

YiFan Xiong

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Education

Fujian Agriculture and Forestry University | *M.S. in Bioengineering. GPA: 3.33/4.0*

Sep. 2019 - Jun. 2022

Wuhan University of Bioengineering | *B.S. in Bioengineering. GPA: 3.56/4.0*

Sep. 2015 - Jun. 2019

Professional experience

Bioinformatic Research Assistant | *Tsinghua University*

Jul. 2024 - Present

Supervisor: Prof. Xuegong Zhang

Bioinformatics Analyst | *Dynamic Biosystems Ltd.*

Jun. 2023 - Jun. 2024

- Coding for scRNA-seq and scVDJ-seq data analysis and visualization, Independently developed R package [cellPCT](#).

Bioinformatics Analyst | *Tsinghua-Fuzhou Institute of Data Technology*

Jul. 2022 - Jun. 2023

- Single-cell data collection, metadata organization, cell type annotation and import into hECA2.0 Single-cell database.

Research Experience

Bioinformatic Research Assistant | Supervisor: **Prof. Xuegong Zhang**

Jul. 2024 - Present

- Evaluate the biological meaning in different single cell foundation models and Large Language Models' gene embedding.
- Identify core TFs combinations in T cells reprogramming and cell development using the algorithm scDirect.
- LncRNA and ceRNA analysis of Marfan syndrome samples, reveal the potential role of lncRNA in the pathogenesis.

Graduate Student Researcher | Supervisor: Prof. Shoukai Lin

Jun. 2019 - Jul. 2022

Calcium-dependent protein kinase family in *Fragaria vesca* and their functions under biotic stresses

- Phylogenetic analysis of the CDPK family in strawberry, explore collinearity among FvCDPKs, and determine the stress-related cis-acting elements in promoter regions.
- Conduct transcriptome analysis of different pathogen infections to reveal the distinctive functional responses.

Large-scale physiological and transcriptome analysis of adaptive responses of *Eriobotrya japonica* under freezing stress

- Genome-wide identification of Loquat protein kinase and TFs using motif specific HMM models and sequence similarity.
- Using WGCNA to associate the freezing-stress phenotype with co-expressed gene modules, find the hub genes in gene regulation networks with module membership and gene significance.
- Experimental verification of target genes in *Arabidopsis*, revealing the function of freezing stress resistance.

RNA-seq analysis provides insights into the regulatory mechanism of striped leaf albinism in *Areca catechu*

- *De novo* transcriptome analysis of arecanut leaf, determine the expression patterns of genes related to pigments biosynthesis, senescence and chloroplast development.

Undergraduate Research Assistant | Supervisor: Prof. Junlin Zhang & Prof. Zhongming Fang

Sep. 2016 - Jun. 2019

Extraction and identification of anti-cancer bioactive peptides and *in vitro* functional verification

- Wet-lab experience including DNA extraction, Real-time PCR, vector construction, protein extraction, SDS-PAGE, cell culture, establish mouse model, data processing and visualization.

Transcriptome analysis of *Oryza sativa* transgenic materials reveal mechanism of leaf senescence

- *OsAAP3* transgenic rice leaf tissue RNA-seq data analysis, from rawdata to DEG identification and gene functional enrichment analysis. Write parts of the paper, conduct data visualization, and respond to peer reviews.

Publications

- **Yifan Xiong**, Shunquan Lin, Jincheng Wu, Shoukai Lin. Identification and Expression Analysis of CDPK Family in *Eriobotrya japonica*, reveals *EjCDPK25* in Response to Freezing Stress in Fruitlets. *bioRxiv*, 2024.

<https://doi.org/10.1101/2024.05.01.591999>

- **Yifan Xiong**, Dahe Lin , Shiwei Ma, Chunhua Wang, Shoukai Lin. Genome-wide identification of the calcium-dependent protein kinase gene family in *fragaria vesca* and expression analysis under different biotic stresses. *European Journal of Plant Pathology*, 2022, 164(2):283-98. <https://doi.org/10.1007/s10658-022-02560-4>
- Wei Qilang, Zhenwei Yan, **Yifan Xiong**, and Zhongming Fang. Altered Expression of *OsAAP3* Influences Rice Lesion Mimic and Leaf Senescence by Regulating Arginine Transport and Nitric Oxide Pathway. *International Journal of Molecular Sciences*, 2021, 22, no.4: 2181. <https://doi.org/10.3390/ijms22042181>
- Jia Li, Xiaocheng Jia, Liyun Liu, Xianmei Cao, **Yifan Xiong**, Yaodong Yang, Huanqi Zhou, Ming Yi, and Meng Li. "Comparative biochemical and transcriptome analysis provides insights into the regulatory mechanism of striped leaf albinism in arecanut (*Areca catechu L.*)". *Industrial Crops and Products*, 2020, 154: 112734. <https://doi.org/10.1016/j.indcrop.2020.112734>

Skills

- English: IELTS overall band 7 (Listening 7.5, Reading 8.5, speaking 6.5, writing 6.0)
- Programming: Proficient in R, Python and Shell
- NGS data analysis: scRNA-seq, bulk RNA-seq(ceRNA competition),WGS, WGBS, ATAC-seq
- Machine learning: SVM, Random forest, Transformer, *et al.*
- Code Management and Version Control: Github and Gitlab
- Servers, Environment and Workflow Manager: Conda, Docker, Slurm, WDL and Snakemake

Presentations and Posters

The 2nd Symposium of Fujian Bioinformation Society Poster presentation <i>Fuzhou, Fujian province</i>	Feb. 2023
Digital Medicine Algorithm Innovation Competition Organization assistant <i>Fuzhou, Fujian province</i>	Aug. 2022
Academic competition for Graduate Student Oral and poster presentation <i>Fuzhou, Fujian province</i>	May. 2022
The 10th National Symposium on Loquat Poster presentation <i>Lanxi, Zhejiang province</i>	May. 2021

Honors & Awards

Academic Achievements Prize for Graduates <i>Fujian Agriculture and Forestry University</i>	Jun. 2022
Scholarship for Graduates <i>Fujian Agriculture and Forestry University</i>	Jun. 2020
Outstanding Graduates <i>Wuhan University of Bioengineering</i>	Jun. 2019
Scholarship for Undergraduates 1st Place <i>Wuhan University of Bioengineering</i>	Dec. 2018
Scholarship for Undergraduates 2nd Place <i>Wuhan University of Bioengineering</i>	Dec. 2017
National English Competition for Undergraduates 3rd Place <i>Wuhan University of Bioengineering</i>	May. 2017
Annual Outstanding Undergraduates <i>Wuhan University of Bioengineering</i>	Dec. 2016
Scholarship for Undergraduates 3rd Place <i>Wuhan University of Bioengineering</i>	Dec. 2015

Outreach and Extracurricular Activities

Community volunteer for anti-COVID pandemic	Jun. 2020
Bilingual volunteer for the Tour of China Cycling Competition	May. 2016
Pre-College Summer School Program @Central China Normal University	Jul. 2015 - Aug. 2015