

An Yuyan



Areas of Research

Plant stress physiology, signal transduction of plant growth regulators, and fruit quality regulation.

Contact Information

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Research Interest

✧ Plant stress physiology

Our lab has demonstrated the outstanding roles of 5-aminolevulinic acid (ALA), a new plant growth regulator, in improving fruit tree tolerance to abiotic stresses. We are now interested in the physiological and molecular biological mechanisms underlying ALA-improved tolerance of fruit trees.

✧ Guard cell signal transduction

We found a new role of ALA, regulating stomatal movement. We have been studying how ALA regulates stomatal movement to enrich guard cell signal transduction mechanisms.

✧ Regulation of fruit quality

We focus on the regulatory mechanisms of fruit quality, especially anthocyanin accumulation in fruits.

Education Background

✧ 2007-2011 Ph.D. in Plant Ecophysiology, Research Center of Soil and Water Conservation and Ecological Environment, Chinese Academy of Science and Ministry of Education, China

✧ 2005-2007 M.S. in Plant Ecophysiology, Northwest A&F University, China

✧ 2001-2005 B.S. in Bioengineering, Northwest A&F University, China

Work Experience

- ✧ 2017-present Associate Professor, College of Horticulture, Nanjing Agricultural University, China
 - ✧ 2017-2018 Visiting scholar, University of California, Davis, USA
 - ✧ 2013-2017 Lecturer, College of Horticulture, Nanjing Agricultural University, China
 - ✧ 2011-2013 Postdoctor, College of Life Science, Northwest A&F University, China
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Honors and Awards

- ✧ The Zhu liyuehua Excellent Doctoral Student Award of the Chinese Academy of Science and Ministry of Education (2011)
 - ✧ The excellent thesis first prize in Botanical Society of Shaanxi province (2009, 2010)
 - ✧ The Merit Student award of the Chinese Academy of Science and Ministry of Education (2008)
 - ✧ The first-class national scholarship in Northwest A&F University (2002)
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Selected Publication

- J. Li, **Y.Y. An***, L.J. Liang*. Transcriptomic analysis of *Ficus carica* peels with a focus on the key genes for anthocyanin biosynthesis. **International Journal of Molecular Sciences**, 2020, 21: 1245.
- Y.Y. An**, L.J. Xiong, S. Hu, et al. PP2A and microtubules function in 5-aminolevulinic acid-mediated H₂O₂ signaling in *Arabidopsis* guard cells. **Physiologia Plantarum**, 2020, 168: 709-724.
- C.Y. Cai, S.S. He, **Y.Y. An***, et al. Exogenous 5-aminolevulinic acid improves strawberry tolerance to osmotic stress and its possible mechanisms. **Physiologia Plantarum**, 2020, 168: 948-962.
- N. Ma, **Y.Y. An (Co-first author)**, J. Li, et al. Cloning and characterization of a homologue of the *FLORICAULA/LEAFY* gene in *Ficus carica* L., *FcLFY*, and its role in flower bud differentiation. **Scientia Horticulturae**, 2020, 261: 100914.
- Y.Y. An**, D.X. Cheng, Z.X. Rao, et al. 5-Aminolevulinic acid (ALA) promotes primary root elongation through modulation of auxin transport in *Arabidopsis*. **Acta Physiologiae Plantarum**, 2019, 41: 85.

- W.W. Wu, S.S. He, **Y.Y. An**, et al. Hydrogen peroxide as a mediator of 5-aminolevulinic acid-induced Na⁺ retention in roots for improving salt tolerance of strawberries. **Physiologia Plantarum**, 2019, 167: 5-20.
- Y.Y. An**, W.Y. Lu, L. Jie, et al. ALA inhibits pear pollen tube growth through regulation of vesicle trafficking. **Scientia Horticulturae**, 2018, 241: 41-50.
- Y.Y. An**, X.X. Feng, L.B. Liu, et al. ALA-induced flavonols accumulation in guard cells is involved in scavenging H₂O₂ and inhibiting stomatal closure in *Arabidopsis* cotyledons. **Frontiers in Plant Science**, 2016, 7: 1713.
- X.X. Feng, **Y.Y. An (Co-first author)**, J. Zheng, et al. Proteomics and SSH analyses of ALA-promoted fruit coloration and evidence for the involvement of a MADS-box gene, *MdMADS1*. **Frontiers in Plant Science**, 2016, 7: 1615.
- Y.Y. An**, L.B. Liu, L.H. Chen, et al. ALA inhibits ABA-induced stomatal closure via reducing H₂O₂ and Ca²⁺ levels in guard cells. **Frontiers in Plant Science**, 2016, 7: 482.
- Y.Y. An**, J. Li, C.H. Duan, et al. 5-aminolevulinic acid thins pear fruits by inhibiting pollen tube growth via Ca²⁺-ATPase-mediated Ca²⁺ efflux. **Frontiers in Plant Science**, 2016, 7: 121.
- Y.Y. An**, L. Qi, L.J. Wang. ALA-pretreatment improves waterlogging tolerance of fig plants. **PLoS ONE**, 2016, 11(1): e0147202.
- M. Ru, **Y.Y. An (Co-first author)**, K.R. Wang, et al. *Prunella vulgaris* L. hairy roots: culture, growth, and elicitation by ethephon. **Engineering in Life Sciences**, 2016, 16: 494-502.
- Y. Wang, **Y.Y. An (Co-first author)**, J. Yu, et al. Different responses of photosystem II and antioxidants to soil water deficit in two contrasting populations of Sour jujube from the Loess Plateau, China. **Ecological Research**, 2016, 31: 761-775.
- Y.Y. An**, M.X. Zhang, G.B. Liu, et al. Proline accumulation in leaves of *Periploca sepium* via both biosynthesis up-regulation and transport during recovery from severe drought. **PLoS ONE**, 2013, 8(7): e69942.
- Y.Y. An**, Z.S. Liang, R.K. Zhao, et al. Organ-dependent responses of *Periploca sepium* to repeated dehydration and rehydration. **South African Journal of Botany**, 2011, 77(2): 446- 454.
- Y.Y. An**, Z.S. Liang, Y. Zhang. Seed germination responses of *Periploca sepium* Bunge, a dominant shrub in the Loess hilly regions of China. **Journal of Arid Environments**, 2011, 75(5): 504-508.
- Y.Y. An**, Z.S. Liang. Drought tolerance of *Periploca sepium* during seed germination: antioxidant defense and compatible solutes accumulation. **Acta Physiologiae Plantarum**, 2013, 35(3): 959-967.
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