

刘泽文



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研究方向:

1、害虫（褐飞虱）抗药性机制研究

Molecular mechanisms of insecticide resistance
in agricultural pest insects

2、杀虫剂作用机制与选择性机制研究

Mode of action of insecticides and their
selectivity

3、蜘蛛毒素类杀虫资源的开发与作用机制研究

Predator spider genomics and peptide toxin

个人简历

教育经历 Education

1995-1999	南京农业大学, 学士 Bachelor's degree, Nanjing Agricultural University, China
1999-2004	南京农业大学, 昆虫学博士 Ph.D. in Entomology, Nanjing Agricultural University, China

工作经历 Professional Experience

2004-2005	英国洛桑试验站 访问学者 Visiting scholar, Rothamsted Research, UK
2005-2006	英国伦敦大学 博士后 Postdoctoral fellow, University College London, UK
2006-present	南京农业大学 教授 Professor, Nanjing Agricultural University, China

研究课题

Project/主持项目

1. 2019年01月至2023年12月，国家自然科学基金重点项目，稻飞虱对新烟碱类杀虫剂代谢抗性的遗传调控机制，31830075
2. 2020年01月至2023年12月，国家自然科学基金面上项目，拟环纹豹蛛多肽毒素与醚菊酯共同调控昆虫钠离子通道的机制，31972296
3. 2018年01月至2021年12月，国家自然科学基金面上项目，害虫天敌拟环纹豹蛛全部乙酰胆碱酯酶的特征与生理功能，31772185
4. 2014年01月至2016年12月，国家自然科学基金优秀青年基金项目，昆虫神经毒理学，31322045
5. 2014年01月至2016年12月，江苏省自然科学基金杰出青年基金项目，褐飞虱乙酰胆碱受体与杀虫剂的分子互作机制研究，BK20130028

研究成果

代表性文章/Representative publications

>60 publications with >1000 citations in journals including *PNAS*, *J Neurochem.*, *Insect Biochem Mol Biol.*, *Pestic Biochem Physiol.*

List of some selected papers (Asterisk * indicates the corresponding author)

部分文章列表:

- (1) Bao, H., Gao, H., Zhang, J., Liu, Z.*, 2021. Neonicotinoids stimulate H₂-limited methane emission in *Periplaneta americana* through the regulation of gut bacterium community. *Environ Pollut.* 285, 117237.
- (2) Gao, H., Lin, X., Yang, B., Liu, Z.*, 2021. The roles of GSTs in fipronil resistance in *Nilaparvata lugens*: Over-expression and expression induction. *Pestic Biochem Physiol.* 177,104880.
- (3) Wang, K., Zhang, F., Wei, Y.,... Liu, Z.*, Liu, S.*, 2021. In Situ imaging of cellular reactive oxygen species and Caspase-3 activity using a multifunctional

- theranostic probe for cancer diagnosis and therapy. *Anal Chem.* 93(22), 7870-7878.
- (4) Yang, Z., Yu, N., Wang, S., Korai, S.K., Liu, Z.*, 2021. Characterization of ecdysteroid biosynthesis in the pond wolf spider, *Pardosa pseudoannulata*. *Insect Mol Biol.*, 30(1), 71-80.
- (5) Yu, N, Han, C, Liu, Z.*, 2020. *In silico* identification of the neuropeptidome of the pond wolf spider *Pardosa pseudoannulata*. *Gen Comp Endocrinol*, 285, 113271.
- (6) Zhang, Y., Xu, X., Bao, H., Shao, X., Li, Z., Liu, Z.*, 2019. The binding properties of cycloxaprid on insect native nAChRs partially explain the low cross-resistance with imidacloprid in *Nilaparvata lugens*. *Pest Manage Sci*, 75 (1), 246-251.
- (7) Yu, N., Wang, X., Bao, H., Liu, Z.*, 2019. Identification and functional study of three nAChR regulators, ubiquilin-1, PICK1, and CRELD2, in *Locusta migratoria manilensis* dorsal unpaired median neurons. *J Neurochem*, 149(3), 331-345.
- (8) Huang, L., Wang, Z., Yu, N., Li, J., Liu, Z.*, 2018. Toxin diversity revealed by the venom gland transcriptome of *Pardosa pseudoannulata*, a natural enemy of several insect pests. *Comp Biochem Physiol Part D Genomics Proteomics*, 28 172-182.
- (9) Yu, N., Tian, J., Zhang, Y., Li, Z., Liu, Z.*, 2018. Imidacloprid-susceptible *Nilaparvata lugens* individuals exceeded resistant individuals in a mixture population with density pressure. *Pest Manag Sci.* 74, 234-239.
- (10) Sun, H., Yang, B., Zhang, Y., Liu, Z.*, 2017. Metabolic resistance in *Nilaparvata lugens* to etofenprox, a non-ester pyrethroid insecticide. *Pestic. Biochem. Physiol.* 136, 23-28.
- (11) Bao, H., Meng, X., Liu, Z.*, 2017. Spider acetylcholine binding proteins: An alternative model to study the interaction between insect nAChRs and neonicotinoids. *Insect Biochem Mol Biol.* 90, 82-89.
- (12) Zhang, Y., Yang, Y., Sun, H., Liu, Z.*, 2016. Metabolic imidacloprid resistance in the brown planthopper, *Nilaparvata lugens*, relies on multiple P450 enzymes. *Insect Biochem Mol Biol* 79, 50-56.
- (13) Zhang, Y., Wang, X., Yang, B., Hu, Y., Huang, L., Bass, C., Liu Z.*, 2015. Reduction in mRNA and protein expression of a nicotinic acetylcholine receptor

