

Sijie Li

Chinese Citizen

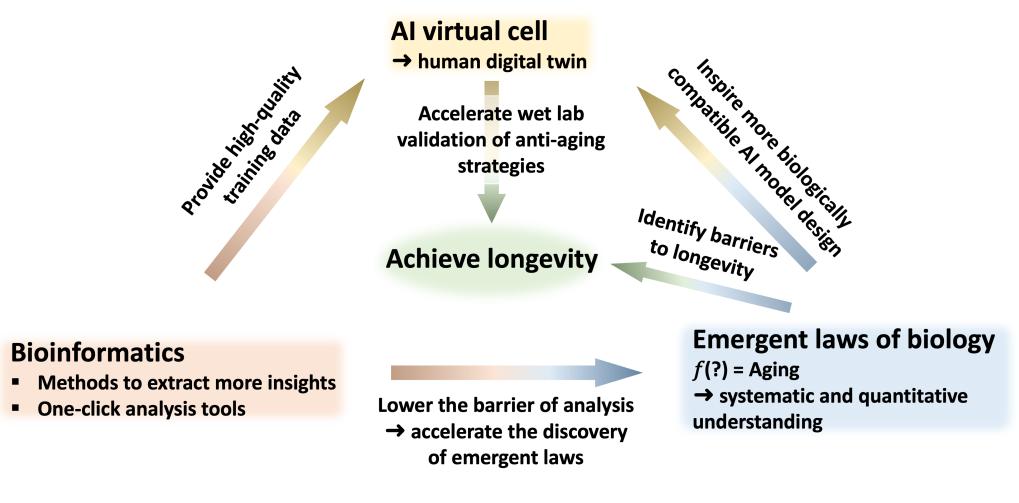
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Objective



Education

- School Name: Southern University of Science and Technology (SUSTech)
- Major: Biomedical Engineering
- Degree: B.Sc.;
- Expected Graduation Date: June 2026;
- Cumulative GPA: 3.95/4.00
- Rank: 1/68
- Interdisciplinary Coursework: Bioinformatics (A+), Systems Biology (A+), Molecular Cell Biology (A+); Thermodynamics and Statistical Mechanics (A+); Intelligent Sensing Technology (A+), Principles of Electric Circuits (A+), etc.

Research & Projects

Bioinformatics analysis and tools development

Mentor: Peng He (UCSF), Ongoing

- **Deeptree**: extract representative “deep genes” to improve cell type annotation;
- **sc-bulk heatmap**: module detection, functional/motif analysis, and mapping bulk RNA-seq to single-cell markers to enable one-click insight extraction;
- **multi-omic data analysis**: applied sc-bulk heatmap pipeline, ChIP-seq analysis, single-cell annotation, etc. to Drosophila embryo data; *second author of the preprint Balancing precision with plasticity: Redefining the roles of transcription factors in early cell fate specification* (bioRxiv, 2025).

Microwell RNA-seq data analysis for drug screening

Mentor: Zhi Luo (SUSTech), Ongoing

- **Objective**: Analyze microwell-based RNA-seq data to capture global gene-network perturbations for systematic drug screening, beyond single-gene or pathway readouts.
- **Done**: (1) Built a preprocessing workflow tailored to microwell bulk data with low capture rate and sparsity; (2) Built downstream analysis for drug screening and validated the pipeline.

Aging Kinetic Model Exploration Mentor: Yifan Yang (Westlake University), Summer 2025

- **Objective:** Apply mean-field theory to derive a mechanistic interpretation of the SR model.
- **Done:** (1) Ran numerical simulations in parameter space and analyzed statistical characteristics and variable distributions to connect the two models; (2) Deepened understanding of the two models, SDEs, Poisson processes (stopping conditions), Buckingham Pi theorem, etc; (3) Presented at journal clubs and group meetings.

Brain Region Segmentation with fMRI Data Machine Learning, Course Project, 2024

- **Objective:** Generate a brain atlas from fMRI data and validate it.
- **Done:** (1) Proposed and implemented an innovative complexity-based clustering approach using Lempel–Ziv Complexity (LZC); (2) Conducted additional explorations with sliding-window analysis; (3) Led the entire project process.

Motion Detection via Communication Signals Signals & Systems, Course Project, 2024

- (1) Processed radar signals to estimate position and velocity; (2) Optimized the algorithm and improved estimation resolution; (3) Identified analysis details overlooked in the baseline method.

Additional Experience

Model specific adhesion of engineered *E. coli* in the TME iGEM SUSTech-Med, 2025

- Built individual-based mechanistic simulations in CompuCell3D to demonstrate adhesion specificity in the tumor microenvironment (TME) and explored parameter sensitivity.

FSI modeling of the vasculature Mentor: Ju Liu (SUSTech), 2024–2025

- Constructed multi-layered vascular wall models and fluid–structure interaction (FSI) meshes using SimVascular, Gmsh, and ParaView.
- Executed computational fluid dynamics (CFD) and FSI simulations on high-performance computing (HPC) cluster.

Proteomics Mentor: Chris Soon Heng Tan (SUSTech), Summer 2024

- Learned proteomics wet-lab and analysis workflows (SILAC, Western blot, CETSA, TPCA, LC–MS/MS, etc.).
- Reviewed strategies for high-throughput molecular glue discovery.

Cell culture & polymer synthesis Mentor: Zhi Luo (SUSTech), 2023

- Cultured RAW264.7 cells (LPS-induced polarization).
- Learned RAFT polymerization.

Others

- **Programming Languages:** Python, R, Shell, AWK, MATLAB
- **Academic Activities:** Gave a presentation at Undergraduate Life Sciences Conference (SUSTech); Participated in the PEBBLE BioFusion Camp (Westlake University), chemical biology summer coursework (Peking University), quantitative biology summer coursework (PKU), q-Bio conference (PKU), many workshops, seminars, and symposia at SUSTech.
- **Student Activities:** Publicity Minister, SUSTech Red Cross; conducted 10 first-aid lectures and participated in various community service activities (80+hr);
- **Awards:** First-class College Scholarships; Outstanding Student Leader Award
- **Hobbies:** Drawing, calligraphy, and running
- **Personal Traits:** Proactive, creative, goal-oriented, and sunny!