Yifan Xiong

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Education

Fujian Agriculture and Forestry University | *M.S. in Bioengineering* — Sep. 2019 - Jun. 2022

Wuhan University of Bioengineering | *B.S. in Bioengineering* — Sep. 2015 - Jun. 2019

Professional Experience

Bioinformatics Engineer | *Dynamic Biosystems Ltd, Xiamen, China* — Jun. 2023 - Jun. 2024

- Development team member of the Well-Paired-Seq single-cell platform; independently developed the R package cellPCT.

Bioinformatics Engineer |*Fuzhou Institute of Data Technologies, Fuzhou, China* — Jul. 2022 - Jun. 2023

- Annotated cell types and organized metadata for the hECA 2.0 database; constructed multi-omics pipelines.

Research Experience

Bioinformatics Research Assistant — Jul. 2024 - Present

XGlab, Tsinghua University, PI: Prof. Xuegong Zhang

Evaluate the Biological Meaning in Different Gene Embeddings from Single-cell Foundation Models

- Calculate genes' distances in embedding space, explore the biological meaning through multiple downstream tasks.

Reversing T cell Exhaustion through TFs Combinations Identified by the scDirect Algorithm

- Annotated T cell subclusters in scRNA-seq datasets and deduced TF combinations for reversing exhausted T cells.

Reveal the Potential Role of lncRNA Targets in the Pathogenesis of Marfan Syndrome

- Conducted co-expression analysis of lncRNA and mRNA to identify potential lncRNAs involved in Marfan syndrome.

Graduate Student Researcher — Jun. 2019 - Jul. 2022

Department of Life Science, Fujian Agriculture and Forestry University, PI: Prof. Shoukai Lin

Identify Calcium-dependent Protein Kinase in *Fragaria vesca* and Reveal the Expression Patterns Under Biotic Stresses

- Conducted phylogenetic analysis of CDPK family in strawberry, and determined the stress-related cis-regulatory elements.
- Performed transcriptome analysis of different pathogen infections to reveal the distinctive functional responses.

Large-scale Physiological and Transcriptome Analysis of Adaptive Responses of Loquat fruit Under Freezing Stress

- Conducted genome-wide identification of protein kinase and TFs using motif HMM models and sequence similarity.
- Associated frezzing stress traits with co-expressed gene modules to identify hub genes in gene regulation networks.
- Experimental verification of target genes in *Arabidopsis*, revealing their functions in freezing stress resistance.

Undergraduate Research Assistant — Sep. 2016 - Jun. 2019

Applied Biotechnology Research Center, Wuhan University of Bioengineering, PI: Prof. Junlin Zhang & Prof. Zhongming Fang

Extraction and Identification of Anti-cancer Bioactive Peptides and Functional Verification

- Received training including vector construction, QPCR, SDS-PAGE, cell culture and annimal model establishment.

Transcriptome Analysis of Rice Transgenic Materials Reveal Mechanisms of Leaf Senescence

- Analyzed RNA-seq data from *OsAAP3* transgenic rice leaf, conducted data visualization and wrote manuscript.

RNA-seq Analysis Provides Insights into the Regulatory Mechanism of Striped Leaf Abinism in Arecanut

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

Publications and Preprints

- **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

- Language: IELTS overall band 7 (Reading 8.5, Listening 7.5, speaking 6.5, writing 6.0); native in Mandrain Chinese.
- Programming: Proficient in R, Python and Shell
- NGS Data Analysis: scRNA-seq, bulk RNA-seq, WGS, WGBS, ATAC-seq
- Code Management and Version Control: Github and Gitlab
- Servers, Environment and Workflow Manager: Slurm, Conda, Docker, WDL and Snakemake

Presentations and Posters

The 2nd Symposium of Fujian Bioinformatics Society | Poster presentation |*Fuzhou, Fujian province* **Feb. 2023**

Academic Competition for Graduate Student | Oral and poster presentation | *Fuzhou, Fujian province* **May. 2022**

The 10th National Symposium on Loquat | Poster presentation | *Lanxi, Zhejiang province* **May. 2021**

Honors & Awards

Employee of the Year Award |*Dynamic Biosystems Ltd.* **Dec. 2023**

Academic Achievements Prize for Graduates | *Fujian Agriculture and Forestry University* **Jun. 2022**

Scholarship for Graduates | *Fujian Agriculture and Forestry University* **Jun. 2020**

Outstanding Graduates | *Wuhan University of Bioengineering* **Jun. 2019**

1st Place Scholarship for Undergraduates | *Wuhan University of Bioengineering* **Dec. 2018**

2nd Place Scholarship for Undergraduates | *Wuhan University of Bioengineering* **Dec. 2017**

3rd Place National English Competition for Undergraduates | *Wuhan University of Bioengineering* **May. 2017**

Annual Outstanding Undergraduates Award | *Wuhan University of Bioengineering* **Dec. 2016**

3rd Place Scholarship for Undergraduates | *Wuhan University of Bioengineering* **Dec. 2015**

Outreach and Service Activities

Organizational support volunteer for the Inauguration of ISCB-China **Oct. 2024**

Organizational support volunteer for Digital China Innovation Competition in Medicine Algorithm **Aug. 2022**

Community support volunteer for Anti-COVID pandemic **Jun. 2020**