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教育背景

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日本综合研究大学院大学 国立基础生物学研究所 基础生物学专业 博士

2003-09 至 2007-07

哈尔滨工业大学 生物工程专业 学士

博士后工作经历

(1) 2016-04 至 2019-03, 日本奈良先端科学技术大学院大学

(2) 2013-08 至 2016-03, 日本理化学研究所

科研与学术工作经历

(1) 2022-10 至今, 中国科学院昆明植物研究所, 资源植物与生物技术, 研究员

(2) 2019-04 至 2022-09, 日本奈良先端科学技术大学院大学, 生物学部门, 助教

(3) 2013-04 至 2013-07, 日本综合研究大学院大学, 国立基础生物学研究所, 研究实习生

主要研究成果简述

自博士毕业以来一直从事吸器的发育调控研究, 始终以列当科的兼性寄生植物—松蒿和专性寄生植物—独脚金为研究对象, 以解析列当科寄生植物与寄主的分子互作机制。研究内容聚焦于吸器发育生物学, 重点以松蒿为模型, 结合基因组学和正向遗传学方法从松蒿突变体中挖掘并鉴定吸器发育调控基因; 首次运用基因组学与遗传学在半寄生植物松蒿中建立了突变位点筛选及鉴定体系, 并应用此方法成功鉴定到吸器功能和发育调控关键基因 ETHYLENE RECEPTOR 1 (ETR1) 和 ETHYLENE INSENSITIVE 2 (EIN2)。此外, 利用细胞分子生物学、发育学和成像学等技术揭示了独脚金和松蒿中寄主信号感应信号途径, 发现了水稻抵抗寄生植物的新分子途径, 验证了吸器中多种细胞类型的结构与功能。系统掌握列当科寄生植物吸器的形态特征和发育模式, 以及其与寄主的互作原理。

发表研究论文

- Cui S, Takeda-Kimura Y, Wakatake T, Luo J, Tobimatsu Y, Yoshida S (2025) *Striga hermonthica* induces lignin deposition at the root tip to facilitate prehaustorium formation and obligate parasitism. *Plant Commun.* 6: 101294 (Research Paper)
- Cui S, Inaba S, Suzuki T, Yoshida S (2023) Developing for nutrient uptake: Induced organogenesis in parasitic plants and root nodule symbiosis. *Curr. Opin. in Plant Biol.* 76: 102473 (Review)
- #Aoki N, #Cui S, Ito C, Kumaishi K, Kobori S, Ichihashi Y, Yoshida S (2022) Phenolic signals for prehaustorium formation in *Striga hermonthica*. *Front. Plant Sci.* 13: 1077996 (#co-first authors) (Research paper)
- Aoki N, Cui S, Yoshida S (2022) Cytokinins induce prehaustoria coordinately with quinone signals in the parasitic plant *Striga hermonthica*. *Plant Cell Physiol.* 63: 1446-1456. (Research paper)
- Ogawa S, Cui S, White ARF, Nelson DC, Yoshida S, Shirasu K (2022) Strigolactones are chemoattractants for host tropism in Orobanchaceae parasitic plants. *Nat. Commun.* 13: 4653 (Research paper)

