China

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Please describe any new experimental resources and/or software tools available to Arabidopsis researchers that have been initiated or funded in your country in 2020 or early 2021.

- AraShare: A community biological resource center
http://www.arashare.cn/
- Plant Transcriptional Regulatory Map (includes updated PlantTFDB and additional resources)
http://plantregmap.cbi.pku.edu.cn/
- AHD2.0: Arabidopsis hormone database 2.0
https://bigd.big.ac.cn/ahd/
- LSD3.0: Arabidopsis leaf senescence database 3.0
https://bigd.big.ac.cn/lsd/
- PlantGSEA: a gene set enrichment analysis toolkit for plant community
http://structuralbiology.cau.edu.cn/PlantGSEA/
- PsRobot: Plant small RNA analysis toolbox
http://omicslab.genetics.ac.cn/psRobot/
- Shoot cell type-specific expression ebrowser
http://jiaolab.genetics.ac.cn/shootapex.html

Please provide a paragraph describing the general impact of the COVID19 pandemic on the scientific community in your country

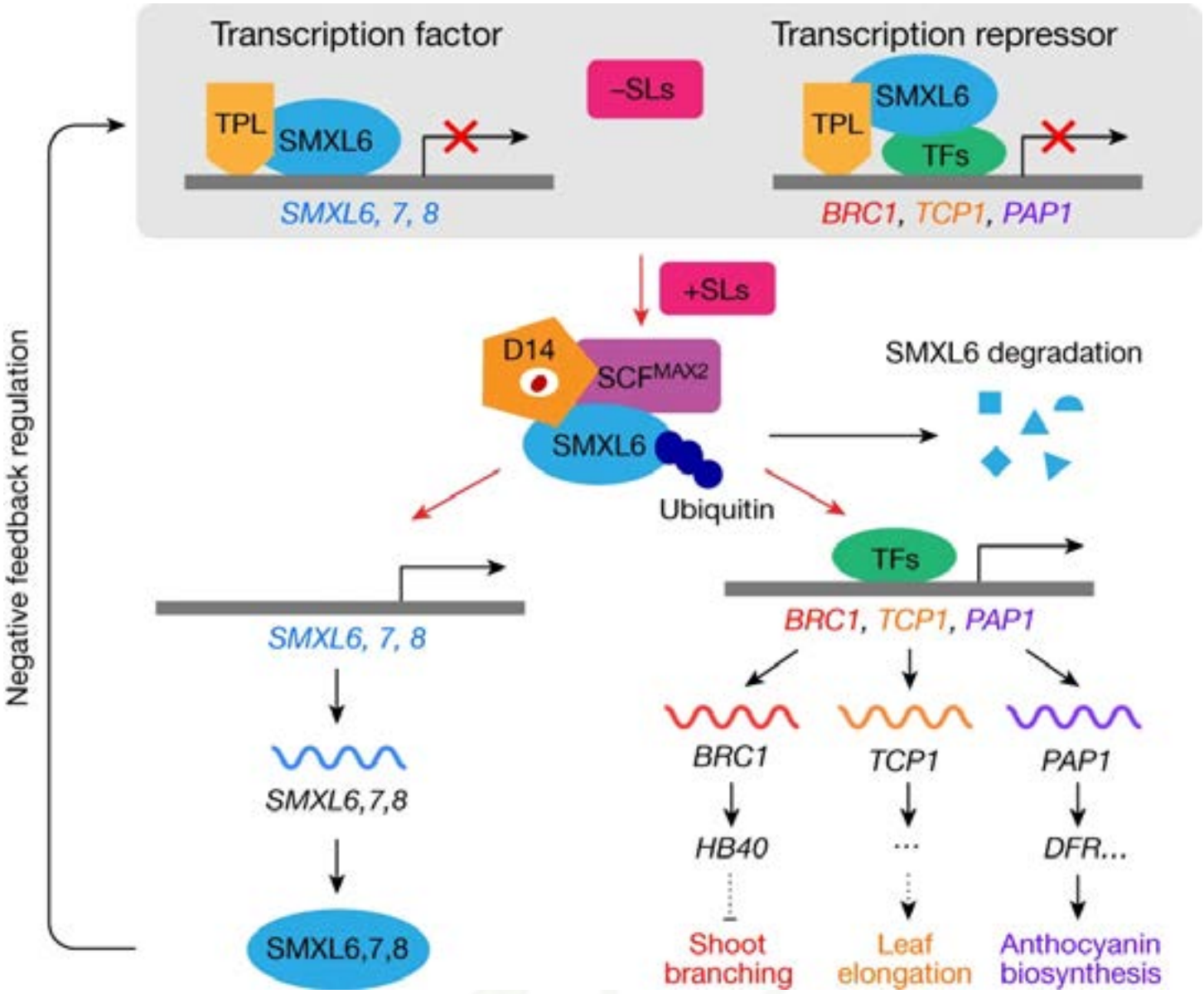
COVID19 outbreak started in Wuhan in late January during the Lunar New Year holidays. A countrywide lock down followed up that stopped or at least slowed down research in the majority of universities and research institutions. For about a semester, graduate and undergraduate students stayed at home so that laboratories were mostly closed. Nevertheless, quite a few research groups with expertise in sequence analysis and molecular evolution participated in COVID19 pandemic studies. Since summer, the pandemic was contained. Life resumed normal as well as laboratory research, although temporarily interfered by the occasional identification of new cases in a few cities. In October, we were pleased to see the annual National Congress of Plant Biology to take place as usually, although about half of the attendees selected the online option.

