

# Curriculum Vitae

## Personal Information

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## Education:

- B.S. in Biological Education from Anhui Institute of Education, Hefei, Anhui, China, 1998
- Ph.D. in Plant Molecular Biology from Purdue University, West Lafayette, IN 47907, 2004

## Research Interests:

Land plants are frequently challenged by the changing physical environment, which often generates various biotic and abiotic stresses including salinity, drought, and temperature extremes. According to reports from the FAO (Food and Agriculture Organization of the United Nations), 96.5% of global rural land area is under the influence of abiotic stresses. These abiotic stresses adversely affect the productivity and quality of crops worldwide. My research interest is to understand the molecular mechanisms that plants have evolved to cope with abiotic stresses. Most of my effort has been concentrating on the identification of key components in signal transduction pathways for plant responses to abiotic stresses, with the long-term goal of developing rational strategies to improve crop productivity and agricultural and environmental sustainability. In my lab, we use a combination of forward and reverse genetics in the model plant *Arabidopsis thaliana* to study the roles of proteins and non-protein encoding regulatory small RNAs in plant abiotic stress responses.

## Articles in Refereed Journals since 2008:

1. Guan, Q., Yue, X., Zeng, H., and **Zhu, J.** (2013). The protein phosphatase and its interacting partner NAC019 are required for heat stress-responsive

gene regulation and thermotolerance in *Arabidopsis*. **Plant Cell**. Accepted.

2. Guan, Q., Wu, J., Yue, X., Zhang, Y., and **Zhu, J.** (2013) A nuclear calcium-sensing pathway is critical for gene regulation and salt stress tolerance in *Arabidopsis*. **PLoS Genetics** . 9(8): e1003755.
3. Guan, Q., Wu, J., Zhang, Y., Jiang, C., Liu, R., Chai, C., and **Zhu, J.** (2013) A DEAD box RNA helicase is critical for pre-mRNA splicing, cold-responsive gene regulation, and cold tolerance in *Arabidopsis*. **Plant Cell**. 25: 342-356.
4. Guan, Q., Lu, X., Zeng, H., Zhang, Y., and **Zhu, J.** (2013) Heat stress induction of miR398 triggers a regulatory loop that is critical for thermotolerance in *Arabidopsis*. **Plant Journal**. 74:840-851.
5. Li, W.\*, Guan, Q.\*, Wang, Z.-Y., Wang, Y., and **Zhu, J.** (2013) A bi-functional xyloglucan galactosyltransferase is an indispensable salt stress tolerance determinant in *Arabidopsis*. **Molecular Plant**. 6: 1344-1354. (\*co-first authors)
6. Lu, X., Guan, Q., and **Zhu, J.** (2013) Downregulation of CSD2 by a heat-inducible miR398 is required for thermotolerance in *Arabidopsis*. **Plant Signaling & Behavior**. 8: e24952.
7. Guan, Q., Zeng, H., Wen, C., and **Zhu, J.** (2013) A KH domain-containing putative RNA-binding protein is critical for heat stress-responsive gene regulation and thermotolerance in *Arabidopsis*. **Molecular Plant**. 6: 386-395.
8. Barrera-Figueroa, B.E., Gao, L., Wu, Z., Zhou, X., **Zhu, J.**, Jin, H., Liu, R., and Zhu, J.-K. (2012) High throughput sequencing reveals novel and abiotic stress-regulated microRNAs in the inflorescences of rice. **BMC Plant Biology**. 12: 132.
9. Khraiwesh, B.\*, Zhu, J.-K., and **Zhu, J.\*** (2012) Role of miRNAs and siRNAs in biotic and abiotic stress responses of plants. **Biochimica et Biophysica Acta-Gene Regulatory Mechanisms**. 1819: 137-148. (co-corresponding authors)
10. Wang, Z.-Y., Xiong, L., Li, W., Zhu, J.-K., and **Zhu, J.** (2011) Plant cuticle is required for osmotic stress regulation of abscisic acid biosynthesis and osmotic stress tolerance. **Plant Cell**. 23: 1971-1984.
11. **Zhu, J.** (corresponding author), Lee, B.-h., Dellingner, M., Cui, X., Zhang, C., Wu, S., Nothnagel, E.A., and Zhu, J.-K. (2010) A cellulose synthase-like protein is required for osmotic stress tolerance in *Arabidopsis*. **Plant Journal**. 63: 128-140.
12. Ren, Z., Zheng, Z., Chinnusamy, V., **Zhu, J.**, Cui, X., Iida, K., and Zhu, J.-K. (2010) RAS1, a quantitative trait locus for salt tolerance and ABA sensitivity in *Arabidopsis*. **Proceedings of the National Academy of Sciences of the United States of America**. 107: 5669-5674.
13. He, X.J., Hsu, Y.F., Zhu, S., Liu, H.L., Pontes, O., **Zhu, J.**, Cui, X., Wang, C.S., and Zhu, J.-K. (2009). A conserved transcriptional regulator is

required for RNA-directed DNA methylation and plant development. **Genes & Development.** 23: 2717-2722.

14. He, X.J., Hsu, Y-F., Pontes, O., **Zhu, J.**, Lu, J., Bressan, R.A., Pikaard, C., Wang, C.-S., and Zhu, J.-K. (2009) NRPD4, a protein related to the RPB4 subunit of RNA polymerase II, is a component of RNA polymerases IV and V and is required for RNA-directed DNA methylation. **Genes & Development.** 23: 318-330.

15. Zheng, X., Pontes, O., **Zhu, J.**, Miki, D., Zhang, F., Li, W.X., Iida, K., Kapoor, A., Pikaard, C.S., and Zhu, J.-K. (2008). ROS3 is an RNA-binding protein required for DNA demethylation in *Arabidopsis*. **Nature.** 455: 1259-1262.

16. Li, W.X., Oono, Y., **Zhu, J.**, He, X.J., Wu, J.M., Iida, K., Lu, X.Y., Cui, X., Jin, H., and Zhu, J.-K. (2008). The *Arabidopsis* NFYA5 transcription factor is regulated transcriptionally and posttranscriptionally to promote drought resistance. **Plant Cell.** 20: 2238-2251.