Steven Liu's Portofolio

This portfolio showcases my journey at the intersection of **molecular biology**., **cancer research**, **small-molecule drug screening**, and **data-driven discovery**..

Seeking Scientist / Post-doctoral Research Associate roles in translational oncology and small-molecule drug discovery.

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About Me

I am an oncology-focused scientist specializing in small-molecule drug discovery and translational cancer biology. I drive oncology projects from target validation to pre-clinical candidate evaluation using cell-based, antibody-based, and biochemical assays, and I integrate data-driven analysis to generate clear, decision-ready insights for therapeutic development.

Education

Tulane University

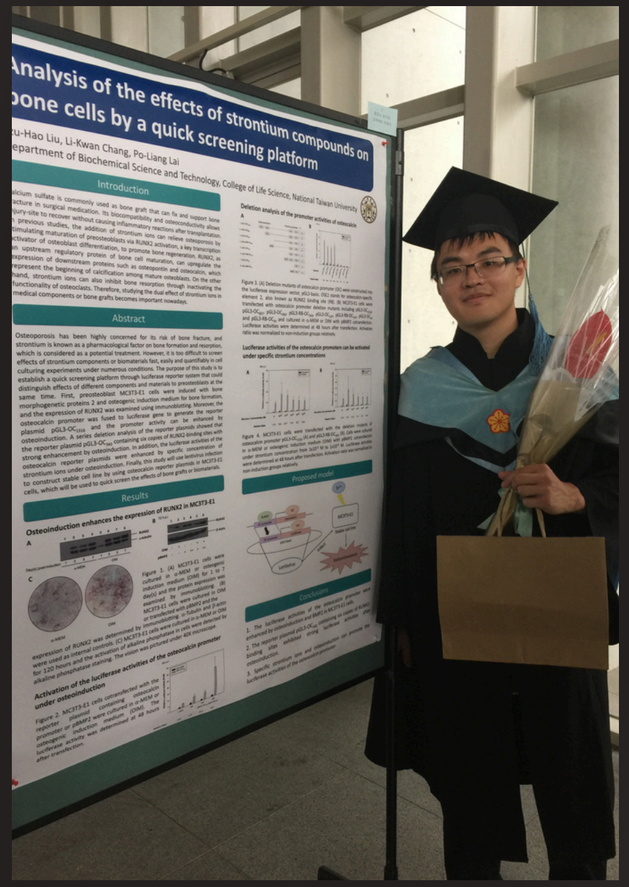
Ph.D. in Biomedical Science | 2025

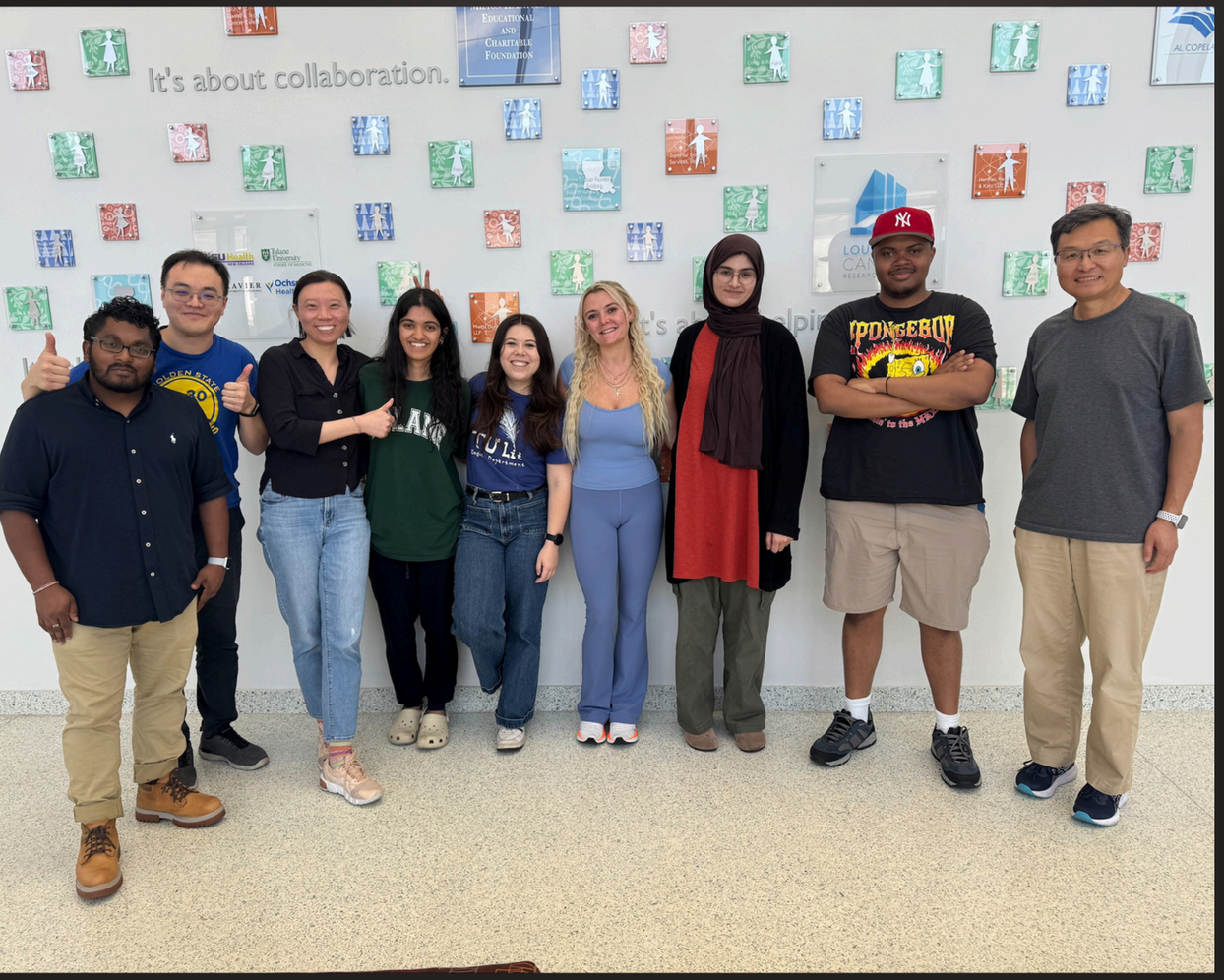
National Taiwan University

M.S. in Biochemical Science and Technology | 2018

National Taiwan University

B.S. in Biochemical Science and Technology | 2016





Work Experience

Tulane University School of Medicine
Doctoral Candidate Research Associate /Research Associate (2020 - 2025)

Chang Gung University
Research Assistant (2019 - 2020)

National Taiwan University
Graduate Research and Teaching Assistant (2016 - 2018)

My Work

Project: Selective Degradation of Oncogenic Kinases using PROTAC-style Small Molecules

