

# Jim L. Zhang

## EDUCATION

**Stanford University, School of Medicine**  
Ph.D. Student - Structural Biology

Palo Alto, California

**Rice University, Wiess School of Natural Sciences**  
B.S. in Biochemistry and Cell Biology – *summa cum laude*

Houston, Texas  
**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

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### 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

*9<sup>th</sup> 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

*8<sup>th</sup> 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

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### 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

<b>National Science Foundation Graduate Research Fellowship, USA</b>	April 2022
<b>Shapiro Prize, Houston, TX</b>	April 2022
<b>George J. Schroepfer Jr. Award for Excellence in Undergraduate Research in Biochemistry, Houston, TX</b>	April 2022
<b>Worden Endowed Award, Houston, TX</b>	April 2022
<b>Rice Excellence in Academic Advising Award, Houston, TX</b>	April 2022
<b>Rice IBB Research Symposium, Houston, TX</b> <i>Outstanding Poster Presentation</i>	August 2021
<b>Rice Undergraduate Research Symposium, Houston, TX</b> <i>Outstanding Oral Presentation</i>	April 2021
<b>George J. Schroepfer Jr. Summer Undergraduate Research Fellow, Houston, TX</b>	April 2021
<b>Barry M. Goldwater Scholar, USA</b>	March 2021
<b>James Street Fulton and Edythe King Fulton Endowed Prize, Houston, TX</b>	December 2020
<b>Willis Service Award, Houston, TX</b>	November 2020
<b>BIOC 211 Student Research Presentations, Houston, TX</b> <i>Outstanding Poster Presentation</i>	November 2019
<b>Rice REU Research Symposium, Houston, TX</b> <i>Outstanding Poster Presentation</i>	November 2019
<b>Comcast Leaders and Achievers Scholar, Houston, TX</b>	June 2018
<b>HISD Board of Education Award, Houston, TX</b> <i>Outstanding Student</i>	May 2018