Jim L. Zhang

EDUCATION

Stanford University, School of Medicine Palo Alto, California
Ph.D. Student - Structural Biology

Rice University, Wiess School of Natural Sciences Houston, Texas
B.S. in Biochemistry and Cell Biology – *summa cum laude* **GPA**: 3.99/4.00
Honors: Distinction in Research and Creative Work, President's Honor Roll, Phi Beta Kappa, Honors Thesis
M.S. in Biochemistry and Cell Biology **GPA**: 4.00/4.00
Thesis: "*Structure-function studies of the nematode-infecting Orsay virus"*

RESEARCH

Feng Laboratory – Stanford School of Medicine, Palo Alto, CA
Graduate Student Researcher October 2022 – Present

Rogala Laboratory – Stanford School of Medicine, Palo Alto, CA
Rotation Student August 2022 – October 2022
- Structurally examined previously unknown protein-protein interactions within one-carbon metabolism
- Trained in cryoEM data processing with RELION, cryoSPARC, and high-performance computing systems

Feng Laboratory – Stanford School of Medicine, Palo Alto, CA
Rotation Student July 2022 – August 2022
- Investigated the structure of inhibitor-bound NCC, a sodium-chloride cotransporter responsible for regulating blood pressure
- Reconstituted purified NCC into lipid nanodiscs for native-condition structural and biochemical analyses
- Trained in cryoEM sample preparation, microscope usage, and data collection

ADVANCE Summer Institute – Stanford School of Medicine, Palo Alto, CA
Research Fellow June 2022 – August 2022
- Participated in literature discussion groups, professional development workshops, and computational bootcamps

Undergraduate Honors Research in Biochemistry and Cell Biology, Houston, TX
Thesis: Structural studies of a filamentous double-stranded RNA virus August 2021 – June 2022
Advisor: Yizhi J. Tao
- Examined the capsid structure of a novel, filamentous double-stranded RNA virus
- Performed gene isolation, cloning, and recombinant protein expression/purification for the isolation of virus-like particles

Advanced Biosciences Summer Research Institute, Houston, TX
Research Fellow and Student Mentor June 2020 – August 2021
- Mentored student researchers on scientific writing and presentation skills

National Science Foundation - REU in Multi-Scale Biomolecular Networks, Houston, TX
Research Fellow in Molecular Virology June 2019 - August 2019
- Trained in research ethics, MATLAB-based data modeling, and DNA manipulation
- Developed a density-based purification protocol for the isolation of a novel nematode-infecting virus

B.S.-M.S.-Ph.D. Candidate in Biochemistry and Cell Biology, Houston, TX
Thesis: Structure-function studies of the nematode-infecting Orsay virus March 2019 – June 2022
Advisor: Yizhi J. Tao
- Completed advanced, graduate-level coursework and research concurrent with undergraduate studies
- Defended yearly research progress with a faculty-led thesis committee

Tao Laboratory – Rice University, Houston, TX
Researcher January 2019 – June 2022
- Investigated the structure and mechanics of viral infection by the nematode virus Orsay
- Successfully purified and structured the infectious Orsay virion with collaborators from Harvard University
- Identified the *C. elegans* transmembrane protein FSHR-1 as a likely host-cell receptor candidate; expressed and purified FSHR-1 using insect cell lines for *in vitro* binding assays with Orsay viral proteins

TEACHING

Department of Biochemistry and Cell Biology at Rice University, Houston, TX

BIOS 302: Biochemistry II Teaching Assistant January 2022 – May 2022

- Led discussion sections as a lecturer
- Wrote and administered exams; responsible for grading all coursework

Wiess School of Natural Sciences at Rice University, Houston, TX
Pilot Program for Improving STEM Retention Among Underrepresented Populations August 2021 – September 2021

- Provided feedback on improving teaching strategies for at-risk student populations in introductory undergraduate STEM courses

Department of Biochemistry and Cell Biology at Rice University, Houston, TX
BIOS 301: Biochemistry I Teaching Assistant August 2020 – December 2021

- Led weekly discussion sections as a lecturer, recapping exam-related material over a 2-hour class period

Department of Biochemistry and Cell Biology at Rice University, Houston, TX
BIOS 450/550: Viruses and Infectious Diseases Teaching Assistant January 2021 – May 2021

- Hosted weekly office hours; responsible for coursework and exam grading

Office of Academic Advising at Rice University, Houston, TX
Academic Fellow in Biochemistry and Cell Biology March 2020 – May 2022

- Planned and organized weekly office hours and exam review sessions for Introductory Biology, Biochemistry I, Biochemistry II, and Cell Biology courses.

Department of Chemistry at Rice University, Houston, TX
CHEM 211: Organic Chemistry I Teaching Assistant June 2019 – August 2019

- Facilitated three weekly, inquiry-based discussion sessions reviewing in-class concepts
- Dedicated an additional six hours per week to answer student questions through office hours
- Graded all examinations and coursework with professor supervision

Breakthrough Collaborative, Houston, TX
9th Grade Teaching Fellow in Biology; Department Chair of Science May 2018 – August 2018

- Performed 60+ hours of independent teaching across two classroom sections
- Developed daily lessons plans as part of a six-week curriculum in introductory biology

Breakthrough Collaborative, Houston, TX
8th Grade Teaching Assistant in Chemistry and Algebra I May 2017 – August 2017

- Taught high performing, underserved middle schoolers in a selective college preparatory program
- Received over 150+ hours of professional training and development in teaching and presentation skills
- Designed and implemented a lab/demo-based chemistry curriculum for hands-on student learning

EXTRACURRICULARS AND SERVICE

Department of Structural Biology at Stanford University, Palo Alto, CA
Diversity, Equity, and Inclusion Committee Member September 2022 – Present

Department of Structural Biology at Stanford University, Palo Alto, CA
Recruitment Committee Member September 2022 – Present

Community College Outreach Program, Palo Alto, CA
Science Small Group Mentor August 2022 – December 2022

- Mentored community college undergraduate students on scientific research
- Lead weekly small group meetings for discussion of findings and results

Project SHORT, USA
Pre-Grad Mentor July 2022 – Present

- Volunteer organization offering *pro bono* mentoring for graduate school admissions
- Providing one-on-one mentorship and application feedback to students interested in pursuing a life sciences Ph.D.