Research Highlights

Target Validation

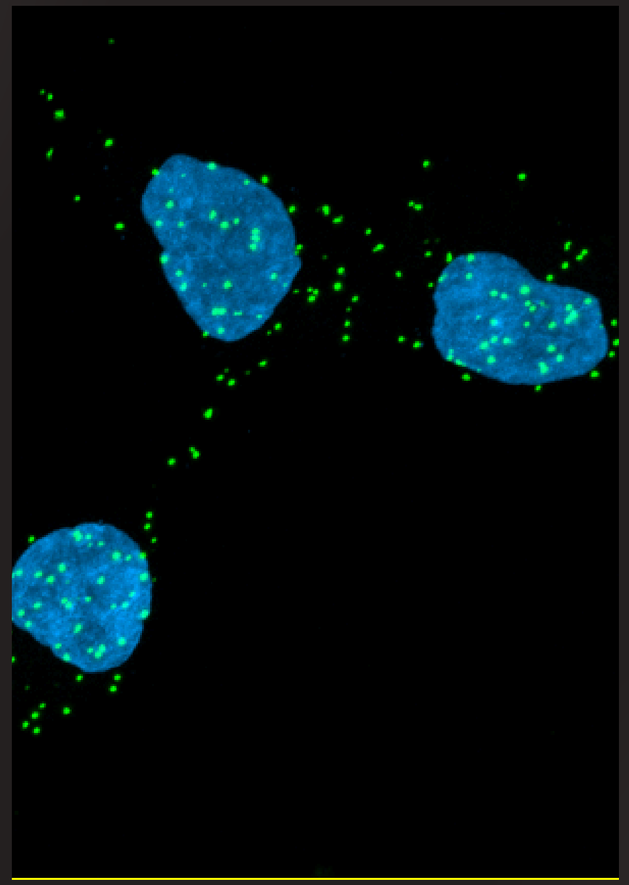
Antibody-based & Biochemical Assays

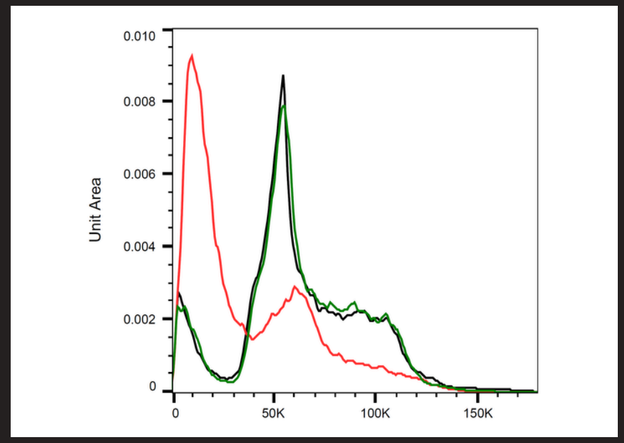
Preclinical Candidate Evaluation

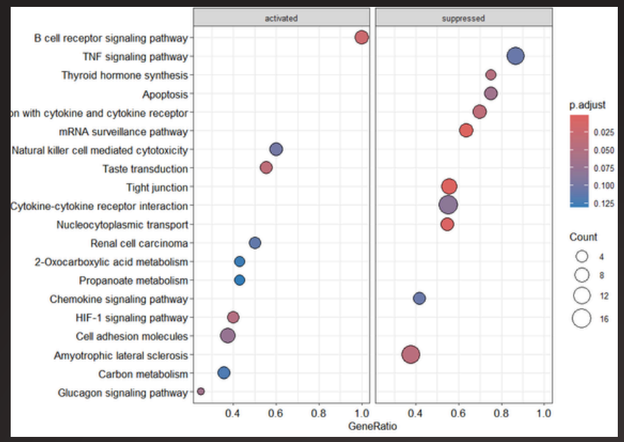
Cell-based Assays

Translational Oncology

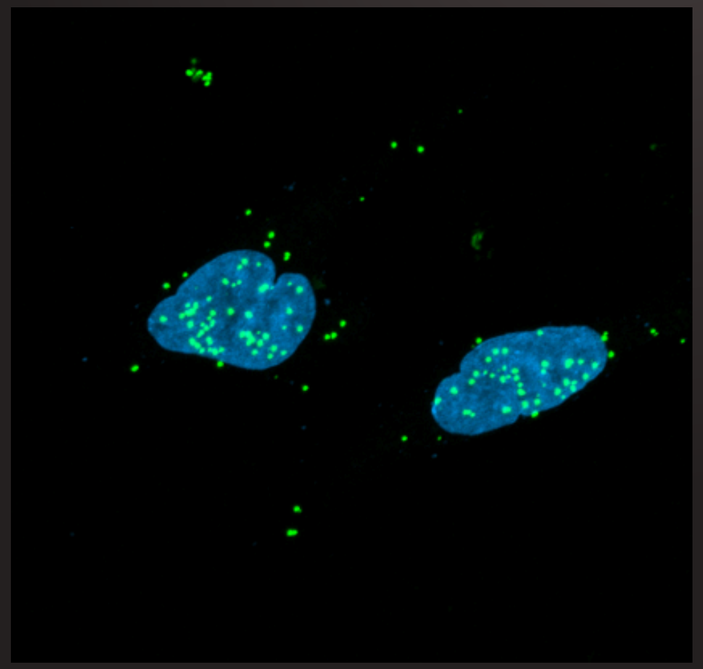
Data-Driven Analyses



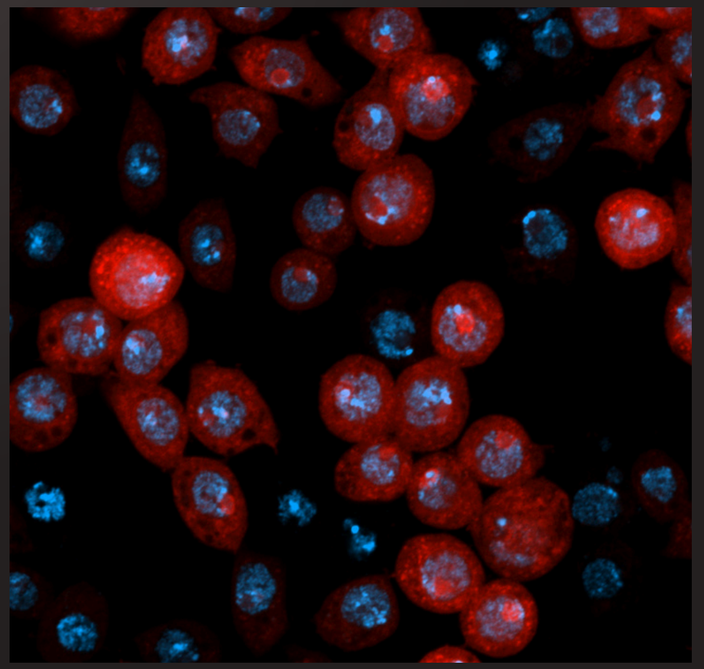




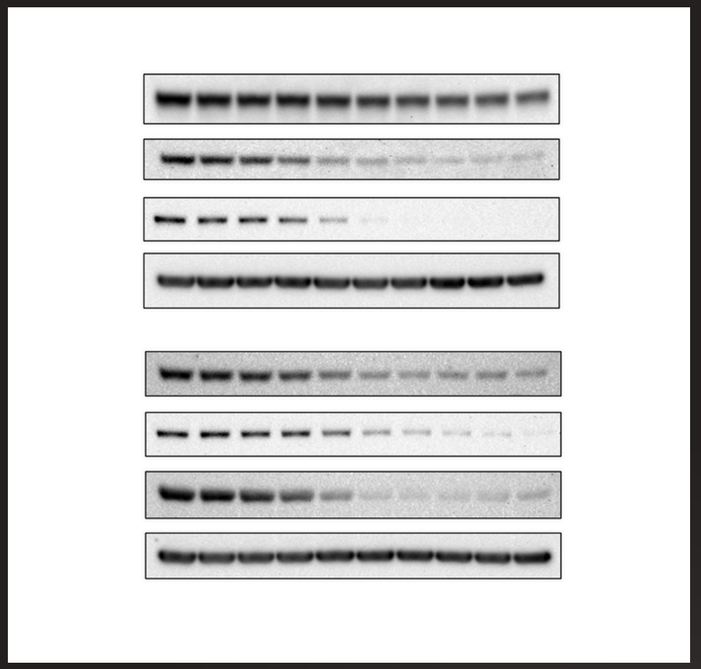
Target Validation



Immunostaining and Proximity Ligation Assay
(Antibody-based Assays)



