

Jim L. Zhang

EDUCATION

Stanford University, School of Medicine

Stanford, California

Ph.D. Student in Structural Biology/Biophysics

National Science Foundation Graduate Research Fellow

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*

M.S. in Biochemistry and Cell Biology

GPA: 4.00/4.00

RESEARCH

ADVANCE Summer Institute, Stanford, CA

Research Fellow

June 2022 – August 2022

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

- Examining the capsid structure of a novel, filamentous double-stranded RNA virus
- Performing gene isolation, cloning, and recombinant protein expression/purification for the isolation of virus-like particles
- Analyzing samples with single-particle cryoEM to investigate structure and biophysical mechanics of dsRNA packaging

Advanced Biosciences Summer Research Institute, Houston, TX

June 2020 - August 2020;

Research Fellow and Student Mentor

June 2021 – 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: Structural and functional studies of a viral spike protein

March 2019 – June 2022

Advisor: Yizhi J. Tao

- Completing advanced, graduate-level coursework and research concurrent with undergraduate studies
- Defending yearly research progress with a faculty-led thesis committee

Tao Laboratory, Houston, TX

Researcher

January 2019 – June 2022

- Investigating 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; working on expression and purification 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

Wiess School of Natural Sciences at Rice University, Houston, TX

August 2021 – May 2022

Pilot Program for Improving STEM Retention Among Underrepresented Populations - Undergraduate Representative

- Providing 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

August 2020 – December 2020;

BIOS 301: Biochemistry I Teaching Assistant

August 2021 – 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 <i>BIOS 450/550: Viruses and Infectious Diseases Teaching Assistant</i>	January 2021 – May 2021
<ul style="list-style-type: none"> Hosted weekly office hours; responsible for coursework and exam grading 	
Office of Academic Advising at Rice University , Houston, TX <i>Academic Fellow in Biochemistry and Cell Biology</i>	March 2020 – May 2022
<ul style="list-style-type: none"> Planning and organizing 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 <i>CHEM 211: Organic Chemistry I Teaching Assistant</i>	June 2019 – August 2019
<ul style="list-style-type: none"> 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 <i>9th Grade Teaching Fellow in Biology; Department Chair of Science</i>	May 2018 – August 2018
<ul style="list-style-type: none"> 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 <i>8th Grade Teaching Assistant in Chemistry and Algebra I</i>	May 2017 – August 2017
<ul style="list-style-type: none"> 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	
Office of Academic Advising at Rice University , Houston, TX <i>Peer Academic Advisor</i>	February 2020 – May 2022
<ul style="list-style-type: none"> Providing academic and professional advising for peers interested in graduate studies in the biological sciences 	
Office of First Year Programs at Rice University , Houston, TX <i>Orientation Week Coordinator – Will Rice College</i>	December 2019 – September 2020
<ul style="list-style-type: none"> Planned week-long college orientation for approximately 100 incoming new 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 <i>First-Generation and Low-Income Student Ambassador</i>	September 2019 – May 2020
<ul style="list-style-type: none"> Hosted bi-weekly lunches facilitating first-generation, low-income (FLI) student connections Facilitated partnerships with Rice advising offices promoting resources for FLI students 	
Rice Thresher , Houston, TX <i>News Writer</i>	September 2018 – May 2019
Rice Catalyst , Houston, TX <i>Popular Science Writer and Discoveries Blogger</i>	September 2018 – May 2019
Breakthrough Collaborative , Houston, TX <i>High School Student Mentor</i>	August 2018 – May 2019

PRESENTATIONS AND CONFERENCES

Rice University Shapiro Showcase , Houston, TX <i>Selected Speaker – “Visualizing a Virus at Molecular Resolution”</i>	April 2022
Rice IBB Summer Research Symposium , Houston, TX <i>Poster - “Virus-like Particles from a Double-stranded RNA Virus with Filamentous Capsid Morphology”</i>	August 2021
Rice Undergraduate Research Symposium , Houston, TX <i>Speaker - “Structural and Functional Studies of a Covalently Linked Viral Fiber”</i>	April 2021

Cellular and Molecular Biophysics Conference, Houston, TX <i>Speaker - "Cryo-EM Reconstruction of a Covalently Linked Viral Fiber"</i>	December 2020
BioSciences Summer Research Institute Symposium, Houston, TX <i>Speaker - "A Preliminary Cryo-EM Model of the Orsay Spike Protein CP-δ"</i>	August 2020
Rice Undergraduate Research Symposium, Houston, TX <i>Poster - "The Structure and Entry Mechanism of the Nematode Virus Orsay"</i>	April 2020
Emerging Trends in Cellular and Molecular Biophysics, Houston, TX <i>Poster - "Native-Condition Structural Studies of the Nematode Virus Orsay"</i>	December 2019
Rice REU Research Symposium, Houston, TX <i>Poster - "A Purification Scheme Enabling Native-Condition Structural Studies of the Nematode Virus Orsay"</i>	October 2019
Rice IBB Summer Research Symposium, Houston, TX <i>Poster - "An Iodixanol-based Density Gradient Isolates Orsay Virions with Substantial Yield and Purity"</i>	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

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 <i>Outstanding Poster Presentation</i>	August 2021
Rice Undergraduate Research Symposium, Houston, TX <i>Outstanding Oral Presentation</i>	April 2021
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 <i>Outstanding Poster Presentation</i>	November 2019
Rice REU Research Symposium, Houston, TX <i>Outstanding Poster Presentation</i>	November 2019
Comcast Leaders and Achievers Scholar, Houston, TX	June 2018
HISD Board of Education Award, Houston, TX	May 2018