

Jim L. Zhang

EDUCATION

Stanford University, School of Medicine – Incoming Fall 2022
Ph.D. Candidate in Biophysics and Structural Biology
National Science Foundation Graduate Research Fellow

Stanford, California

Rice University, Wiess School of Natural Sciences – 2022
B.S. in Biochemistry and Cell Biology
Distinction in Research and Creative Work
M.S. in Biochemistry and Cell Biology

Houston, Texas

GPA: 3.99/4.00

GPA: 4.00/4.00

RESEARCH

Undergraduate Honors Research in Biochemistry and Cell Biology, Houston, TX

Thesis: Structural studies of a filamentous double-stranded RNA virus

August 2021 – Present

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 – Present

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 – Present

- 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 – Present

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

August 2021 - Present

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

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 – Present

- 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

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

Will Rice College (Rice University), Houston, TX

Head Caregiver

February 2020 – Present

- Responsible for coordinating with the Office of Wellbeing and Emergency Medical Services
- Organizing and leading student caregivers to ensure student safety and health during campus events

Office of Academic Advising at Rice University, Houston, TX

Peer Academic Advisor

February 2020 – Present

- 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

Orientation Week Coordinator – Will Rice College

December 2019 – September 2020

- 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

First-Generation and Low-Income Student Ambassador

September 2019 – May 2020

- 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

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 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 <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

PUBLICATIONS

1. Guo, Y. R., Fan, Y., Zhou, Y., Jin, M., **Zhang, J. L.**, Jiang, H., Holt, M. V., Wang, T., Young, N. L., Wang, D., Zhong, W., & Tao, Y. J. 2020. Orsay CP-δ adopts a novel β-bracelet structural fold and incorporates into virions as a head fiber. *Journal of Virology*.
2. **Zhang, J.L.**, Pan, J.*, Zhou, Y., Fan, Y., Guo, Y.R., Zhong, W., & Tao, Y.J. (*In Preparation*). The structure of a covalently linked pentameric viral fiber revealed by cryo-electron microscopy reconstruction. *Equal contribution.

HONORS AND AWARDS

Shapiro Prize, Houston, TX	April 2022
Distinction in Research and Creative Work Award, 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
National Science Foundation Graduate Research Fellow, USA	April 2022
Phi Beta Kappa	April 2022
Rice Excellence in Academic Advising Award, Houston, TX	April 2022
Rice University Shapiro Showcase, Houston, TX <i>Selected Speaker - School of Natural Sciences</i>	March 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 <i>"To students who have distinguished themselves in utilizing the educational opportunities of Rice University in the face of personal or financial hardship, and who have set an example of personal achievement and community service."</i>	December 2020
Willis Service Award, Houston, TX <i>"To students who have displayed selfless devotion to the members of Will Rice College and who have demonstrated"</i>	November 2020

an outstanding interest in all fields of knowledge.”

BIOC 211 Student Research Presentations, Houston, TX
Outstanding Poster Presentation

November 2019

Rice REU Research Symposium, Houston, TX
Outstanding Poster Presentation

November 2019

President’s Honor Roll, Houston, TX
In recognition of an undergraduate's outstanding academic achievement per semester.

December 2018 - Present

Comcast Leaders and Achievers Scholar, Houston, TX
Recognizing incoming undergraduates for their community service, academics, and leadership.

June 2018

HISD Board of Education Award, Houston, TX
Awarded to one outstanding male and female student per graduating class.

May 2018