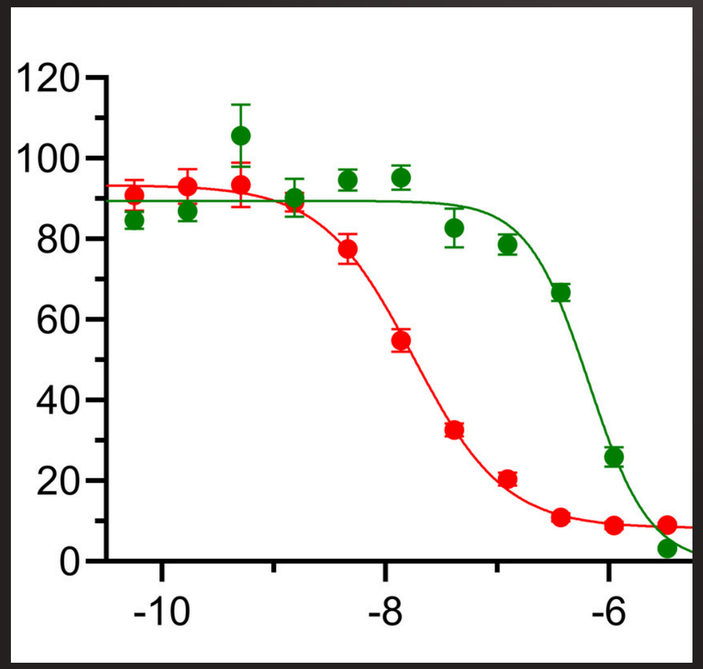
Metabolic Response (HPG) and Immune Response Detection (ELISA)
(Antibody-based and Biochemical Assays)



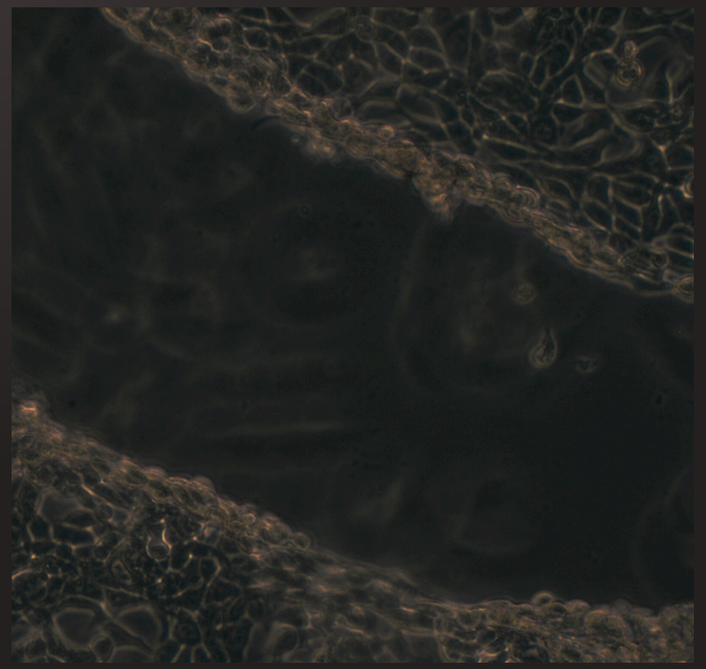
Quantitative Biomolecular Analysis by Immunoblotting and qPCR
(Biochemical Assays)

These antibody-based and biochemical assays confirm specific target engagement and modulation of downstream signaling at both protein and mRNA levels. Metabolic and immune readouts demonstrate that target perturbation elicits clear functional changes in cancer cells.

