Zekun Jin

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Academic Background

| Texas A&M | 09/2024 |
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| PhD of Entomology | |
| Nanjing Agricultural University | 09/2021-06/2024 |
| Master of Agriculture in Insect Molecular Biology, GPA: 86.7/100 | |
| Hebei Agricultural University | 09/2016-06/2020 |
| Bachelor of Agriculture in Plant Protection, GPA: 77.16/100 | |
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Internships

Sichuan Guoguang Agrochemical Co., Ltd.

07/2017-09/2017

Laboratory Technician

- > Took charge of the pre-treatment of experimental samples for GLP pesticide residue detection, including special processing of harvested samples like extraction and purification, and skillfully operated various instruments like LC or LC-MS for residue detection of multiple pesticides
- Extracted compounds after fermentation and conducted separation using silica gel column chromatography based on polarity to obtain high-activity mixtures
- Further separated mixtures by preparative liquid chromatography and characterized compounds or macromolecules using analytical techniques like high-resolution mass spectrometry and nuclear magnetic resonance spectroscopy
- Learned pesticide targets on fungi and insects, resistance detection, and toxicological molecular mechanisms, thus gaining an in-depth understanding of pesticide working principles and impacts

Research Projects

Research on the Signaling Pathway of the Gycoprotein Hormone 09/2021-Now Glycoprotein α2/85 and Its Receptor in the Reproductive Activity of the Grass-craving Nightshade Moth (Spodptera Frugiperda)

Held at Plant Protection College, Nanjing Agricultural University

Tutor: Dr. Pengcheng Liu, PHD Tutor and Professor of College of Plant Protection, Nanjing Agricultural University, and Postdoctoral Fellow of Virginia Polytechnic Institute and State University and New York University

- Obtained homologous nucleic acid and protein sequences of gonadotropins in armyworms through homology comparison among mammals, providing key baseline data for subsequent research
- ➤ Utilized RNA interference (dsRNA, siRNA) to knock down two families of short neuropeptide hormones and receptors in female adult armyworms, and monitored relative gene expression and ovary phenotypes to determine their effects on

reproductive activities

- Inserted target gene sequences into plasmid vectors and obtained expression vectors through E.coli transformation, culture, plasmid purification, and sequencing verification, and conducted cell transfection experiments to validate the in vitro interactions between these hormones and their receptors.
- Measured changes in intracellular cAMP levels through enzyme-linked immunosorbent assays (ELISA), thus, deepening my understanding of the correlation between cAMP levels and these hormones bound to the receptors
- Performed co-immunoprecipitation (Co-IP) to study the direct relationships between these hormones, receptors, and other proteins, further understanding their interactive relationships
- Knocked down gonadotropin-releasing hormone and receptor through RNAi, observing their effects on downstream gonadotropin expression and ovary development, and utilized CUT&RUN technology to study upstream transcription factor regulation and binding sites of the receptor

Characterization and Functional Analysis of the ABC Transporter, 11/2017-10/2019 Hexose Transporter, and Pt_20783 of Wheat Leaf Rust Fungus in Intercropping with Wheat

Held at Plant Pathology Laboratory, College of Plant Protection, Hebei Agricultural Uni. **Tutor: Dr. Wenxiang Yang**, Ph.D. in Plant Pathology and Professor of College of Plant Protection, Hebei Agricultural University

- Utilized bioinformatics to screen and identify ABC transporters in wheat leaf rust fungus across seven major databases (Nr, Nt, Swiss-Prot, KEGG, COG, Interpro, and GO), and analyzed their expression patterns in different developmental stages of leaf rust fungus
- Extracted Total RNA from wheat-leaf rust fungus interaction and synthesized cDNA for subsequent expression analysis
- Silenced two classes of transporter genes in wheat near-isogenic lines using Barley Stripe Mosaic Virus (BSMV)-mediated host-induced gene silencing (HIGS) technique to inhibit their expression, and inoculated silenced plants with wheat leaf rust fungus to identify resistance phenotypes

Awards and Scholarships

Third-degree Scholarship of the 2022-2023 Academic Year, Nanjing Agricultural University Third-degree Scholarship of the 2021-2022 Academic Year, Nanjing Agricultural University Award of Excellence in Social Activities (School Level) for the 2018-2019 Academic Year, Hebei Agricultural University

Award of Excellence in Social Activities (School Level) for the 2017-2018 Academic Year; Hebei Agricultural University

Third Place Award in the 2019-2020 Hebei Agricultural University (HABU) "Campus Cup" Soccer Tournament

Champion of Nanjing Agricultural University's "Shennong Cup" Soccer Tournament in the 2022 academic year