



南京农业大学

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简历

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工作经历:

2004.03 - 至今: 南京农业大学资源与环境学院, 教授 (二级, 钟山首席 A 岗)

2007.12 - 2018.11: 南京农业大学资源与环境学院, 院长

2006.05 - 2007.11: 南京农业大学资源与环境学院, 副院长 (主持工作)

2004.11 - 2004.12: 日本农业资源生物研究所 (NIAS, 筑波), 访问学者

2001.07 - 2004.02: 以色列 Weizmann Institute of Science, 博士后

2001.01 - 2001.06: 以色列 Agricultural Research Organization, 博士后

1995.12 - 1996.06: 南京农业大学资源与环境学院, 副教授

1990.12 - 1995.11: 南京农业大学土壤农化系, 讲师

1988.09 - 1990.11: 南京农业大学土壤农化系, 助教

教育经历:

1997.07 - 2000.12: Hebrew University of Jerusalem, Faculty of Agriculture, Food and Environment, Department of Field Crops, Vegetables and Genetics, PhD candidate

1996.07 - 1997.06: Hebrew University of Jerusalem, Faculty of Agriculture, Food and Environment, Department of Field Crops, Vegetables and Genetics, visiting scholar

1985.09 - 1988.08: 南京农业大学土壤农化系, 植物营养学科, 硕士生

1981.09 - 1985.07: 南京农业大学土壤农化系, 土壤农化专业, 本科生



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人才培养:

先后主讲“土壤农化分析”、“农产品品质分析”、“作物营养诊断”、“植物营养与施肥”、“植物营养学(双语)”等本科专业课程,其中“**植物营养学(双语)**”被教育部认定为**首批(2020年)国家级一流本科课程**。

主讲“高级植物营养学(英语授课)”、“植物营养分子遗传学”等研究生课程,其中“**高级植物营养学**”被评为**教育部首批(2013年)来华留学英语授课品牌课程**。

团队多名青年教师获得“教育部青年长江学者”、“教育部新世纪人才”、“国家优秀青年基金”、“江苏省杰出青年基金”、“南京农大钟山学术新秀”等称号。本科教学质量评价连续多年获得优秀,被评为南京农业大学优秀教师,指导的本科生毕业论文入选江苏省优秀毕业论文;**指导的博士学位论文入选全国百篇优秀博士论文**。

主持多项江苏省教育厅教改研究项目,发表多篇教学教改论文。作为第三完成人,“产学研结合分类培养农业资源与环境本科专业人才的模式与实践”获得国家级教学成果奖二等奖,江苏省教学成果奖特等奖(2009年)。**作为第一完成人,“一导向二贯通四协同-农科环境类专业人才培养模式构建与实践”获得江苏省教学成果奖二等奖(2017年)**。

学术成就:

长期从事土壤与作物营养的理论及施肥技术、植物营养与抗逆分子遗传研究。在 Proc Nat Acad Sci USA, Current Biology, Nature Commun, Annu Rev Plant Biol, Mol Plant 等权威期刊和其他国际重要学术期刊发表论文 180 多篇,2014 年起连续入选中国高被引学者(Elsevier, 农业与生物科学领域),**2019、2020 年均入选为全球高被引科学家(科睿唯安,植物学和动物学领域)**。

获得国际(美国、欧盟等国)新基因发明专利 1 项,国内新基因发明专利 12 项,多项专利成果得到应用。

作为第一完成人,“缺磷和菌根调控的作物磷素吸收和转运的分子机制”获得中国土壤学会科学技术奖一等奖,“作物高效吸收利用氮磷养分的生理过程和分子调控途径”获得江苏省科学技术奖(基础类)一等奖。

学术兼职:

第四届国际植物氮素营养组织主席(2016.08 - 至今)。

江苏省研究生教育指导委员会农学类主任委员(2018.09 - 2020.06);江苏省科学技术协会第九届委员(2015 - 至今)。



学术期刊编委: *Journal of Experimental Botany* (Guest Editor), *Seminars in Cell and Development Biology* (Guest Editor), *Frontiers in Plant Science*, *Scientific Reports*, *Chemical and Biological Technologies in Agriculture* (Associated Editor)、*中国农业科学*、*土壤学报*、*植物营养与肥料学报*、*南京农业大学学报*等。

