Ziwei(Zoe) Wu

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Education

Sun Yat-Sen University (SYSU) Aug. 2021 - Present

Master in Science

Major: Ecology (honors program: Evolutionary Ecology)

Cumulative GPA: 3.5 (85.65/100)

Core Courses: Evolutionary Ecology, Seminar in Ecology and Evolution, Data Analysis in R

Fujian Agriculture and Forestry University (FAFU) Sep. 2017 - Jun. 2021

Bachelor of Agriculture, summa cum laude

Majors: Plant Science and Technology

Cumulative GPA: 3.4/4

Relevant Courses: Microbiology, Genetics (Bilingual Course), Molecular Genetics, Biological Data Analysis, Organic Chemistry B, Plant Physiology A, Biochemistry B, Probability Theory, Experimental Designs and Statistical Analyses, Plant Cell Biology, Agroecology, Plant Biotechnology

Research Experience

1. **Multi-omics study on the lignocellulose degradation by holobionts in mangrove sesarmid crabs: a game-changer for terrestrialization** Nov. 2022 - Present

   Co-first author, in progress, in collaboration with The Chinese University of Hong Kong

   - Led the assembly of three Sesarmidae genomes.
   - Conducted gene functional annotations, focusing on CAZymes, using public databases.

- Analyzed genomic collinearity, evaluated CAZymes families, and identified unique gene families and expansions/contractions.
- Combined metagenomics and metatranscriptomics to uncover crab lignocellulose degradation mechanisms and evolution.

2. **Evolution of terrestrialization in Land Crabs: exploring at the genomic level** Sep. 2022 - Present

   First author, in progress, Master thesis

   - Performed chromosome-genome assembly using ONT and Hi-C data.
   - Extracted RNA from five tissues(Heart, Hepatopancreas, Testis, Muscles, Gills), self-constructed RNA libraries, and full-length cDNA ONT sequencing.
   - Gene functional annotation.
   - Analyzed genomic collinearity and identified unique gene families, expansions/contractions, and positive selection to understand its adaptive terrestrial evolution.

3. **Uncovering influenza-like virus clades and new genera in invertebrates: Evolutionary insights into Orthomyxoviridae across metazoans** Jun. 2022 - Jul. 2023

   Co-first author, submitted to *PLOS Pathogens* in collaboration with The Hong Kong Polytechnic University

   - Constructed the phylogenetic tree for the newly recognized viruses alongside known members of Orthomyxoviridae.
   - Analyzed the ancestral states of the novel viruses and their host associations.

4. **Transcriptome Analysis of Pathogen-Induced Physiological Responses in Shrimp** Feb. 2022 - Jan. 2023

   First author, completed

   - Gathered nine RNA-Seq project datasets from the NCBI SRA and finally obtained 109 transcriptome expression profiles.
   - Data Quality Control, Differential Expression Analysis, and Enrichment Analysis (including Gene Ontology and Kyoto Encyclopedia of Genes Pathway Analysis)

5. ***Microscopic Algae, "Macroscopic" Energy*** Jun. 2018 - Nov. 2021

   Student Leaders & Advisors, iGEM Project

   - Constructed transgenic algal strains improve carbon dioxide fixation and lipid synthesis by overexpressing essential genes in the ascorbic acid metabolic pathway.
   - Managed mathematical modeling efforts, including:
     - Creation of a Logistic growth model for microalgae based on growth trends.
     - Optimization models using cost and time data to predict optimal cultivation conditions, cost-effectiveness, and profitability of a microalgae facility.

Publication

1. **Wu Z**, Chu KH*, Ma KY*. Transcriptome Analysis of Multiple Tissues in the Shrimp *Penaeus vannamei* Reveals the Typical Physiological Response to Three Pathogens[J]. Journal of Marine Science and Engineering. 2023; 11(2):389.
2. Veresoglou, S.D., Chen, J., **Wu, Z.** et al. (2023). No-tillage outperforms conventional tillage under arid conditions and following fertilization. Soil Ecol. Lett. 5, 137–141 (2023).

Honors and Awards

1. **Gold** and Bronze Awards at the International Genetically Engineered Machine (iGEM) in 2021 and 2019, respectively.
2. Nominated for Best Sustainability (7/320 international student team) at iGEM in 2021
3. Second Prize Scholarship (8% students) in 2020
4. Advanced Individual in Social Work and Excellent Volunteer in Cangshan District

Conference presentation

- **Wu ZW**, Chu KH, Ma KY. Transcriptome analysis of multiple tissues of *Penaeus vannamei* reveals the typical physiological response to the invasion of three pathogens, THE 16th SYMPOSIUM OF CRUSTACEAN SOCIETY, 12-13 Nov 2022, Heibei Province, China (oral presentation).
- **Wu ZW**, Chu KH, Ma KY. Transcriptome analysis of multiple tissues of *Penaeus vannamei* reveals the typical physiological response to the invasion of three pathogens, Dialogue with fantastic creatures—SYSU&HKU paleontology theme workshop, 15-17 Oct 2022, Guangdong Province, China (oral presentation).

Additional Experience

1. Undergraduate Ecological Comprehensive Experiment — Mar. 2023 - Jun. 2023
   Laboratory Assistant
2. Undergraduate Biochemical Experiment — Oct. 2022 - Jan. 2023
   Laboratory Assistant
3. English-Chinese translation of a sustainable development report — Oct. 2022 - Nov. 2022
   United Nations Volunteers Translator
4. Undergraduate Ecological Comprehensive Experiment — Mar. 2022 - Jun. 2022
   Laboratory Assistant

Skills and Hobbies

Software: Proficient in R (preferred for analysis and plotting), strong command of Perl programming (primary tools), familiar with Python (supplementary tools), limited exposure to Java

Hobbies: Avid Reader & Passionate Cook & Food Enthusiast & Animal Lover

References

Ka Yan MA, Associate Professor
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Rongfeng Cui, Associate Professor
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Tsang Ling Ming, Assistant Professor
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Stay curious forever, be willing to embrace everything, and excel at learning from scratch.