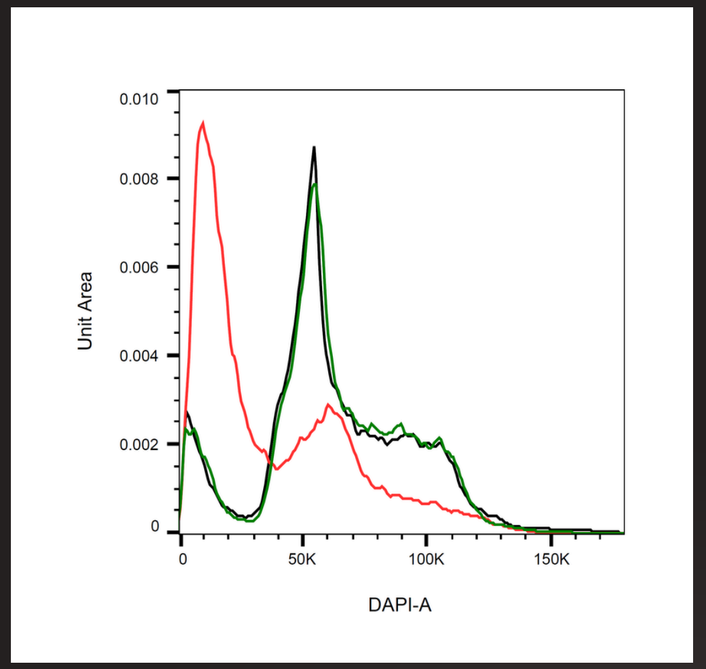
Preclinical Candidate Evaluation



Dose–Response Cell Viability Assays and EC_{50}/IC_{50}/DC_{50} Curve Fitting
(Cell-based Assays)



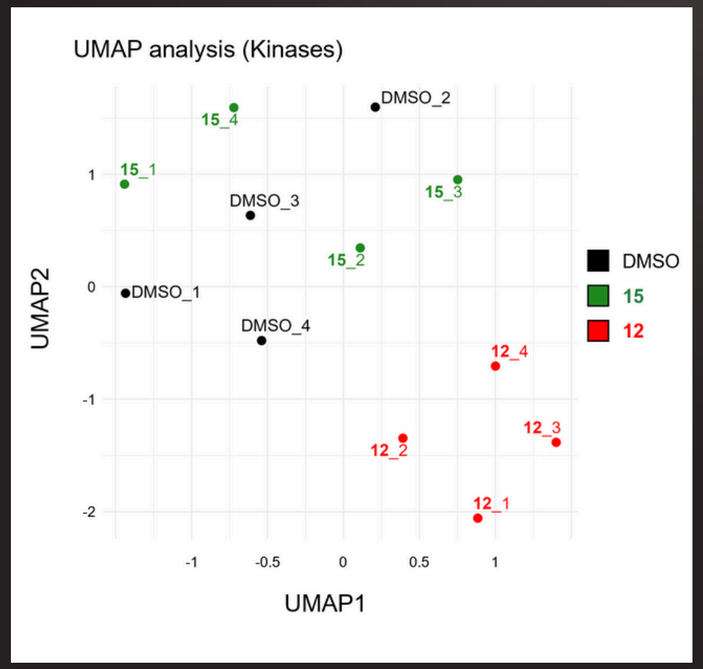
Scratch Wound Healing Assay for Cell Migration
(Cell-based Assays)



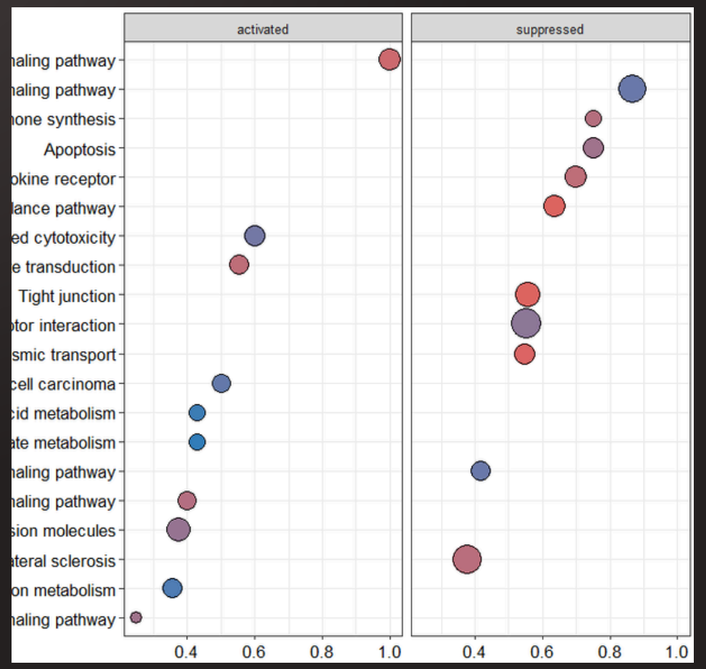
Cell-cycle and Apoptosis Profiling by Flow Cytometry
(Cell-based Assays)

Cell-based assays show that lead compounds suppress cancer cell viability, proliferation, and migration in a dose-dependent manner. These phenotypic responses define a clear potency profile and support rational prioritization of preclinical candidates.