Office of Academic Advising at Rice University, Houston, TX
Peer Academic Advisor February 2020 – May 2022

- Provided academic and professional advising for peers interested in graduate studies in the biological sciences

Office of First Year Programs at Rice University, Houston, TX
Orientation Week Coordinator – Will Rice College December 2019 – September 2020

- Planned week-long college orientation for approximately 100 incoming new undergraduate students
- Facilitated partnerships with Rice academic and administrative offices for greater outreach and training on advising first generation, low-income students

Office of Student Success Initiatives at Rice University, Houston, TX
First-Generation and Low-Income Student Ambassador September 2019 – May 2020

- Hosted bi-weekly lunches facilitating first-generation, low-income (FLI) student connections
- Formed collaborations with Rice advising offices to promote FLI-specific resources

Rice Thresher, Houston, TX
News Writer September 2018 – May 2019

Rice Catalyst, Houston, TX
Popular Science Writer and Discoveries Blogger September 2018 – May 2019

Breakthrough Collaborative, Houston, TX
High School Student Mentor August 2018 – May 2019

PRESENTATIONS AND CONFERENCES

Rice University Shapiro Showcase, Houston, TX
Selected Speaker – "Visualizing a Virus at Molecular Resolution" April 2022

Rice IBB Summer Research Symposium, Houston, TX
Poster - "Virus-like Particles from a Double-stranded RNA Virus with Filamentous Capsid Morphology" August 2021

Rice Undergraduate Research Symposium, Houston, TX
Speaker - "Structural and Functional Studies of a Covalently Linked Viral Fiber" April 2021

Cellular and Molecular Biophysics Conference, Houston, TX
Speaker - "Cryo-EM Reconstruction of a Covalently Linked Viral Fiber" December 2020

BioSciences Summer Research Institute Symposium, Houston, TX
Speaker - "A Preliminary Cryo-EM Model of the Orsay Spike Protein CP-δ" August 2020

Rice Undergraduate Research Symposium, Houston, TX
Poster - "The Structure and Entry Mechanism of the Nematode Virus Orsay" April 2020

Emerging Trends in Cellular and Molecular Biophysics, Houston, TX
Poster - "Native-Condition Structural Studies of the Nematode Virus Orsay" December 2019

Rice REU Research Symposium, Houston, TX
Poster - "A Purification Scheme Enabling Native-Condition Structural Studies of the Nematode Virus Orsay" October 2019

Rice IBB Summer Research Symposium, Houston, TX
Poster - "An Iodixanol-based Density Gradient Isolates Orsay Virions with Substantial Yield and Purity" July 2019

GRANTS AND PUBLICATIONS

1. Guo, YR, Fan, Y, Zhou, Y, Jin, M, **Zhang, JL**, Jiang, H, Holt, MV, Wang, T, Young, NL, Wang, D, Zhong, W, & Tao, YJ. 2020. Orsay CP-δ adopts a novel β-bracelet structural fold and incorporates into virions as a head fiber. Journal of Virology.
2. **Zhang, JL**[*], Pan, J[*], Zhou, Y, Fan, Y, Guo, YR, Zhong, W, & Tao, YJ. (*In Preparation*). The structure of a covalently linked pentameric viral fiber revealed by cryo-electron microscopy reconstruction. [*]Equal contribution.
3. **Co-author/Contributor**. Awarded to Tao, YJ. National Institutes of Health. "The molecular basis of Orsay virus entry mediated by the CP-delta head fiber" (1R21AI171624-01), May 2022 – April 2024, $227,680.

HONORS AND AWARDS

National Science Foundation Graduate Research Fellowship, USA — April 2022

Shapiro Prize, Houston, TX — April 2022

George J. Schroepfer Jr. Award for Excellence in Undergraduate Research in Biochemistry, Houston, TX — April 2022

Worden Endowed Award, Houston, TX — April 2022

Rice Excellence in Academic Advising Award, Houston, TX — April 2022

Rice IBB Research Symposium, Houston, TX — August 2021
Outstanding Poster Presentation

Rice Undergraduate Research Symposium, Houston, TX — April 2021
Outstanding Oral Presentation

George J. Schroepfer Jr. Summer Undergraduate Research Fellow, Houston, TX — April 2021

Barry M. Goldwater Scholar, USA — March 2021

James Street Fulton and Edythe King Fulton Endowed Prize, Houston, TX — December 2020

Willis Service Award, Houston, TX — November 2020

BIOC 211 Student Research Presentations, Houston, TX — November 2019
Outstanding Poster Presentation

Rice REU Research Symposium, Houston, TX — November 2019
Outstanding Poster Presentation

Comcast Leaders and Achievers Scholar, Houston, TX — June 2018

HISD Board of Education Award, Houston, TX — May 2018
Outstanding Student