中国土壤学会常务理事 (2004-2016)、土壤-植物营养专业委员会副主任 (2008-至今), 江苏省土壤学会副理事长 (2004-2016)、理事长 (2012-2016)、监事长 (2016-至今), 中国植物营养与肥料学会理事 (2004-至今)、植物营养生物专业委员会副主任 (2004-至今)。

受聘多个省部级重点实验室学术委员会委员, 南京农业大学校学术委员会委员 (2008-至今), 作物遗传与种质创新国家重点实验室副主任 (2011-2018), **农业部长江中下游植物营养与肥料重点实验室主任 (2011-至今)**。

学术荣誉:

全球高被引科学家 (科睿唯安, 植物学和动物学领域), 全国百篇优秀博士论文指导教师 (2011 年), 中国高被引学者 (Elsevier, 农业与生物科学领域)。

首批全国农业科研杰出人才, 农业部“作物养分高效生物学研究创新团队”带头人, 江苏省“333 高层次人才”第二层次培养对象, “青蓝工程”中青年学术带头人培养对象, 江苏高等学校创新团队“农业资源的生物学利用”的带头人等, **获得国务院政府特殊津贴**。

首批“国家重点研发计划项目首席科学家” (2016 年)。《中国大百科全书》第三版, 农业资源与环境学科副主编兼植物营养学分支主编 (2016 年)。

国际学术大会特邀报告: 先后 30 多场次, 包括第二届 (智利)、第三届 (法国) 国际植物氮素营养大会; 第 15 届 (澳大利亚)、第 16 届 (日本) 国际植物膜生物学学术大会; 第 17 届 (土耳其)、18 届 (丹麦) 国际植物营养学大会、第三届国际氮素大会分会场 (印度) 等。

应邀在美国 Purdue University, University of Kentucky, University of Utah, UC San Diego, UC Davis, University of Florida 等大学, 澳大利亚阿德莱德大学、墨尔本大学, 以色列希伯来大学、以色列理工学院 (Technion), 以色列威兹曼科学研究院, 日本冈山大学, 法国国家农科院, 德国汉诺威大学, 比利时根特大学, 加拿大 Alberta 大学, 肯尼亚埃格顿大学, 台湾大学, 台湾中研院, 台湾宜兰大学等做学术报告。

项目主持 (2010 年以来):

- 国家重点研发计划项目: “主要农作物养分高效利用性状形成的遗传与分子基础”, 2016.07 - 2020.12, 国拨经费: 7361 万元。项目编号: 2016YFD0100700。
- 国家自然科学基金 – 重点项目: “氮素协同调控水稻生育期和产量及氮素利用效率的机制”, 2020 年 01 月至 2024 年 12 月, 直接经费: 305 万; 项目批准号: 31930101。



