Jeffrey Chang
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Education

Ph.D. student in Physics, Harvard University — 2020–
B.S. in Physics, Stanford University (GPA: 4.03) — 2016–'20

Career

Graduate Researcher in Nicholas Polizzi Lab — 2022–
Dana Farber Cancer Institute
- De novo protein design of ligand-binding proteins

Graduate Researcher 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

Rotation Student in Wesley Wong Lab — 2021–'22
Wyss Institute at Harvard University
- Single-molecule force spectroscopy and Bayesian inference for characterizing polyclonal antibodies

Biophysics / Statistical Modeling Consultant — 2020–
Manifold Biotechnologies, Inc.
- Algorithmic development of a proprietary platform for highly multiplexed quantification of barcoded proteins

Textbook Author 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"

Undergrad Researcher in Steve Boxer Lab — 2017–'19
Stanford Dept. of Chemistry
- X-ray crystallography to study photochemical pathways in fluorescent proteins

Software Engineering Intern — 2017
Schrödinger, Inc.
- Helped develop python GUI for protein structure visualization

Teaching

Teaching Assistant, Harvard Dept. of Applied Math — 2021
- Applied Math 104: Complex and Fourier Analysis (Aut. 21-22)

Teaching Assistant, 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)

Peer Tutor, 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, in press.

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, under review. [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**, 15504-15508 (2019). [link]