

# Jim L. Zhang

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## EDUCATION

### Stanford University, School of Medicine

Stanford, California

Ph.D. Candidate in Biophysics and Structural Biology

*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

### 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

<b>Department of Biochemistry and Cell Biology at Rice University</b> , Houston, TX	
<i>BIOS 450/550: Viruses and Infectious Diseases Teaching Assistant</i>	January 2021 – May 2021
<ul style="list-style-type: none"> <li>Hosted weekly office hours; responsible for coursework and exam grading</li> </ul>	
<b>Office of Academic Advising at Rice University</b> , Houston, TX	
<i>Academic Fellow in Biochemistry and Cell Biology</i>	March 2020 – May 2022
<ul style="list-style-type: none"> <li>Planning and organizing weekly office hours and exam review sessions for Introductory Biology, Biochemistry I, Biochemistry II, and Cell Biology courses.</li> </ul>	
<b>Department of Chemistry at Rice University</b> , Houston, TX	
<i>CHEM 211: Organic Chemistry I Teaching Assistant</i>	June 2019 – August 2019
<ul style="list-style-type: none"> <li>Facilitated three weekly, inquiry-based discussion sessions reviewing in-class concepts</li> <li>Dedicated an additional six hours per week to answer student questions through office hours</li> <li>Graded all examinations and coursework with professor supervision</li> </ul>	
<b>Breakthrough Collaborative</b> , Houston, TX	
<i>9<sup>th</sup> Grade Teaching Fellow in Biology; Department Chair of Science</i>	May 2018 – August 2018
<ul style="list-style-type: none"> <li>Performed 60+ hours of independent teaching across two classroom sections</li> <li>Developed daily lessons plans as part of a six-week curriculum in introductory biology</li> </ul>	
<b>Breakthrough Collaborative</b> , Houston, TX	
<i>8<sup>th</sup> Grade Teaching Assistant in Chemistry and Algebra I</i>	May 2017 – August 2017
<ul style="list-style-type: none"> <li>Taught high performing, underserved middle schoolers in a selective college preparatory program</li> <li>Received over 150+ hours of professional training and development in teaching and presentation skills</li> <li>Designed and implemented a lab/demo-based chemistry curriculum for hands-on student learning</li> </ul>	
<b>EXTRACURRICULARS AND SERVICE</b>	
<b>Office of Academic Advising at Rice University</b> , Houston, TX	
<i>Peer Academic Advisor</i>	February 2020 – May 2022
<ul style="list-style-type: none"> <li>Providing academic and professional advising for peers interested in graduate studies in the biological sciences</li> </ul>	
<b>Office of First Year Programs at Rice University</b> , Houston, TX	
<i>Orientation Week Coordinator – Will Rice College</i>	December 2019 – September 2020
<ul style="list-style-type: none"> <li>Planned week-long college orientation for approximately 100 incoming new students</li> <li>Facilitated partnerships with Rice academic and administrative offices for greater outreach and training on advising first generation, low-income students</li> </ul>	
<b>Office of Student Success Initiatives at Rice University</b> , Houston, TX	
<i>First-Generation and Low-Income Student Ambassador</i>	September 2019 – May 2020
<ul style="list-style-type: none"> <li>Hosted bi-weekly lunches facilitating first-generation, low-income (FLI) student connections</li> <li>Facilitated partnerships with Rice advising offices promoting resources for FLI students</li> </ul>	
<b>Rice Thresher</b> , Houston, TX	
<i>News Writer</i>	September 2018 – May 2019
<b>Rice Catalyst</b> , Houston, TX	
<i>Popular Science Writer and Discoveries Blogger</i>	September 2018 – May 2019
<b>Breakthrough Collaborative</b> , Houston, TX	
<i>High School Student Mentor</i>	August 2018 – May 2019

## PRESENTATIONS AND CONFERENCES

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

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

## PUBLICATIONS

- 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- $\delta$  adopts a novel  $\beta$ -bracelet structural fold and incorporates into virions as a head fiber. *Journal of Virology*.
- 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

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