

Ziwei (Zoe) Wu

State Key Laboratory of Biocontrol, Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), School of Ecology, Sun Yat-sen University, Guangzhou, China
E-mail: ziweiw1998@gmail.com

[Personal Homepage](#)

EDUCATION

Sun Yat-Sen University (SYSU)

Master in Science degree

Aug. 2021 - Present

Majors: **Ecology** (honors program: Evolutionary Ecology)

Cumulative GPA: **3.5 (85.65/100)**

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

Fujian Agriculture and Forestry University (FAFU)

Bachelor of Agriculture degree, summa cum laude

Sep. 2017 - Jun. 2021

Majors: **Plant Science** and **Technology** (honors program, quantitative focus)

Cumulative GPA: **3.5 (85/100)**

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

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

RESEARCH EXPERIENCE

1. [Microscopic Algae, “Macroscopic” Energy](#)

Fuzhou, China

Student Leaders & Advisors, iGEM Project

Jun. 2018 - Nov. 2021

- Led the construction of transgenic algal strains to enhance carbon dioxide fixation and lipid synthesis metabolism by overexpressing critical genes in the ascorbic acid metabolic pathway.
- Led mathematical modeling experiments, **including**
 - **Designing** a Logistic growth model for microalgae based on growth trends.
 - **Developed** optimization models using cost and time data to predict optimal cultivation conditions and evaluate microalgae factory cost-effectiveness and profitability.

2. [Transcriptome Analysis of Pathogen-Induced Physiological Responses in Shrimp](#) Shenzhen, China

First author, Published

Feb. 2022 - Jan. 2023

- Gathered nine RNA-Seq project datasets from the NCBI SRA and finally obtained 109 transcriptome expression profiles.
- Generated **innovative ideas** to enhance project outcomes.
- Proficiently acquired expertise in **Shell scripting** and effectively utilized **R programming languages**, which enabled me to complete the Data Processing, Plot Generation, and Initial Draft Writing independently.

3. **Uncovering Influenza-Like Virus Clades and New Genera in Invertebrates:**

Hongkong, China

Evolutionary Insights into Orthomyxoviridae across Metazoans

Co-first author, In submission

Jun. 2022 - Jul. 2023

- **Novel Orthomyxoviridae identified.** Constructed phylogenetic relationship of newly identified viruses with known viral members from Orthomyxoviridae.
- **Ancestral states of the novel viruses and host associations analysis.**

4. Terrestrial Adaptation Evolution in Land Crabs: Exploring at the Genomic Level

Shenzhen, China

First author, Upcoming **Graduation Thesis**

Sep. 2022 - Present

- Completed **genome assembly** using third-generation ONT sequencing data and Hi-C data.
- Individually extracted RNA from five tissues of the Land Crabs (*Gecarcoidea lalandii*), **constructed RNA libraries** and performed **independent** third-generation **full-length cDNA ONT sequencing**.
- Conducted **gene functional annotation** amalgamating second and third-generation transcriptomic data and homologous protein information, utilizing the Maker tool and public database.
- Performed inner **genomic collinearity analysis, unique and shared gene family assessment, and positive selection analysis** to identify distinctive gene families, significant expansions, and contractions in *Gecarcoidea lalandii*.

Additionally, scrutinized for genes under positive selection in *Gecarcoidea lalandii*, with the objective of elucidating the driving factors behind its adaptive evolution (terrestrial adaptation).

5. Crabs and Symbiotic Microorganisms: Collaborative Cellulose Degradation

Facilitating Radiative Diversity in Sesarmidae — Genomic and Gut

Hongkong, China

Microbiome Macro-genomic Analysis of Crabs

Co-first author, In Analysis

Nov. 2022 - Present

- Led three Sesarmidae genome assemblies using third-generation ONT sequencing data.
- Conducted **gene functional annotation (especially the annotation of CAZymes)** using transcriptomic data and homologous protein information, utilizing the Maker tool and public database.
- Performed **three crabs' genomic collinearity analysis, CAZymes family assessment, and positive selection analysis** to identify distinctive gene families, significant expansions, and contractions in *Sesarmidae*.
- Combining metagenomics and metatranscriptomics to reveal the molecular mechanism and evolutionary process of crab degradation of lignocellulose.

ACADEMIC ACTIVITIES AND PUBLICATION

- 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).
- 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 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.

ADDITIONAL EXPERIENCE

- | | |
|--|-----------------------------------|
| 1. Undergraduate Ecological Comprehensive Experiment | Mar. 2022 - Jun. 2022 |
| <u>Experimental teaching assistant</u> in the 2021 autumn semester | High-Throughput Sequencing Module |
| 2. English - Chinese translation of a sustainable development report | Oct. 2022 - Nov. 2022 |
| <u>United Nations Volunteers</u> | <u>Translator</u> |
| 3. Undergraduate Biochemical Experiment | Oct. 2022 - Jan. 2023 |
| <u>Experimental teaching assistant</u> in the 2022 spring semester | Biochemical Experiment |
| 4. Undergraduate Ecological Comprehensive Experiment | Mar. 2023 - Jun. 2023 |
| <u>Experimental teaching assistant</u> in the 2022 autumn semester | High-Throughput Sequencing Module |

SKILLS AND HOBBIE

Software: Novice in R (Preferred for plotting), Moderate skill in Shell programming (Primary tools), Familiar with Python (Supplementary tools), Limited exposure to Java

Hobbies: Avid Reader & Passionate Cook & Food Enthusiast