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- 国家自然科学基金 – 国际(地区)合作与交流项目: “INFEWS:US-China: 高湿废弃物与全球循环经济: 水热裂解促进食物-能源-水系统可持续循环”, 2020年01月至2023年12月, 直接经费: 250万; 项目批准号: 41961124005。
- 江苏省重点研发计划项目: “氮素高效利用的水稻分子育种技术体系研究” Research on molecular breeding technology system of rice for improving nitrogen use efficiency, 2020年7月至2023年12月, 财政拨款: 200万; 项目批准号: BE2020339。
- 国家自然科学基金项目: “水稻糖分调控因子 OsSPR1 及其下游基因 OsUGP5 在维持碳磷平衡中的功能研究”, 2019.01-2022.12, 直接经费: 60万; 项目批准号: 31872165。
- 国家自然科学基金项目: “编码二磷酸腺苷葡萄糖焦磷酸酶的 OsAGPase3 基因在水稻缺氮和缺磷胁迫响应中的功能研究”, 2015.01 - 2018.12, 经费: 95万; 项目批准号: 31471931。
- 国家自然科学基金项目: “烟草中菌根和缺磷信号相关转录因子 MYCF1 和 PHR 的生理功能及其调控途径解析”, 2013.01-2016.12, 经费: 90万; 项目批准号: 31272225。
- 国家自然科学基金项目: “一个编码两个硝酸盐运输蛋白的水稻基因: 剪切机制和功能”, 2011.01-2013.12, 经费: 40万; 项目批准号: 31071839。
- 国家自然科学基金项目: “水稻 Pht1 家族的两个磷酸盐转运体 OsPT2 和 OsPT6 的功能解析和利用”, 2009.01-2011.12, 经费: 35万; 项目批准号: 30871582。
- 国家重点基础研究发展计划 (973 计划) 项目课题: “氮信号转导与吸收利用协同调控机制”, 2011.01-2015.12, 经费: 550万; 课题编号: 2011CB100302。
- 国家重点基础研究发展计划 (973 计划) 项目课题: “课题名称: 氮、磷高效吸收关键基因功能与调控机理”, 2006.01-2010.12, 经费: 450万; 课题编号: 2005CB120903。
- 国家转基因生物新品种培育科技重大专项课题任务: “水稻氮、磷高效吸收转基因新品种培育”, 2008.07-2015.12, 总经费: 850万; 所属课题编号: 2008ZX08001-005。

代表性论文 (IF_{5y} > 6, *Corresponding/Senior author):

1. Shunan Zhang, Yuyi Zhang, Kangning Li, Ming Yan, Jinfei Zhang, Ming Yu, Shuo Tang, Luyang Wang, Hongye Qu, Le Luo, Wei Xuan, **Guohua Xu***. 2020. Nitrogen mediates flowering time and nitrogen use efficiency via a floral regulator in rice. **Current Biology** doi: 10.1016/j.cub.2020.10.095.
2. Zhang J, Gu M*, Liang RSH, Shi XY, Chen LL, Hu X, Wang SC, Dai XL, Qu HY, Li, HH, **Xu GH**. 2020. OsWRKY21 and OsWRKY108 Function Redundantly to Promote Phosphate Accumulation Through Maintaining the Constitutive Expression of OsPHT1;1 under Phosphate-Replete Conditions. **New Phytologist** doi: 10.1111/nph.16931
3. Meng Q, Zhang WQ; Hu X; Shi XY, Chen LL, Dai XL, Qu HY, Xia YW, Liu W, Gu M*; **Xu GH**. 2020. Two ADP-glucose Pyrophosphorylase Subunits, OsAGPL1 and OsAGPS1, Modulate Phosphorus Homeostasis in Rice. **The Plant Journal** doi: 10.1111/tbj.14998



