

SILIANG SONG

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EDUCATION

B.Sc. in Biological Science 09/2014-06/2018
Zhejiang University, Chu Kochen Honors College Hangzhou, China
- Major GPA: 3.89/4.00, ranking 1/20

RESEARCH EXPERIENCE

Department of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor 09/2018-now
Researcher, Mentor: Dr. Jianzhi Zhang Ann Arbor, MI
Project: Using machine learning to predict tRNA genotype fitness landscape
- Background: The lab had generated more than 65000 genotypes by mutating a yeast wild type tRNA, and had measured their fitness experimentally.
- Applying those experimental data to predict fitness for those tRNA genotypes (fitness landscape) that are not measured in the experiment using machine learning method.

Department of Organismic and Evolutionary Biology, Harvard University 05/2018-09/2018
Remote Research Assistant, Mentor: Dr. James Mallet Hangzhou, China
Project: Elucidating the history and functional significance of a large inversion in *Heliconius*
- Searched for positive selection and selection pressure difference between genes in inversion and genes in the rest of genome.
- Identified regions (including non-coding regions) that have selection pressure shift between (*Heliconius erato*, *Heliconius himera*, *Heliconius hecalesia*) and (*Heliconius sara*, *Heliconius demeter*, *Heliconius telesiphe*)
- Confirmed differentially expressed genes between *Heliconius erato* and *Heliconius sara* by analyzing existed RNA-seq data.

College of Life Sciences, Zhejiang University 05/2018-08/2018
Research Assistant, Mentor: Dr. Ming Chen Hangzhou, China
Project: Transcriptome analysis on Aluminum-accumulating plant species
- Analyzed transcriptomes of 5 different plant species with different aluminum-accumulating levels.
- Focused on revealing new genes contribute to Al-detoxification, comparing the expression level of known genes, and depicting the evolution of Al-detoxification mechanism across plants.

Department of Organismic and Evolutionary Biology, Harvard University 10/2017-04/2018
Researcher, Mentor: Dr. Naomi Pierce Cambridge, MA
Project: Lepidoptera opsin gene screening for differences between diurnal and nocturnal species
- Cloned 10 new LW opsin genes from 10 species, and constructed expression plasmid for each gene.
- Reconstructed a phylogenetic tree of all available LW opsin genes including new screened ones, and carried out PAML selection pressure analysis.
- Heterogeneous expression system was also expected to be constructed.

The Cross-disciplinary Scholars in Science and Technology (CSST) Program, University of California, Los Angeles (UCLA) 07/2017-09/2017
Researcher; Mentor: Dr. Brad Shaffer Los Angeles, CA

- Project: Revealing phylogeny of Ambystomatidae using thousands of genes from targeted enrichment
- Revealed the phylogeny of Ambystomatidae (a salamander family) by using the RNA probes for 5237 exon genes, selecting and picking representative samples, doing DNA extraction and library preparation for 190 samples; and also processed NGS raw data.
 - Proposed to do phylogenetic analysis on lab server once the sequence data was available.

Institute of Insect sciences, Zhejiang University 11/2015-07/2017
Research Assistant, Mentor: Dr. Xuexin Chen Hangzhou, China

- Project: Hymenoptera Taxonomy & Phylogeny Practice
- Observed specimens of the family Braconidae and other families of Hymenoptera under stereo microscope, and classified them into family or subfamily.
 - Investigated the relationship between parasitic behavior and mitochondrial DNA evolution pressure of hymenoptera with phylogenetic software, including MrBayes, RAxML and PAML.

TECHNICAL SKILLS

- **Biotechnology:** DNA/RNA extraction, NGS Library prep, SDS-PAGE, Western Blot, Basic Genetic Engineering, Basic Insects & Hymenoptera Taxonomy, RT-PCR, RACE-PCR, Molecular cloning, Novel Gene Screening
- **Computer Skills:** C, C++, JAVA, basic Assembly language, Python, R, SAS, NGS data processing, Linux, web design, RNA-seq analysis, simple machine learning, simple deep learning, cloud computing.
- **Phylogenetic Software:** Geneious, PartitionFinder, PhyML, RAxML, MrBayes, PAML, BEAST, IQtree

STANDARDIZED TESTS

- TOEFL: 104 (reading 29, listening 29, speaking 22, writing 24)
- GRE: verbal 156(73%), quantitative 170(97%), analytical writing: 3.5 (42%)

HONORS & SCHOLARSHIPS

Best Student Presenter in CSST summer program, UCLA	9/2017
First-Class Scholarship for Outstanding Merits	2015&2016&2017
Zhejiang Provincial Government Scholarship	10/2016
Excellent project of Zhejiang University SQTP (Students Quality Training Project)	04/2016
First-Class Scholarship for Elite Students in Basic Sciences	12/2015
First Prize of Zhejiang Province College Students Physical Innovation Competition	12/2015
Second Prize of Chinese Physics Olympiad in Zhejiang Division	10/2013

EXTRACURRICULAR ACTIVITIES

Basketball Referee in Sanhao Cup	04/20/2017-05/20/2017
Basketball Team of Life Science College, Zhejiang University	2015-2017
Volleyball Team of Chu Kochen Honors College, Zhejiang University	2014-2016