

MATTHEW CAO

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Education

University of California, Berkeley

B.A. Molecular & Cell Biology (Molecular Therapeutics)

Expected MAY 2026

Coursework: Organic Chemistry; Biochemistry and Molecular Biology; Genetics; Genomics; Cell Biology; Biology of Cancer; Molecular Therapeutics Discovery and Development;

Minor Data Science (Comp. Molecular & Genomic Bio.)

Expected MAY 2026

Coursework: Linear Algebra; Structure of Computer Programs; Discrete Mathematics and Probability; Data Structures & Algorithms; Data Science for Biology; Machine Learning in Computational Biology;

Research Experience

Liu Lab - Studies of Nucleic Acid-based Agents for Inhibition of Viral Replication

Berkeley, CA

Research Apprentice

JAN 2024 – JAN 2025

- Analyzed and generated 3D structures of the SARS-CoV- 2 envelope protein
- Created 3D protein models to hypothesize efficacy of **vaccine** developments.
- Annotated SARS-CoV-2 and SARS-CoV-229E genomes through annotation pipeline and studied transcriptomes and genomes of human and viral sequences, identifying key sequence features.
- Generated models using *AlphaFold 2*, *AlphaFold 3*, and *ChimeraX*, in-training for Rosetta SnugDock.

Gracell Biotech./CAR-T development (NASDAQ:GRCL)

Shanghai, China

Research Apprentice

MAY 2024 – JUL 2024

- Constructed prototypes and proof-of-concept models of experimental medication
- Worked on methods and formulation for drug delivery models
- Performed Fluorescent Array Cell Sorting (FACS) and Enzyme-Linked Immunosorbent Assay (ELISA) procedures
- Performed Polymerase Chain Reaction (PCR) procedures in a GMP facility
- Handled, subdued, and gathered blood from lab animals.

Work Experience

Applied StemCell Inc.

Milpitas, CA

Laboratory Assistant

JUL 2021 – AUG 2021

- Nurtured cells in a GMP facility
- Changed cell medium, and monitored and recorded cell growth
- Managed advertising campaign for partnership between the company and HumanCells Bio. Created product landing pages, communicated for graphics, and made LinkedIn adverts.

University of California, Berkeley

Berkeley, CA

Student Worker

AUG 2024 – PRESENT

- Supervised undergraduate exams to ensure academic integrity and compliance with university testing protocols
- Monitored testing environments, verified student identities, and enforced time limits and exam rules
- Collaborated with faculty and staff to set up exam materials and promptly reported any irregularities

Skills and Knowledge

- Cell culturing and nurturing
- Microscopy, spectrophotometry, chromatography
- Gel electrophoresis, PCR, ELISA
- Molecular immunology, Cancer pathways
- Organic Chemistry, Biochemistry
- Genomics, Genetics, Gene Sequencing
- **Programming** (Java, Javascript, Scheme, Python, SQL)
 - Python (NumPy, Matplotlib, Pandas)
- Machine Learning, Dimensionality Reduction, EDA
- Graphic Design (Adobe Photoshop & Adobe Illustrator)
- Website Development (HTML/CSS, jQuery, React.js)
- Social Media management (Web, Instagram, LinkedIn)

Last Updated: April 24, 2025