4. Jia L, Xie Y, Wang Z, Luo L, Zhang C, Pélissier PM, Parizot B, Qi W, Zhang J, Hu Z, Motte H, Le L, **Xu G**, Beeckman T, Xuan W*. 2020. Rice plants respond to ammonium-stress by adopting a helical root growth pattern. **The Plant Journal** doi: 10.1111/tpj.14978.
5. Mengmeng Hou, Feifei Luo, Daxia Wu, Xuhong Zhang, Manman Lou, Defeng Shen, Ming Yan, Chuanzao Mao, Xiaorong Fan, **Guohua Xu**, Yali Zhang*. 2020. OsPIN9, an auxin efflux carrier, is required for the regulation of rice tiller bud outgrowth by ammonium. **New Phytologist** doi: 10.1111/nph.16901.
6. Shang Pan, Yang Wang, Yunpeng Qiu, Dima Chen, Lin Zhang, Chenglong Ye, Hui Guo, Weixing Zhu, Aiqun Chen, **Guohua Xu**, Yi Zhang*, Yongfei Bai*, Shuijin Hu*. 2020. Nitrogen - induced acidification, not N - nutrient, dominates suppressive N effects on arbuscular mycorrhizal fungi. **Global Change Biology** <https://doi.org/10.1111/gcb.15311>.
7. **Guohua Xu***, Hideki Takahashi*. 2020. Improving nitrogen use efficiency: from cells to plant systems. **Journal of Experimental Botany** 71 (15), 4359-4364.
8. Shuangshuang Wang, Aiqun Chen*, Kun Xie, Xiaofeng Yang, Zhenzhen Luo, Jiadong Chen, Dechao Zeng, Yuhan Ren, Congfan Yang, Lingxiao Wang, Huimin Feng, Damar Lizbeth Lopez-Arredondo, Luis Rafael Herrera-Estrella*, **Guohua Xu*** (徐国华)*. 2020. Functional analysis of the OsNPF4.5 nitrate transporter reveals a conserved mycorrhizal pathway of nitrogen acquisition in plants. **Proceedings of the National Academy of Sciences of the United States of America** 117 (28) 16649-16659.
9. Nan Guo, Jinqi Hu, Ming Yan, Le Luo, Hongye Qu, Mechthild Tegeder*, **Guohua Xu***. 2020. *Oryza sativa* Lysine-Histidine-type Transporter 1 functions in root uptake and root-to-shoot allocation of amino acids in rice. **The Plant Journal** 103(1): 395-411. <https://doi.org/10.1111/tpj.14742>.
10. Miaoquan Song, Xiaorong Fan, Jingguan Chen, Hongye Qu, Le Luo, **Guohua Xu***. 2020. Characterization of OsNAR2.1 interaction with OsNIT1 and OsNIT2 in rice uncovers their different critical roles in mediating root growth response to nitrate and ammonium. **Plant Physiology** doi:10.1104/pp.19.01364.
11. Ai H, Cao Y, Jain A, Wang XW, Hu Z, Zhao GM, Hu SW, Shen X, Yan Y, Liu XL, Sun YF, Lan XX, **Xu GH**, Sun SB*. 2020. The ferroxidase LPR5 functions in the maintenance of phosphate homeostasis and is required for normal growth and development of rice. **Journal of Experimental Botany** <https://doi.org/10.1093/jxb/eraa211>.
12. Le Luo, Yali Zhang, **Guohua Xu***. 2020. How does nitrogen shape plant architecture? **Journal of Experimental Botany** <https://doi.org/10.1093/jxb/eraa187>
13. Huimin Feng, Xiaorong Fan, Anthony J Miller, **Guohua Xu***. 2020. Plant nitrogen uptake and assimilation: regulation of cellular pH homeostasis. **Journal of Experimental Botany** <https://doi.org/10.1093/jxb/eraa150>.
14. Junli Liu, Jiadong Chen, Kun Xie, Yuan Tian, Anning Yan, Jianjian Liu, Yujuan Huang, Shuangshuang Wang, Yiyong Zhu, Aiqun Chen*, **Guohua Xu***. 2020. A mycorrhiza-specific H⁺-ATPase is essential for arbuscule development and symbiotic phosphate and nitrogen uptake. **Plant Cell & Environment** <https://doi.org/10.1111/pce.13714>.
15. Yafei Sun, Ajay Jain, Yong Xue, Xiaowen Wang, Gengmao Zhao, Lu Liu, Zhi Hu, Siwen Hu, Xing Shen, Xiuli Liu, Hao Ai, **Guohua Xu**, Shubin Sun*. 2020. OsSQD1 at the crossroads of phosphate and sulfur metabolism affects plant morphology and lipid composition in response to phosphate deprivation. **Plant Cell & Environment** <https://doi.org/10.1111/pce.13764>.
16. Liu XL, Wang L, Wang XW, Yan Y, Yang XL, Xie MY, Hu Z, Shen X, Ai H, Lin HH, **Xu GH**, Yang J*, Sun SB*. 2020. Mutation of the chloroplast-localized phosphate transporter OsPHT2;1 reduces flavonoids accumulation and UV tolerance in rice. **The Plant Journal** doi: 10.1111/tpj.14611.
17. Gao Z, Wang Y, Chen G, Zhang A, Yang S, Shang L, Wang D, Ruan B, Liu C, Jiang H, Dong G, Zhu L, Hu J, Zhang G, Zeng D, Guo L, **Xu GH**, Teng S, Harberd NP*,



