

# 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 to uncover crab lignocellulose degradation mechanisms and evolution.
2. **Evolution of terrestrialization in Land Crabs:** Sep. 2022 - Present  
**exploring at the genomic level**  
*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** Jun. 2022 - Jul. 2023  
**in invertebrates: Evolutionary insights into Orthomyxoviridae across metazoans**  
*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 (\*Corresponding author; +Co-first author)**

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<sup>+</sup>, **Wu, Z.**<sup>+</sup> 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 16<sup>th</sup> 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<br>Laboratory Assistant                                  | Mar. 2023 - Jun. 2023 |
| 2. Undergraduate Biochemical Experiment<br>Laboratory Assistant   | Oct. 2022 - Jan. 2023 |
| 3. English-Chinese translation of a sustainable development<br>report<br>United Nations Volunteers Translator | Oct. 2022 - Nov. 2022 |
| 4. Undergraduate Ecological Comprehensive Experiment<br>Laboratory Assistant                                  | Mar. 2022 - Jun. 2022 |

## ***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.*