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Dr. Wei Xuan



所属单位: 资源与环境科学学院, 植物营养学系

(Department of Plant nutrition, College of Resources and Environmental Sciences)

研究方向: 植物根系和资源利用

(Research feild: Plant Root and Soil Resources Utilization)

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(欢迎全国各地优秀学子报考本实验室的硕士、博士研究生 , 若对本实验室的研究方向感兴趣 , 欢迎来实验室了解情况。)

教育经历 Education :

1. 本科 : 2002/09-2006/06 , 南京农业大学 , 生命科学学院生物科学专业
(Bachelor of Science, major in Biological Science, College of Life Sciences, Nanjing Agricultural University)

2. 研究生：2006/09-2009/06，南京农业大学，生命科学学院生物化学及分子生物学系 (Master of Science, major in Biochemistry & Molecular Biology, College of Life Sciences, Nanjing Agricultural University)
3. 博士：2009/11-2015/07，比利时根特大学 (UGent-VIB 研究所)，生物化学与生物技术专业 (Ph.D of Biotechnology and Biochemistry, VIB, Department of Plant Systems Biology, VIB, Ghent University, Belgium)
4. 工作阶段：2015/07 至今 (Present)，南京农业大学资源与环境科学学院，高层次人才引进，教授 (Professor, College of Resources and Environmental Sciences, Nanjing Agricultural University)

主要研究方向 (Research interests) :

1. **植物营养对植物根系构型可塑性的调控作用；**
(Plasticity of root system architecture in response to Nutrient signals)
2. **根系生物钟“root clock”对逆境信号的响应机制以及根系逆境适应性研究；**
(Plant root pre-patterning during abiotic stress sensing and tolerance)
3. **植物侧根发生的分子机制及基因调控网络的解析。**
(Molecular mechanism of plant lateral root formation and its gene regulatory networks)

主持课题 Research Funding :

1. 国家重点研发计划-科技部政府间科技创新合作重点专项

“根系生物钟调控氮素高效吸收的分子基础” , 2016-2019 , 主持

2. 国家自然科学基金面上项目

“解析根系生物钟响应氮素信号的分子机制” , 2017-2020 , 主持

3. 江苏省高层次创新创业人才引进计划(省双创人才)高校创新类, 2016-2019

4. 南京农业大学高层次引进人才启动基金, 2017-2020 , 主持

5. 江苏省青年基金项目, 2016-2019 , 主持

发表论文 Publications (SCI/EI)

First author

1) **Xuan, W.**[#], Beeckman T., Xu G. (2017) Plant nitrogen nutrition: sensing and signaling.

Current opinion in plant biology, 39, 57-65.

2) **Xuan, W.**[#], Band, L., Kumpf, R., Van Damme, D., Parizot, B., et al. (2016) Cyclic programmed cell death stimulates hormone signaling and root development in Arabidopsis. **SCIENCE**, 351, 384-387.

3) **Xuan, W.**[#], Audenaert, D., Parizot, B., Moller, B.K., Njo, M.F., De Rybel, B., De Rop, G., et al. (2015). Root Cap-Derived Auxin Pre-patterns the Longitudinal Axis of the Arabidopsis Root.

Current Biology 25, 1381-1388.

4) **Xuan, W.**[#], Murphy, E., Beeckman, T., Audenaert, D., and De Smet, I. (2013). Synthetic molecules: helping to unravel plant signal transduction. **Journal of Chemical Biology** 6, 43-50.

5) **Xuan, W.**[#], Xu, S., Li, M., Han, B., Zhang, B., Zhang, J., Lin, Y., Huang, J., Shen, W., and Cui, J. (2012). Nitric oxide is involved in hemin-induced cucumber adventitious rooting process.

Journal of Plant Physiology 169, 1032-1039.

6) **Xuan, W.**[#], Xu, S., Yuan, X., and Shen, W. (2008a). Carbon monoxide: A novel and pivotal

signal molecule in plants? **Plant Signaling & Behavior** 3, 381-382.

7) **Xuan, W.**[#], Zhu, F.Y., Xu, S., Huang, B.K., Ling, T.F., Qi, J.Y., Ye, M.B., and Shen, W.B. (2008b). The heme oxygenase/carbon monoxide system is involved in the auxin-induced cucumber adventitious rooting process. **Plant Physiology** 148, 881-893.

8) **Xuan W.**[#], Huang L.Q., Li M., Huang B.K., Xu S., Liu H., Gao Y., Shen W.B. (2007) Induction of growth elongation in wheat root segments by heme molecules: a regulatory role of carbon monoxide in plants? **Plant Growth Regulation** 52, 41 - 51.

Co-author

1) Moller, B.K., **Xuan, W.**[#], and Beeckman, T. (2017) Dynamic control of lateral root positioning. **Current opinion in plant biology** 35, 1-7.