- Qian Q*. 2019. The indica nitrate reductase gene OsNR2 allele enhances rice yield potential and nitrogen use efficiency. **Nature Communication** 10(1):5207.
18. Dan Sun, Hua-Yuan Feng, Xin-Yuan Li, Hao Ai, Shubin Sun, Yanshan Chen, **Guohua Xu**, Bala Rathinasabapathi, Yue Cao, Lena Q Ma*. 2019. Expression of New *Pteris vittata* Phosphate Transporter PvPht1; 4 Reduces Arsenic Translocation from the Roots to Shoots in Tobacco Plants. **Environmental Science & Technology** 54(2), 1045-1053.
 19. Xie Y, Wang J, Zheng L, Wang Y, Luo L, Ma M, Zhang C, Han Y, Beeckman T, **Xu G**, Cai Q, Xuan W*. 2019. Cadmium stress suppresses lateral root formation by interfering with the root clock. **Plant Cell & Environment** 42 (12), 3182-3196.
 20. Dong C, Li F, Yang T, Feng L, Zhang S, Li F, Li W, **Xu G**, Bao S, Wan X, Lucas WJ, Zhang Z*. 2019. Theanine transporters identified in tea plants (*Camellia sinensis* L.). **The Plant Journal** 101 (1), 57-70. **(Highly cited)**
 21. Liu J, Liu J, Liu J, Cui M, Huang Y, Tian Y, Chen A*, **Xu G**. 2019. The potassium transporter SIHAK10 is involved in mycorrhizal potassium uptake. **Plant Physiology** 180 (1), 465-479.
 22. Cao Y, Feng H, Sun D, **Xu G**, Rathinasabapathi B, Chen Y, Ma LQ*. 2019. Heterologous Expression of *Pteris vittata* Phosphate Transporter PvPht1;3 Enhances Arsenic Translocation to and Accumulation in Tobacco Shoots. **Environmental Science & Technology** 53(18):10636-10644.
 23. Huang S, Liang Z, Chen S, Sun H, Fan X, Wang C, **Xu GH**, Zhang YL*. 2019. A Transcription Factor, OsMADS57, Regulates Long-Distance Nitrate Transport and Root Elongation. **Plant Physiology** 180(2):882-895.
 24. Chang MX, Gu M*, Xia YW, Dai XL, Dai CR, Zhang J, Wang SC, Qu HY, Yamaji N, Ma JF, **Xu GH***. 2019. Rice Phosphate Transporter OsPHT1;3 Mediates Uptake, Translocation and Remobilization of Phosphate under Extremely Low Phosphate Regime. **Plant Physiology** 179(2):656-670. **(Highly cited)**
 25. Luo L*, Takahashi M, Kameoka H, Qin R, Shiga T, Kanno Y, Seo M, Ito M, **Xu GH**, Kyoizuka J*. 2019. Developmental analysis of the early steps in strigolactone-mediated axillary bud dormancy in rice. **The Plant Journal** 97 (6), 1006-1021 doi: 10.1111/tpj.14266.
 26. Chen L, Qin L, Zhou L, Li X, Chen Z, Sun L, Wang W, Lin Z, Zhao J, Yamaji N, Ma JF, Gu M, **Xu GH**, Liao H*. 2019. A nodule-localized phosphate transporter GmPT7 plays an important role in enhancing symbiotic N₂ fixation and yield in soybean. **New Phytologist** 221(4):2013-2025.
 27. Wei J, Zheng Y, Feng HM, Qu HY, Fan XR, Yamaji N, Ma JF, **Xu GH***. 2018. Rice OsNRT2.4 gene encodes a dual-affinity nitrate transporter and functions in nitrate-regulated root growth and nitrate distribution. **Journal of Experimental Botany** 69: 1095-1107.
 28. Cao Y, Sun D, Chen JX, Mei H, Ai H, **Xu G**, Chen Y, LQ Ma*. 2018. Phosphate transporter PvPht1; 2 enhances phosphorus accumulation and plant growth without impacting arsenic uptake in plants. **Environmental Science & Technology** 52: 3975-3981.
 29. Zeng Y, Li Q, Wang HY, Zhang J, Du J, Feng HM, Blumwald E, Yu L*, **Xu GH***. 2018. Two NHX-type transporters from *Helianthus tuberosus* improve the tolerance of rice to salinity and nutrient deficiency stress. **Plant Biotechnology Journal** 16: 310-321.
 30. **Guohua Xu***. 2018. Sensing and transport of nutrients in plants. **Seminars in Cell & Developmental Biology** 74: 78-79.
 31. Chen AQ*, Gu M, Wang SS, Chen J, **Xu GH***. 2018. Transport properties and regulatory roles of nitrogen in arbuscular mycorrhizal symbiosis. **Seminars in Cell & Developmental Biology** 74: 80-88.
 32. Li WH, **Xu GH**, Alli A. Yu L*. 2018. Plant HAK/KUP/KT K⁺ transporters: function and regulation. **Seminars in Cell & Developmental Biology** 74: 133-141.
 33. Zhan X*, Zhu M, Shen Y, Yue L, Li J, Gardea-Torresdey JL, **Xu G**. 2018. Apoplastic and symplastic uptake of phenanthrene in wheat roots. **Environmental Pollution** 233, 331-339



