

# Lu Jinwang

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## EDUCATION

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<b>Master candidate, Cell Biology</b>	GPA: 3.52/4.00
China Agriculture University (CAU)	Sept. 2021 – Present
<b>B.S., Data Science &amp; Big Data Technology (Dual-degree)</b>	GPA:3.99/4.00
China Agriculture University (CAU)	Sept. 2019 – July 2021
<b>B.S., Life Science</b>	GPA:3.48/4.00, Rank:10/80
China Agriculture University (CAU)	Sept. 2017 – July 2021

## RESEARCH EXPERIENCE

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**Screening of Kinase Inhibitors Affecting Organelle Interactions** May. 2023 - Present  
China Agriculture University | Master Thesis

**Description:** This project aims to investigate the potential interactions between Organelles and Cytoskeleton using super-resolution microscopy and proximal labeling.

**Works:**

- Constructed Tet-On induced cell lines through lentivirus infection
- Conducted live cell imaging using spinning-disk confocal microscope to observe organelle dynamics during the cell cycle and in response to microtubule/F-actin depolymerization
- Utilized the splitGFP system to observe interactions between the cytoskeleton and organelles for screening of kinase inhibitors that influence organelle interactions

**Proximal Labeling for Centrosome/Kinetochore** Jan. 2021 – Present  
China Agriculture University | Research Project

**Description:** This project employs proximity labeling technology to investigate proteomic changes in various cellular contexts. Focused on differences in kinetochore components during lateral and end-on attachment, and the effects of *plk4* overexpression on the centrosome.

**Works:**

- Completed research proposal and received support from the CAU Graduate Independent Innovation Research Fund
- Evaluated five proximity labeling enzymes: Bir\*, BioID2, TurboID, miniTurbo, and Apex2
- Labeled biotinylated prey proteins using five centrosomal and three kinetochore proteins as bait
- Conducted Tandem Mass Tag labeling and high-resolution mass spectrometry analysis for partial baits
- Developed and validated two rabbit polyclonal antibodies targeting kinetochore proteins
- Conducted ultrastructure expansion microscopy (U-ExM) for kinetochore proteins

**Characterization of Chromatin Compaction under *TPX2* overexpression** Oct. 2019 – Present  
China Agriculture University | Research Project

**Description:** This project investigated a microtubule-promoting factor (*TPX2*) that was located in the nucleus during interphase and could cause chromatin compaction when overexpressed. The manuscript was ready for submission. The project received support by undergraduate research program and completed with honor.

### Works:

- Implemented deep learning model U-Net to segment cells in low signal-to-noise ratio microscopy images and performed surface modeling for chromatin and nucleus based on 3D-SIM images using ImageJ plugin *TANGO*
- Applied fluorescence lifetime microscopy (FLIM-FRET) to characterize chromatin compaction
- Established EMSA experimental system in our lab and demonstrated that this factor could bind to chromatin via DNA directly (a breakthrough for the project)
- Designed high-throughput pipeline using DAPI/EdU staining and *CellProfiler* software, which indicated that S phase extended when this factor degraded
- Conducted ATAC seq, RNA seq and chIP seq data analysis to determine whether this factor had a specific binding site

## PUBLICATION

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- Yan Y<sup>#</sup>, Lu J<sup>#</sup>, Song Y, Kuang X, Tian Y, Fu J<sup>\*</sup> (2021) Cell segmentation in low signal-to-noise ratio microscopy images based on machine learning. *Journal of Agricultural Biotechnology* 29(1): 198-206. (co-first author)

## ACADEMIC ACTIVITIES

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- Speaker of Cell Dynamics And Chromosomal Stability Workshop (UK-China International Partnership Workshop), *Cell segmentation in low signal-to-noise ratio microscopy images based on machine learning*, 2023
- Speaker of Project Seminar for National Key Research and Development Program of China, *Quantitative Characterization of Chromatin Compaction*, 2021

## AWARDS & SCHOLARSHIP

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- Merit Student Award in CAU, 2023
- Scholarship of Academic Excellence in CAU, 2018/2019/2020/2022
- College Graduate Excellence Award of CAU, 2021
- Honorable Mention in Interdisciplinary Contest In Modeling, 2021  
(Equivalent to second prize in national competition)
- Third Prize in 6<sup>th</sup> Beijing College Student Biology Experimental Design Competition, 2020
- Third Prize in 5<sup>th</sup> Beijing College Student Biology Knowledge Competition, 2019
- Second Prize in Big Data Skills Competition (North China Zone), 2019
- Outstanding Volunteer in China Association for Science and Technology, 2019

## SKILLS & LANGUAGES

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- **Life Science Skill:** DNA cloning, cell culture, protein purification, fluorescence imaging (FLIM-FRET, U-ExM, etc), culture of *Drosophila*
- **Data Science Skill:** Programming, image processing, common machine learning models, statistics, data visualization, bioinformatics analysis for NGS data
- **Languages:** Fluent in English (CET-4: 522, CET-6: 425, promise for TOEFL-iBT), Mandarin