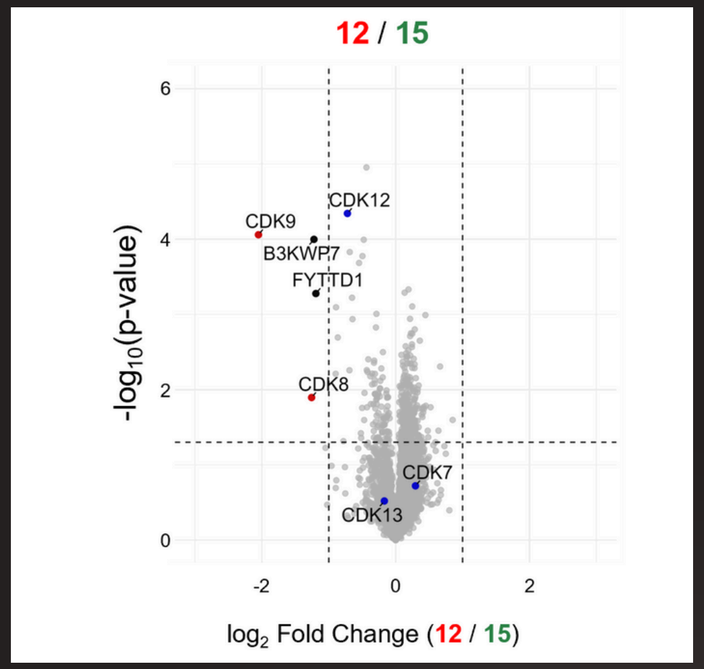
Translational Oncology



UMAP Visualization of Proteomic Profiles after Treatment
(Bioinformatics Analysis)



RNA-seq Analysis Revealing Pathway-level Responses to Treatment
(Bioinformatic analysis)



Volcano Plot of Differential Gene Expression after Treatment
(Bioinformatic analysis)

Omics and survival analyses link treatment-induced molecular changes to pathway-level responses and patient outcomes. These data-driven insights highlight sensitive tumor contexts and guide indication and biomarker selection.

Technical Skills / Methods

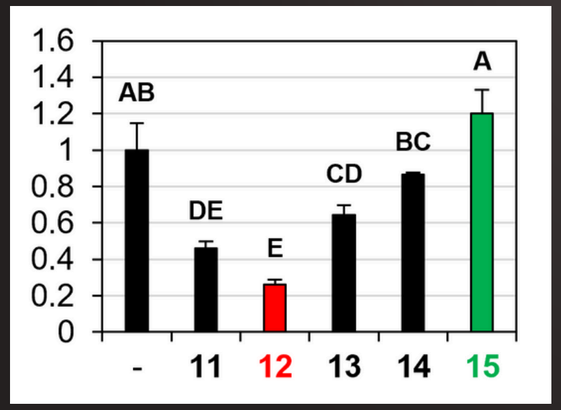
- **Molecular & Cell Biology**
  CRISPR KO/KI, stable cell line generation
  Co-IP, qRT-PCR, reporter assays
  Mammalian and non-mammalian cell culture including cancer and immune cells

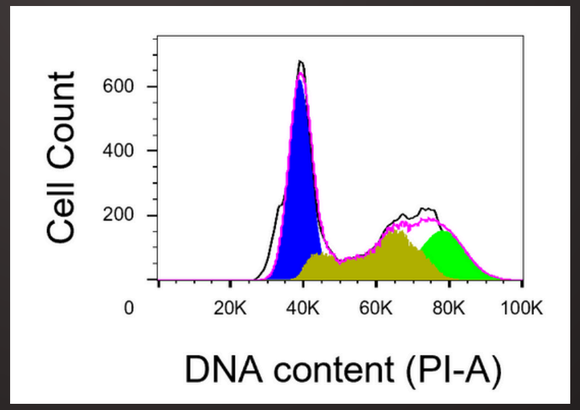
- **Cancer & Small-Molecule Screening**
  Viability / proliferation / cytotoxicity assays
  Dose–response and DC_{50}/IC_{50}/EC_{50} determination
  Mechanism-of-action studies (immuno-pathway readouts, phospho-specific westerns)
  Experience with NCI-60 cancer cell panel analyses