6. Kokla A, Leso M, Zhang X, Simura J, Serivichyaswat PT, **Cui S**, Ljung K, Yoshida S, Melnyk CW (2022) Nitrogen represses haustoria formation through abscisic acid in the parasitic plant *Phtheirospermum japonicum*. Nat. Commun. 13: 2976. (Research paper)
7. Furuta KM, Xiang L, **Cui S**, Yoshida S (2021) Molecular dissection of haustorium development in Orobanchaceae parasitic plants. Plant Physiol. 186: 1424-1434 (Review)
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9. Mutuku JM, **Cui S**, Yoshida S, Shirasu K (2021) Orobanchaceae parasite-host interactions. New Phytol. 230: 46-59 (Review)
10. **Cui S**, Yoshida S (2021) Roles of ethylene in parasitic plant haustorium formation and host invasion. BSJ-Review. 102-111 (Review)
11. **Cui S**, Kubota T, Nishiyama T, Ishida JK, Shigenobu S, Shibata TF, Toyoda A, Hasebe M, Shirasu K, Yoshida S (2020) Ethylene signaling mediates host invasion by parasitic plants. Sci. Adv. 6: eabc2385 (Research paper)
12. Kurotani K, Wakatake T, Ichihashi Y, Okayasu K, Sawai Y, Ogawa S, **Cui S**, Suzuki T, Shirasu K, Notaguchi M (2020) Host-parasite tissue adhesion by a secreted type of β -1,4-glucanase in the parasitic plant *Phtheirospermum japonicum*. Commun. Bio. 3: 407 (Research paper)
13. Yoshida, S., Kim, S., Wafula, E. K., Tanskanen, J., Kim, Y. M., Honaas, L., Yang, Z., Spallek, T., Conn, C. E., Ichihashi, Y., Cheong, K., **Cui, S.**, Der, J. P., Gundlach, H., Jiao, Y., Hori, C., Ishida, J. K., Kasahara, H., Kiba, T., Kim, M. S., Koo, N., Laohavisit, A., Lee, Y. H., Lumba, S., McCourt, P., Mortimer, J. C., Mutuku, J. M., Nomura, T., Sasaki-Sekimoto, Y., Seto, Y., Wang, Y., Wakatake, T., Sakakibara, H., Demura, T., Yamaguchi, S., Yoneyama, K., Manabe, R. I., Nelson, D. C., Schulman, A. H., Timko, M. P., dePamphilis, C. W., Choi, D., and Shirasu, K. (2019) Genome sequence of *Striga asiatica* provides insight into the evolution of plant parasitism. Curr. Biol. 29: 3041-3052 e3044 (Research paper)
14. Goyet, V., Wada, S., **Cui, S.**, Wakatake, T., Shirasu, K., Montiel, G., Simier, P., Yoshida, S. (2019) Haustorium inducing factors for parasitic Orobanchaceae. Front. Plant Sci. 10: 1056 (Review)
15. Wada, S., **Cui, S.**, and Yoshida, S. (2019) Reactive oxygen species (ROS) generation is indispensable for haustorium formation of the root parasitic plant *Striga hermonthica*. Front. Plant Sci. 10: 328 (Research paper)
16. **Mutuku, J.M., #Cui, S.**, Hori, C., Takeda, Y., Tobimatsu, Y., Nakabayashi R., Mori, T., Saito, K., Demura, T., Umezawa, T., Yoshida, S. and Shirasu, K. (2019). The structural integrity of lignin is crucial for resistance against *Striga hermonthica* parasitism in rice. Plant Physiol. 179: 1796-1809 (#co-first authors) (Research paper)
17. **Cui, S.**, Suzaki, T., Tominaga-Wada, R., and Yoshida, S. (2018) Regulation and functional diversification of root hairs. Semin. Cell Dev. Biol. 83: 115-122 (Review)
18. **Cui, S.**, Wada, S., Tobimatsu, Y., Takeda, Y., Saucet, S. S., Takano, T., Umezawa, T., Shirasu, K., Yoshida, S. (2018). Host lignin composition affects haustorium induction in the parasitic plants *Phtheirospermum japonicum* and *Striga hermonthica*. New Phytol. 218: 710-723. (Research paper)
19. **Cui, S.**, Wakatake, T., Hashimoto, K., Saucet, S.B., Toyooka, K., Yoshida, S., and Shirasu, K. (2016). Haustorial hairs are specialized root hairs that support parasitism in the facultative parasitic plant *Phtheirospermum japonicum*. Plant Physiol. 170: 1492-1503. (Research paper)
20. Yoshida, S., **Cui, S.**, Ichihashi, Y., and Shirasu, K. (2016). The haustorium, a specialized invasive organ in parasitic plants. Annu. Rev. Plant Biol. 67: 643-667. (Review)
21. **Cui, S.**, Hayashi, Y., Otomo, M., Mano, S., Oikawa, K., Hayashi, M., and Nishimura, M. (2016). Sucrose production mediated by lipid metabolism suppresses physical interaction of peroxisomes and oil bodies during germination of *Arabidopsis thaliana*. J. Biol. Chem. 291: 9734-9745. (Research paper)

22. Cui, S., Fukao, Y., Mano, S., Yamada, K., Hayashi, M., and Nishimura, M. (2013). Proteomic analysis reveals that the Rab GTPase RabE1c is involved in the degradation of the peroxisomal protein receptor PEX7 (peroxin 7). J. Biol. Chem. 288: 6014-6023. (Research paper)

23. Cui, S., Mano, S., Yamada, K., Hayashi, M., and Nishimura, M. (2013). Novel proteins interacting with peroxisomal protein receptor PEX7 in *Arabidopsis thaliana*. Plant Signal. Behav. 8: e26829. (Review)

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