34. Jia H, Zhang S, Wang L, Yang Y, Zhang H, Cui H, Shao H*, **Xu GH***. 2017. OsPht1;8, a phosphate transporter, is involved in auxin and phosphate starvation response in rice. **Journal of Experimental Botany** 68: 5057-5068.
35. Yue Cao, Dan Sun, Hao Ai, Hanyi Mei, Xue Liu, Shubin Sun, **Guohua Xu**, Yungen Liu, Yanshan Chen, and Lena Q. Ma*. 2017. Knocking out OsPht1;4 gene decreases arsenic uptake by rice plants and inorganic arsenic accumulation in rice grains. **Environmental Science & Technology** 51: 12131-12138.
36. Xuan W, Beeckman T, **Xu GH***. 2017. Plant nitrogen nutrition: sensing and signaling. **Current Opinion in Plant Biology** 39: 57-65. **(Highly cited)**
37. Gu M, Zhang J, Li HH, Meng DQ, Li R, Dai XL, Wang SC, Liu W, Qu HY, **Xu GH***. 2017. Maintenance of phosphate homeostasis and root development are coordinately regulated by MYB1, an R2R3-type MYB transcription factor in rice. **Journal of Experimental Botany** 68: 3603-3615.
38. Guo H, Zhou H, Zhang J, Guan W, Xu S, Shen W, **Xu GH**, Xie Y*, Foyer C. 2017. L-cysteine desulfhydrase-related H₂S production is involved in OsSE5-promoted ammonium tolerance in roots of *Oryza sativa*. **Plant Cell & Environment** 40: 1777-1790.
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管理成效:

在担任南京农大资环学院院长期间 (2006-2018), 新增 “植物营养学” 国家重点学科 (2007 年), “农业资源与环境” 一级学科被评为国家一级重点学科(2007 年); “农业资源与环境一级学科” 排名 (全国一级学科评估) 分别为全国并列第三 (2007 年)、全国并列第一 (2012 年)、第一 (A+) (2016 年), 被遴选为全国首批进入国际一流学科建设的一级学科 (2017 年)。此外, 学院的生态学一级学科 (江苏省重点学科)、环境科学与工程一级学



科位居全国前 30-40%。以学院为单位，资环学院为南京农业大学首批进入国家“双一流”建设高校、国际 ESI 学科排名提升做出了最主要的贡献。



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