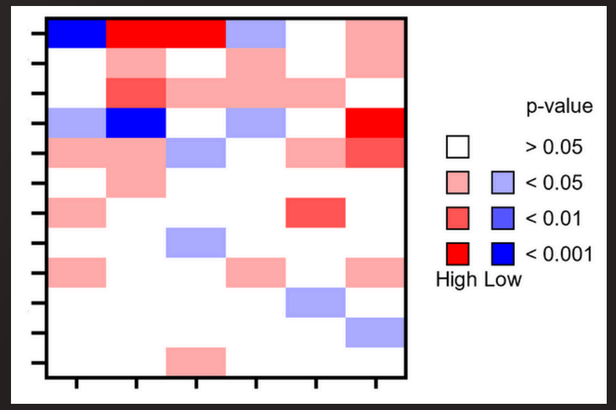
- **Data Analysis & Coding**
  Developed LLM-assisted R/Python analytics pipelines (normalization, QC, statistical testing, and automated figure generation), incorporating data contracts, acceptance criteria, and reproducible environments.
  Improved analysis turnaround time by 50–80%, reduced rework, and delivered publication-grade visualizations with consistent formatting.

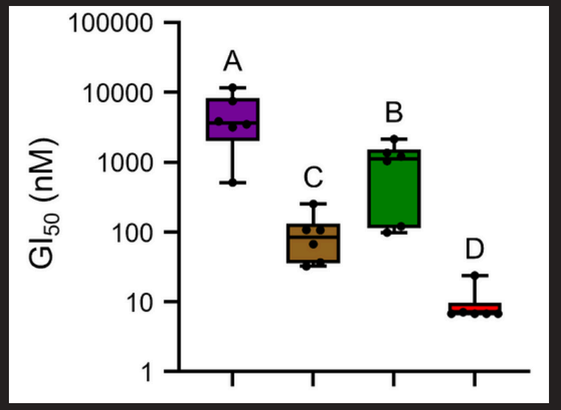
- **Tools & Platforms**
  GraphPad Prism, ImageJ/Fiji, SnapGene, LabArchive, FlowJo

