

Chen Sumei



Areas of Research

Ornamental plants, Biotic and abiotic stress, Flowering

Contact Information

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Research Interests

Salinity tolerance; aphid resistance; senescence; flowering

Our lab integrates transcriptome methods, bioinformatics, reverse genetic methods, metabonomics to study how chrysanthemum copes with salinity and aphids, and how plant hormones affects the stresses tolerance, flowering, and senescence of chrysanthemum. Some of the topics we are currently working on are described below:

1. Salinity tolerance

Our primary research interest concerns how heat shock factor confers to the tolerance of chrysanthemum to salinity. An emerging role of heat shock factors in integrating salinity with other stresses has been recognized. Topics that have attracted our attention recently is how heat shock factors integrates ABA and ROS signals in response to salinity.

2. Aphid resistance

Lignin, an important component of plant cell wall, acts as a mechanical barrier against the feeding of aphids. Our lab has isolated several members of MYB transcription family, and validated their roles in accelerating the synthesis of lignin and resistance of chrysanthemum to aphids. Recently, we are focusing on how *MYBs* regulate the biosynthesis process of lignin in response to aphids and plant hormones. In addition, terpenes have been well known as a component of volatiles repelling the aphids and attracting predators of aphids. Several kinds of terpenes involved in resistance of chrysanthemum to aphids were identified. We are currently dissecting the key factors regulating terpene biosynthesis pathways in chrysanthemum.

3. Senescence

Leaf yellowing and early wilting shortens the shelf life and causes decay in the postharvest quality

of chrysanthemum. Senescence of leaves of chrysanthemum cultivars differs in the sensitivity to plant hormones such as ethylene and ABA, we are focus on dissecting molecular mechanisms of ethylene in regulating the leaf senescence of chrysanthemum.

4. Flowering

Flowering is an important trait for ornamental and economic value of chrysanthemum. Plant hormones played important roles in regulating flowering time, we are interested in reveal roles of strigolactone and auxin in regulating flowering time of chrysanthemum.

Education Background

Bachelor: Nanjing Normal University

Master: Nanjing Agricultural University

Doctor: Chiba University

Work experience

Assistant Professor, Nanjing Agricultural University, 1999-2002

Lecturer, Nanjing Agricultural University, 2002-2007

Associate Professor, Nanjing Agricultural University, 2008-2012

Professor, Nanjing Agricultural University, 2013-

Visiting Scholar, University of California, Riverside, 2014-2015

Honors and Awards

New century outstanding talented person of the Ministry of Education

The second class national technology award for invention prize (3rd contributor)

Selected Publication

(1) Zhang Wanwan[#], Gao Tianwei[#], Li Peiling[#], Tian Chang, Song Aiping, Jiang Jiafu, Guan Zhiyong, Fang Weimin, Chen Fadi, **Chen Sumei***. Chrysanthemum CmWRKY53 negatively regulates the resistance of chrysanthemum to the aphid *Macrosiphoniella sanborni*. *Horticulture Research*. 2020, 7: 109.

(2) An Cong[#], Sheng Liping[#], Du Xinping, Wang Yinjie, Zhang Yi, Song Aiping, Jiang Jiafu, Guan Zhiyong, Fang Weimin, Chen Fadi, **Chen Sumei***. Overexpression of *CmMYB15* provides chrysanthemum resistance to aphids by regulating the biosynthesis of lignin. *Horticulture Research*. 2019, 6: 84.

(3) Du Xinping[#], Li Wenyan[#], Sheng Liping, Deng Ye, Wang Yinjie, Zhang Wanwan, Yu Kaili, Jiang Jiafu, Fang Weimin, Guan Zhiyong, Chen Fadi, **Chen Sumei***. Over-expression of chrysanthemum *CmDREB6* enhanced tolerance of chrysanthemum to heat stress. *BMC Plant Biology*. 2018, 18:178.

(4) Li Fei[#], Zhang Huanru[#], Zhao Husheng, Gao Tianwei, Song Aiping, Jiang Jiafu, Chen Fadi,

- Chen Sumei***. Chrysanthemum CmHSFA4 gene positively regulates salt stress tolerance in transgenic chrysanthemum. *Plant Biotechnology Journal*. 2018, 16(7): 1311-1321.
- (5) Li Peiling, Song Aiping, Gao Chunyan, Wang Linxiao, Wang Yinjie, Sun Jing, Jiang Jiafu, Chen Fadi*, **Chen Sumei***. Chrysanthemum WRKY gene *CmWRKY17* negatively regulates salt stress tolerance in transgenic chrysanthemum and Arabidopsis plants. *Plant Cell Reports*. 2015, 34(8):1365-1378.
- (6) Xia Xiaolong, Shao Yafeng, Jiang Jiafu, Ren Liping, Chen Fadi, Fang Weimin, Guan Zhiyong, **Chen Sumei***. Gene expression profiles responses to aphid feeding in chrysanthemum (*Chrysanthemum morifolium*). *BMC Genomics*. 2014, 15:1050.
- (7) An Juan, Song Aiping, Guan Zhiyong, Jiang Jiafu, Chen Fadi, Lou Wanghuai, Fang Weimin, Liu Zhaolei, **Chen Sumei***. The over-expression of *Chrysanthemum crassum* *CcSOS1* improves the salinity tolerance of chrysanthemum. *Molecular Biology Reports*. 2014, 41:4155-4162.
- (8) Gao Haishun, Song Aiping, Zhu Xirong, Chen Fadi, Jiang Jiafu, Chen Yu, Sun Yan, Shan Hong, Gu Chunsun, Li Peiling, **Chen Sumei***. The heterologous expression in Arabidopsis of a chrysanthemum Cys2/His2 zinc finger protein gene confers salinity and drought tolerance. *Planta*. 2012, 235:979-993.
- (9) Lv Guosheng, Tang Dejuan, Chen Fadi, Sun Ya, Fang Weimin, Guan Zhiyong, Liu Zhaolei, **Chen Sumei***. The anatomy and physiology of spray cut chrysanthemum pedicels, and expression of a caffeic acid 3-O-methyltransferase homologue, *Postharvest Biology and Technology*. 2011, 60:244-250.
- (10) He Junping, Chen Fadi, **Chen Sumei***, Lv Guosheng, Deng Yanming, Fang Weimin, Liu Zhaolei, Guan Zhiyong, He Chunyan. Chrysanthemum leaf epidermal surface morphology and antioxidant and defense enzyme activity in response to aphid infestation. *Journal of Plant Physiology*. 2011, 168(7):687-693.
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