plantarum* 142: 118–127.
45. Guan Z-J, Zhang S-B, Guan K-Y, Li S-Y, Hu H. 2011. Leaf anatomical structures of *Paphiopedilum* and *Cypripedium* and their adaptive significances. *Journal of Plant Research* 124: 289–298.
46. Chang W, Zhang S-B, Li S-Y, Hu H. 2011. Ecophysiological significance of leaf traits in *Cypripedium* and *Paphiopedilum*. *Physiologia Plantarum* 141: 30–39.
47. Zhang S-B, Chang W, Hu H. 2010. Photosynthetic characteristics of two alpine flowers, *Meconopsis integrifolia* and *Primula sinopurpurea*. *Journal of Horticultural Science and Biotechnology* 85: 335–340.
48. Zhang S-B, Hu H. 2010. Temperature acclimation of photosynthesis in *Meconopsis horridula* var. *racemosa* Prain. *Botanical Studies* 51: 457–464.
49. Zhang S-B, Hu H, Xu K. 2008. Photosynthetic adaptation of *Meconopsis integrifolia* and *M. horridula*. *Botanical Studies* 49: 225–234.
50. Zhang S-B, Hu H, Xu K, Li Z-R. 2008. Variation of photosynthetic capacity with leaf age in an alpine orchid, *Cypripedium flavum*. *Acta Physiologiae Plantarum* 30: 381–388.
51. Li Z-R, Zhang S-B, Hu H, Li D-Z. 2008. Photosynthetic performance along a light gradient as related to leaf characteristics of a naturally occurring *Cypripedium flavum*. *Journal of Plant Research* 121: 559–569.
52. Zhang S-B, Hu H, Xu K, Li Z-R, Yang Y-P. 2007. Flexible and reversible responses to different irradiance levels during photosynthetic acclimation of *Cypripedium guttatum*. *Journal of Plant Physiology* 164: 611–620.
53. Zhang S-B, Zhou Z-K, Hu H, Xu K. 2007. Gas exchanges and resource utilization of two alpine oaks at different altitudes in the Hengduan Mountains. *Canadian Journal of Forest Research* 37: 1184–1193.
54. Zhang S-B, Hu H, Xu K, Li Z-R. 2006. Gas exchange of three co-occurring species of *Cypripedium* in a scrubland in the Hengduan Mountains. *Photosynthetica* 44: 241–247.
55. Zhang S-B, Hu H, Xu K, Li Z-R. 2006. Photosynthetic performances of five *Cypripedium* species after transplanting. *Photosynthetica* 44: 425–432.
56. Zhang S-B, Hu H, Zhou Z-K, Xu K, Yan N, Li S-Y. 2005. Photosynthesis in relation to reproductive success of *Cypripedium flavum*. *Annals of Botany* 96: 43–49.
57. Zhang S-B, Zhou Z-K, Hu H, Xu K, Yan N, Li S-Y. 2005. Photosynthetic performances of *Quercus pannosa* vary with altitude in the Hengduan Mountains, southwest China. *Forest Ecology and Management* 212: 291–301.

58. Zhang S-B, Hu H, Zhou Z-K, Xu K, Yan N. 2005. Photosynthetic performances of transplanted *Cypripedium flavum* plants. Botanical Bulletin of Academia Sinica 46: 307–313.

承担科研项目情况:

- 1.国家自然科学基金面上项目: 兜兰属春季开花型和秋季开花型植物的开花生理研究, 直接经费58万元, 2020–2023, 主持。
- 2.中国科学院王宽诚率先人才计划“产研人才扶持项目”: 特色花卉兜兰的新品种及其产业化关键技术示范, 经费50万元, 2020–2022, 主持
- 3.中国西南野生种质资源库“交叉团队”重点项目: 兜兰属和独蒜兰属种质资源的利用技术研发与示范推广, 经费150万元, 2019–2021, 主持。
- 4.云南省科技计划项目子课题: 国际花卉技术创新中心建设及成果产业化, 经费100万元, 2019–2021, 主持。
- 5.企业委托项目: 独蒜兰的种苗繁育与栽培技术研发, 经费50万元, 2019–2021, 主持。
- 6.云南省应用基础研究重点项目: 兜兰属春季和秋季开花种的花芽发育及成花诱导机制, 经费50万元, 2018–2021, 主持。
- 7.中科院STS区域重点项目: 特色花卉兜兰的新品种及其产业化配套技术示范, 经费400万元, 2018–2019, 主持。
- 8.中科院先导B专项子课题: 兰属植物多样性起源与适应性分子机制, 经费150万元, 2018–2023, 参加。
- 9.国家自然科学基金面上项目: 兰科植物根的结构功能及其生态适应意义, 直接经费63万元, 2017–2020, 主持。
- 10.企业委托项目: 道地药材小白芫的优质种苗繁育与栽培技术研发, 经费108万元, 2017–2020, 主持。
- 11.横向合作项目: 云南特色观赏植物的生理生态适应性, 经费80万元, 2016–2020, 主持。
- 12.企业委托项目: 护肤石斛的品种筛选及绿色栽培技术研发, 经费303万元, 2016–2019, 主持。
- 13.中科院昆明植物研究所部署项目: 高档特色花卉兜兰的新品种选育与产业示范, 经费80万元, 2016–2017, 主持。
- 14.国家自然科学基金面上项目: 兰属附生植物的水分适应特征, 经费78万元, 2014–2017年, 主持。
- 15.云南省应用基础研究重点项目: 云南重要观赏植物兰属的水分适应机制研究, 经费40万元, 2013–2016年, 主持。
- 16.中科院昆明植物研究所人才引进项目: 兰科植物的生态适应与进化, 经费70万, 2012–2015年, 主持。
- 17.国家自然科学基金面上项目: 兰属植物的生活型、光合途径及其生态适应, 经费55万元, 2012–2015年, 主持。
- 18.中国烟草公司重大项目子课题: 清香型特色优质烟叶形成物质代谢基础研究, 经费450万元, 2011–2015年, 参加。
- 19.云南省科技计划项目子课题: 石斛属和蕨类植物的生理适应性研究, 经费7万元, 2010–2012年, 主持。

20.国家自然科学基金面上项目：绿绒蒿属植物的生理生态适应性研究，经费30万元，2008–2010年，主持。


21.中科院“西部之光”面上项目：高山花卉绿绒蒿的引种驯化及其生理生态基础，经费20万元，2007–2009年，主持。

22.云南省应用基础面上项目：高山花卉绿绒蒿的引种驯化及其生理适应，经费5万元，2007–2009年，主持。



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