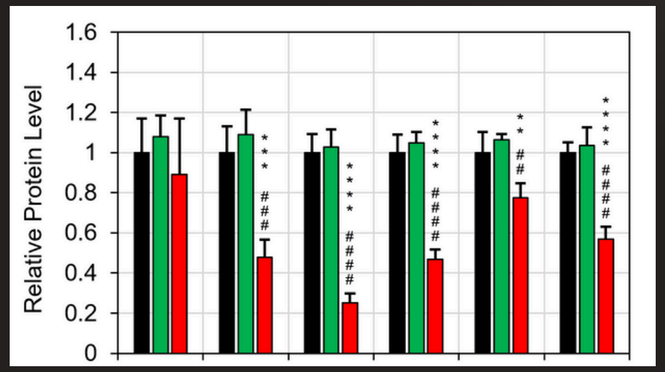
Data & Figures Gallery

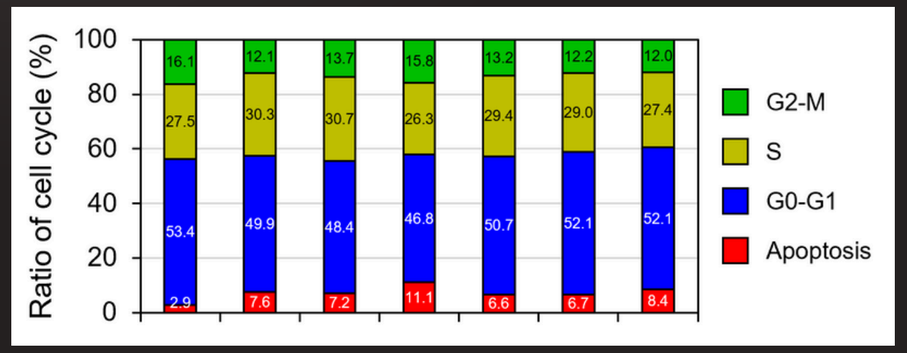


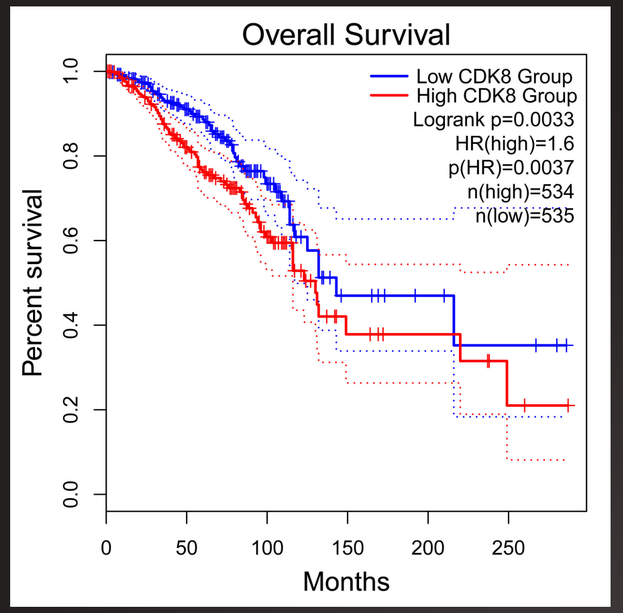


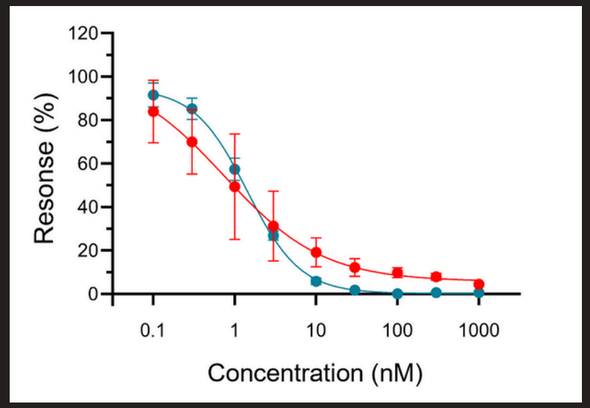


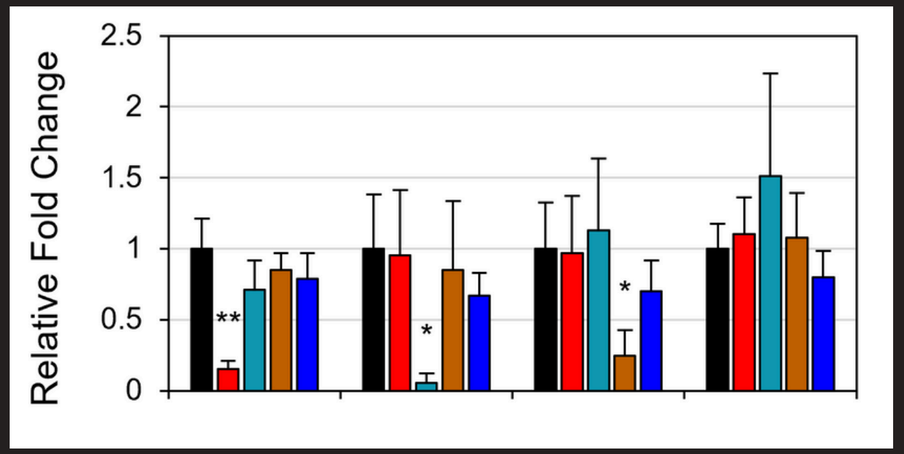












Publication & Patent

- **Liu, T.-H.** †, Lyu, K. †, Zhao, J. C., Dang, X., Wang, X.*, & Ji, J.-Y.*. Development of potent and selective PROTAC degraders targeting transcriptional CDKs. (Manuscript in preparation).
- **Liu, T.-H.** †, Li, X. †, Hsu, F. N. †, Sun, J., Niu, Y., Xing, Y., Liu, M., Liu, Y., Hemba-Waduge, R. U., Ni, J.-Q.*, and Ji, J.-Y.*. Asymmetric interdependency among the four subunits of the CDK8 module. (Manuscript in preparation).
- Li, X., Liu, M., Xing, Y., Niu, Y., **Liu, T.-H.**, Sun, J. L., Liu, Y., Hemba-Waduge, R. U., & Ji, J.-Y*. (2024). Distinct effects of CDK8 module subunits on cellular growth and proliferation in Drosophila. Development 1 December 2024; 151 (23): dev203111. doi: https://doi.org/10.1242/dev.203111
