

Jeffrey Chang

jeffrey_chang@g.harvard.edu — <https://jeffjar.me>

Education	Ph.D. student in Physics, Harvard University	2020–
	B.S. in Physics, Stanford University (GPA: 4.03)	2016–‘20
Career	<i>Graduate Researcher</i> in Nicholas Polizzi Lab	2022–
	Dana Farber Cancer Institute	
	• De novo protein design of ligand-binding proteins	
	<i>Graduate Researcher</i> in Michael Desai Lab	2021–
	Harvard Dept. of Organismic and Evolutionary Biology	
	• Using high-throughput measurements of binding affinity to study sequence-to-function landscapes of antibodies	
	<i>Rotation Student</i> in Wesley Wong Lab	2021–‘22
	Wyss Institute at Harvard University	
	• Single-molecule force spectroscopy and Bayesian inference for characterizing polyclonal antibodies	
	<i>Biophysics / Statistical Modeling Consultant</i>	2020–
	Manifold Biotechnologies, Inc.	
	• Algorithmic development of a proprietary platform for highly multiplexed quantification of barcoded proteins	
	<i>Textbook Author</i> with Prof. Steven A. Kivelson and Dr. Jack M. Jiang	2019–
	Stanford Dept. of Physics	
	• Writing an undergraduate textbook, “Statistical Mechanics of Phases and Phase Transitions”	
	<i>Undergrad Researcher</i> in Steve Boxer Lab	2017–‘19
	Stanford Dept. of Chemistry	
	• X-ray crystallography to study photochemical pathways in fluorescent proteins	
	<i>Software Engineering Intern</i>	2017
	Schrödinger, Inc.	
	• Helped develop python GUI for protein structure visualization	
Teaching	<i>Teaching Assistant</i> , Harvard Dept. of Applied Math	2021
	• Applied Math 104: Complex and Fourier Analysis (Aut. 21-22)	
	<i>Teaching Assistant</i> , Stanford Dept. of Physics	2019–‘20
	• Physics 216: Back of the Envelope Physics (Aut. 19-20)	
	• Physics 63: Electricity, Magnetism, and Waves (Wtr. 19-20)	
	<i>Peer Tutor</i> , Stanford Center for Teaching and Learning	2019
	• Tutored Stanford undergraduates in math and physics through a free tutoring program	

Honors	Harvard NSF-Simons Center Quantitative Biology Student Award	2022
	Harvard Dept. of Physics James Mills Peirce Fellowship	2020
	National Science Foundation Graduate Research Fellowship	2020
	Stanford Deans' Award for Academic Achievement	2020
	Stanford Undergraduate Research and Advising Small Grant	2019
	Stanford Bio-X IIP Symposium Best Poster Award	2018
	Stanford Bio-X Undergraduate Fellow	2018

Skills

Next-generation sequencing. Library preparation, data analysis
Molecular biology. Sequence design, cloning, library generation
Biochemistry. Protein expression and purification, X-ray crystallography
Statistics. Bayesian inference, machine learning
Programming. Python, C++, R

Publications

Resolving Molecular Heterogeneity with Single-Molecule Centrifugation

Y Luo[‡], J Chang[‡], D Yang[‡], J S Bryan IV, M MacIsaac, S Pressé, W P Wong
Journal of the American Chemical Society, **145**, 6, 3276-3282 (2023). [link]

The landscape of antibody binding affinity in SARS-CoV-2 Omicron BA.1 evolution

A Moulana[‡], T Dupic[‡], A M Phillips[‡], J Chang[‡], A A Roffler, A J Greaney, T N Starr, J D Bloom, M M Desai
eLife, in press. [bioRxiv]

Torsional Diffusion for Molecular Conformer Generation

B Jing[‡], G Corso[‡], J Chang, R Barzilay, T Jaakkola
NeurIPS (2022). [openreview]

Compensatory epistasis maintains ACE2 affinity in SARS-CoV-2 Omicron BA.1

A Moulana[‡], T Dupic[‡], A M Phillips[‡], J Chang[‡], S Nieves, A A Roffler, A J Greaney, T N Starr, J D Bloom, M M Desai
Nature Communications, **13**, 7011 (2022). [link]

Binding affinity landscapes constrain the evolution of broadly neutralizing anti-influenza antibodies

A M Phillips, K R Lawrence, A. Moulana, T. Dupic, J Chang, M S Johnson, I Cvijovic, T Mora, A M Walczak, M M Desai
eLife, **10**, e71393 (2021). [link]

Structural Evidence of Photoisomerization Pathways in Fluorescent Proteins

J Chang, M G Romei, S G Boxer
Journal of the American Chemical Society, **141**, 39, 15504-15508 (2019). [link]