Planned events for 2021 and 2022

- 2020 National Congress of Plant Biology, October 11-14, 2020, Shenzhen, Guangdong

- 5th Forum of Young Plant Scientists, November 26-29, 2020, Changzhou, Jiangsu (http://plantyouth2020.csp.escience.cn/)

- 2021 National Congress of Plant Biology, October 11-14, 2021, Xi'an, Shaanxi (http://ncpb.net/)



In the absence of strigolactones (SLs; top), SMXL6 plus TPL bind directly to the promoters of SMXL6, 7, 8 and repress their expression, functioning as a repressive transcription factor (TF). Meanwhile, SMXL6 can also form a complex with unknown transcription factors that are expected to recognize and bind to the promoters of BRC1, TCP1 or PAP1, repressing their transcription as well. In the presence of SLs, D14 binds SLs (white and red circle within D14) and promotes the formation of the D14–SCFMAX2–SMXL6 complex, triggering the ubiquitin-mediated degradation of SMXL6. This relieves the transcriptional repression of SMXL6, 7, 8. Newly synthesized SMXL6 proteins in turn repress transcription, forming a negative feedback loop. The degradation of SMXL6 also releases its transcriptional repression of BRC1, TCP1 and PAP1, thus activating signalling cascades that repress shoot branching, promote leaf elongation and enhance anthocyanin biosynthesis, respectively.

Selected Publications

- Wang L, Wang B, Yu H, Guo H, Lin T, Kou L, Wang A, Shao N, Ma H, Xiong G, Li X, Yang J, Chu J, Li J. (2020) Transcriptional regulation of strigolactone signalling in Arabidopsis. Nature 583(7815): 277-281.

By identifying strigolactone early-responsive genes, this study clarifies how shoot branching, leaf development, and anthocyanin biosynthesis are regulated.

- Wu H, Li B, Iwakawa HO, Pan Y, Tang X, Ling-Hu Q, Liu Y, Sheng S, Feng L, Zhang H, Zhang X, Tang Z, Xia X, Zhai J, Guo H. (2020) Plant 22-nt siRNAs mediate translational repression and stress adaptation. Nature 581(7806): 89-93.

This study identified large amount of 22 nt siRNAs generated by coding sequences, which interferes with translation, and promotes resistance to stress conditions.

- Wu H, Qu X, Dong Z, Luo L, Shao C, Forner J, Lohmann JU, Su M, Xu M, Liu X, Zhu L, Zeng J, Liu S, Tian Z, Zhao Z. (2020) WUSCHEL triggers innate antiviral immunity in plant stem cells. Science 370(6513): 227-231.

By showing WUSCHEL inhibits ribosome maturation, which is required for virus proliferation, this study explains why shoot apical meristem is resistant to virus infection.

Major Funding Sources

- National Natural Science Foundation (NSFC). (http://www.nsfc.gov.cn/publish/portal1/)

- Ministry of Science and Technology (MOST). (http://www.most.gov.cn/eng/programmes1/index.htm)