- Liu, M. †, Hemba-Waduge, R. U. †, Li, X., Huang, X., **Liu, T.-H.**, Han, X., Wang, Y., & Ji, J.-Y*. (2024). Wnt/Wingless signaling promotes lipid mobilization through signal-induced transcriptional repression. Proc Natl Acad Sci U S A, 121(28), e2322066121. https://doi.org/10.1073/pnas.2322066121
- Li, X., Zhang, M., Liu, M., **Liu, T.-H.**, Hemba-Waduge, R. U., & Ji, J.-Y*. (2022). Cdk8 attenuates lipogenesis by inhibiting SREBP-dependent transcription in Drosophila. Dis Model Mech, 15(11). https://doi.org/10.1242/dmm.049650
- **Liu, T.-H.** †, Li, X. †, Hsu, F. N.v, Liu, M., Hemba-Waduge, R. U., & Ji, J.-Y.*. Asymmetric interdependency among the subunits of the CDK8 kinase module. American Association for Cancer Research 2025, Chicago, IL. Apr 2025

- Patent (provisional, in preparation)
  Liu, T.-H., Lyu, K., Wang, X., Ji, J.-Y., et al.
  Selective PROTAC degraders targeting transcriptional CDKs and their use in cancer therapy.
  Provisional patent application in preparation.

THANK YOU

That's my portfolio so far.

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