Xin XIONG

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Education

Sichuan University, Life Science — Sept 2023 – Jun 2027

- GPA: 3.89/4.0 (transcript)
- **Coursework:** Genetics (96) Organic Chemistry(96)Calculus (94) College Chemistry (91) Plant Biology (91) Probability Statistic (90) Microbiology (91) Cellbiology (90) Plant Biology Experiment (98) Biochemistry (89)

Honor and Grants

- National Scholarship(2024)
- National Scholarship(2025)
- Outstanding student of Sichuan University

Projects

Pan-Cancer Dissection of Tumor Microenvironment Cell Communication Networks and Identification of Key Regulatory Axes

June 2025 – Now

- **Standard scRNA pipline:** Analyzed single-cell RNA-seq data across 10+ cancer types to map tumor microenvironment communication networks.
- **CellChat:** Identified conserved and cancer-specific regulatory circuits using CellChat and NicheNet computational frameworks
- **CoVarnet:** Reimplemented CoVarnet in Python and used it to identify five modules associated with cancer development.
- **Spatial Transcript:** Integrated spatial transcriptomics with scRNA-seq to localize high-confidence signaling niches; validated spatial co-localization patterns of sender/receiver cell types and pathway activity.
- **Cell hub:** Identified communication hub cell populations by centrality and network topology metrics; highlighted hub-driven pathways conserved across tumor types and linked them to phenotypic programs.

TP53RK Functional-Mode Determination: Phosphorylation-Dependent vs. KEOP-Complex-Dependent — Jan 2026 - Feb 2026

- **Mutagenesis and cloning:** Constructed plasmids carrying phosphorylation-site mutants and KEOP critical-site mutants of TP53RK.
- **Lentiviral transduction:** Introduced mutant constructs via lentivirus and applied dTAG-V1 to degrade endogenous TP53RK.
- **Live-cell phenotyping:** Used Incucyte to quantify proliferation and compare rescue differences in medulloblastoma cell death between the two mutant classes.

IGEM: " TasAnchor " —- Construction of a Whole Cell immobilization platform — June 2024 – Oct 2025

- **Genetic engineering:**Edited Bacillus subtilis genome by knocking out the endogenous TasA gene; constructed the pHT01 expression vector incorporating the SpyTag/SpyCatcher system to build a modular adhesion scaffold.
- **Plasmid construction and expression:** Designed and cloned constructs into *E. coli* BL21(DE3); induced protein expression using IPTG and performed purification via Ni-NTA affinity chromatography.
- **Functional material integration:** Engineered an adhesion module on polystyrene substrates, enabling the immobilization of *B. subtilis* biofilms on bioreactor filter membranes.

Experiences

Westlake University Visiting Student - Jin Lab — Jan 2026
Westlake University International Undergraduate Summer School — Aug 2025
Peking University summer training — Jul 2025

Technologies

Wet lab: PCR, Sounthern Blot, WB, Plasmid Assembly, Crispr, Protein Expression, Protein purification, Homologous recombination
Bioinformatics: Biopython, scRNA-seq, Spatial transcript, CellChat, Nichenet, CellphoneDB, Prokka, RAST, BLAST, Protein engenerring
Computational: Python, RStudio, VS Code, Machine learning, Linux(bash)