2) Fan, X., Naz, M., Fan, X., **Xuan, W.**[#], Miller, A. J. and Xu, G. (2017) Plant Nitrate Transporters: From Gene Function to Application. **Journal of Experimental Botany** doi: 10.1093/jxb/erx011

3) Chen Q., Liu Y., Maere S., Lee E., Van Isterdael G., Xie Z., **Xuan W.**[#], et al. (2015) A coherent transcriptional feed-forward motif model for mediating auxin-sensitive PIN3 expression during lateral root development. **Nature Communications** 6, doi: 10.1038/ncomms9821.

4) Van Norman, J.M., **Xuan, W.**[#], Beeckman, T., and Benfey, P.N. (2013). To branch or not to branch: the role of pre-patterning in lateral root formation. **Development** 140, 4301-4310.

5) Cui, W., Zhang, J., **Xuan, W.**[#], and Xie, Y. (2013). Up-regulation of heme oxygenase-1 contributes to the amelioration of aluminum-induced oxidative stress in *Medicago sativa*. **Journal of Plant Physiology** 170, 1328-1336.

6) De Rybel, B., Audenaert, D., **Xuan, W.**[#], Overvoorde, P., Strader, L.C., Kepinski, S., Hoyer, R., Brisbois, R., Parizot, B., Vanneste, S., et al. (2012). A role for the root cap in root branching revealed by the non-auxin probe naxillin. **Nature Chemical Biology** 8, 798-805.

7) Cao, Z., Geng, B., Xu, S., **Xuan, W.**[#], Nie, L., Shen, W., Liang, Y., and Guan, R. (2011). BnHO1, a haem oxygenase-1 gene from *Brassica napus*, is required for salinity and osmotic stress-induced lateral root formation. **Journal of Experimental Botany** 62, 4675-4689.

8) Han, Y., Zhang, J., Chen, X., Gao, Z., **Xuan, W.**[#], Xu, S., Ding, X., and Shen, W. (2008).

Carbon monoxide alleviates cadmium-induced oxidative damage by modulating glutathione metabolism in the roots of *Medicago sativa*. **New Phytologist** 177, 155-166.

9) Cao, Z.Y., Huang, B.K., Wang, Q.Y., **Xuan, W.[#]**, Ling, T.F., Zhang, B., Chen, X., Nie, L., and Shen, W.B. (2007). Involvement of carbon monoxide produced by heme oxygenase in ABA-induced stomatal closure in *Vicia faba* and its proposed signal transduction pathway. **Chinese Science Bulletin** 52, 2365-2373.

10) Cao, Z.Y., **Xuan, W.[#]**, Liu, Z.Y., Li, X.N., Zhao, N., Xu, P., Wang, Z., Guan, R.Z., and Shen, W.B. (2007). Carbon monoxide promotes lateral root formation in rapeseed. **Journal of Integrative Plant Biology** 49, 1070-1079.

11) Han, Y., **Xuan, W.[#]**, Yu, T., Fang, W.B., Lou, T.L., Gao, Y., Chen, X.Y., Xiao, X., and Shen, W.B. (2007). Exogenous hematin alleviates mercury-induced oxidative damage in the roots of *Medicago sativa*. **Journal of Integrative Plant Biology** 49, 1703-1713.

12) Liu, K.L., Xu, S., **Xuan, W.[#]**, Ling, T.F., Cao, Z., Huang, B.K., Sun, Y.G., Fang, L., Liu, Z.Y., Zhao, N., et al. (2007). Carbon monoxide counteracts the inhibition of seed germination and alleviates oxidative damage caused by salt stress in *Oryza sativa*. **Plant Science** 172, 544-555.

13) Huang, B.K., Xu, S., **Xuan, W.[#]**, Li, M., Cao, Z.Y., Liu, K.L., Ling, T.F., and Shen, W.B. (2006). Carbon monoxide alleviates salt-induced oxidative damage in wheat seedling leaves. **Journal of Integrative Plant Biology** 48, 249-254.

14) Xu, J., **Xuan, W.[#]**, Huang, B.K., Zhou, Y.H., Ling, T.F., Xu, S., and Shen, W.B. (2006). Carbon monoxide-induced adventitious rooting of hypocotyl cuttings from mung bean seedling. **Chinese Science Bulletin** 51, 668-674.

15) Xu, S., Sa, Z.S., Cao, Z.Y., **Xuan, W.[#]**, Huang, B.K., Ling, T.F., Hu, Q.Y., and Shen, W.B. (2006). Carbon monoxide alleviates wheat seed germination inhibition and counteracts lipid peroxidation mediated by salinity. **Journal of Integrative Plant Biology** 48, 1168-1176.

16) Ling, T.F., **Xuan, W.[#]**, Fan, Y.R., Sun, Y.G., Xu, S., Huang, B.K., Huang, S.R., and Shen, W.B. (2005). The effect of exogenous glucose, fructose and NO donor sodium nitroprusside (SNP) on rice seed germination under salt stress. **Journal of Plant Physiology and Molecular Biology** 31, 205-212.