$\alpha 8$ subunit is associated with resistance to imidacloprid in the brown planthopper, *Nilaparvata lugens*. *J Neurochem.* 135, 686-694.

- (14) Zhang, Y., Shao, Y., Jiang, F., Li, J., Liu, Z.*, 2014. Identification of two acetylcholinesterases in *Pardosa pseudoannulata* and the sensitivity to insecticides. *Insect Biochem. Mol. Biol.* 46, 25-30.
- (15) Ding, Z., Wen, Y., Yang, B., Zhang, Y., Liu, S., Liu, Z.*, 2013. Biochemical mechanisms of imidacloprid resistance in *Nilaparvata lugens*: Over-expression of cytochrome P450 CYP6AY1. *Insect Biochem Mol Biol.* 43, 1021-1027. Liu, Z., Han, Z., Wang, Y., Zhang, L., Zhang, H., Liu, C., 2003. Selection for imidacloprid resistance in *Nilaparvata lugens*: cross-resistance patterns and possible mechanisms. *Pest Manag. Sci.* 59, 1355-1359.
- (16) Shao, X., Lu, H., Bao, H., Xu, X., Liu, Z.*, Li, Z., 2011. The mode of action of a nitroconjugated neonicotinoid and the effects of target site mutation Y151S on its potency. *Insect Biochem. Mol. Biol.* 41, 440-445.
- (17) Liu, Z.*, Han, Z., Liu, S., Zhang, Y., Song, F., Yao, X., Gu, J., 2008. Amino acids outside of the loops that define the agonist binding site are important for ligand binding to insect nicotinic acetylcholine receptors. *J. Neurochem.* 106, 224-230.
- (18) Liu, Z., Han, Z., 2006. Fitness costs of laboratory-selected imidacloprid resistance in the brown planthopper, *Nilaparvata lugens* Stål, *Pest. Manag. Sci.* 62, 279-282.
- (19) Liu, Z., Williamson, M.S., Lansdell, S.J., Han, Z., Denholm, I., Millar, N.S., 2006. A nicotinic acetylcholine receptor mutation (Y151S) causes reduced agonist potency to a range of neonicotinoid insecticides. *J. Neurochem.* 99, 1273-1281.
- (20) Liu, Z., Williamson, M.S., Lansdell, S.J., Denholm, I., Han, Z., Millar, N.S., 2005. A nicotinic acetylcholine receptor mutation conferring target-site resistance to imidacloprid in *Nilaparvata lugens* (brown planthopper). *Proc Natl Acad Sci U S A.* 102, 8420-8425.

主要荣誉及兼职

学术奖励/Awards and Honors

1. 2014 年 国家自然科学基金优秀青年基金获得者
2. 2014 年 江苏省自然科学基金杰出青年基金获得者
3. 2013 年 中组部万人计划-青年拔尖人才获得者
4. 2015 年 国家科技进步奖二等奖第 2 完成人，长江中下游稻飞虱暴发机制及可持续防控技术，2015-J-25101-2-03-R02
5. 2013 年 江苏省科学技术奖一等奖第 2 完成人，高产水稻飞虱的区域暴发机制与综合防控技术，2013-1-8-R2
6. 2007 年 全国优秀博士论文，褐飞虱对吡虫啉的抗性及其机理研究，2007049

学术兼职/Academic Participation

1. 2017.10-2022.10 中国昆虫学会理事
Council member, the Entomological Society of China;
2. 2015.01-2019.12 《昆虫学报》编委
Editorial board member, *Acta Entomologica Sinica*;
3. 2012.09-2016.12 江苏省昆虫学会常务理事
Council member, the Entomological Society of Jiangsu