

Adithya Sivakumar

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EDUCATION

University of Virginia School of Medicine

August 2026 – Present

- First-Year Medical Student (M.D. Program)

University of California, Berkeley

Aug 2021 – Dec 2024

- B.A. Molecular and Cell Biology (Conc. in Molecular Therapeutics and Disease); Minor in Data Science
- University and Department Honors
- Honors Thesis Advisor: Prof. John Flannery

Selected Coursework: Therapeutic Discovery & Development, Computational Genomics, Molecular Endocrinology, Comparative Virology, Stem Cell Biology, Biochemistry, Genetics & Cell Biology, Linear Algebra, Statistics for Public Health, Machine Learning Modeling, Organic Chemistry, Evolutionary Biology

PUBLISHED PAPERS & ABSTRACTS

1. Victoria C. Fong, Beatrice M. Le, Antonia Stefanov, Vivian Lee, Seohyun Park, **Adithya Sivakumar**, Sabrina Spatny, Meike Visel, W. Rowland Taylor, Stephen G. Brohawn, John G. Flannery. Optogenetic restoration of high-sensitivity vision using ChRmine- and ChroME-based channelrhodopsins. **Published in Nature Scientific Reports; <https://doi.org/10.1038/s41598-025-04286-9>.**
2. Beatrice M. Le, Victoria C. Fong, Madi McCloud, Meike Visel, **Adithya Sivakumar**, Evan Kwong, Stephen G. Brohawn, W. Rowland Taylor, John G. Flannery. Evaluation of novel ChRmine- and ChroME-based channelrhodopsin variants for optogenetic restoration of visual function. **Abstract published in Investigative Ophthalmology & Visual Science (IOVS).**
3. Beatrice M. Le, Madi McCloud, Meike Visel, Evan Kwong, **Adithya Sivakumar**, Stephen G. Brohawn, W. Rowland Taylor, John G. Flannery. Optimized ChRmine-based channelrhodopsin mutants for optogenetic restoration of visual function. **Abstract published in Investigative Ophthalmology & Visual Science (IOVS).**

RESEARCH EXPERIENCE

Flannery Lab — PI: Prof. John Flannery

Jan 2023 – May 2025

Project: Behavioral Evaluation of ChRmine-Induced Photoreception in Retinal Ganglion Cells

- Led an Honors Thesis testing four novel ChRmine opsin variants delivered via AAV to retinal ganglion cells, restoring statistically significant light-avoidance behavior in blind (rd1) mice across ambient-to-low-lux conditions, with mechanistic validation in CHO cell culture. Presented thesis findings at the 2025 BYIRC Conference at Stanford's Byers Eye Institute.
- Built and expanded a behavioral-analysis pipeline to quantify light-avoidant mouse behavior, enabling detection of subtle, previously qualitative fear responses.
- Performed anesthesia, intravitreal injections, behavior studies, tissue dissection, and immunohistochemistry.
- Managed daily care for a 30-mouse cohort over a one-year study; trained incoming lab members in animal care, behavioral protocols, and statistical analysis.
- Co-author on one published manuscript, two published abstracts, and two manuscripts in preparation.

Design for Nanoscale Manufacturing Lab — PI: Prof. Hayden Taylor

Oct 2022 – Oct 2023

Project: Optimizing Hydrogel Photopolymerization for Computed Axial Lithography Bioprinting

- Served as a biology specialist within a mechanical engineering lab, identifying biocompatible hydrogel alternatives to standard photopolymer resins for computed axial lithography (CAL) 3D printing.
- Established GelMA (gelatin methacrylate) as a leading hydrogel candidate for CAL 3D printing in biological

applications through literature review, gelation-point testing, and spectrometric analysis.

- Validated candidate photoinitiator-hydrogel combinations through test prints, contributing early proof-of-concept data for hydrogel-based CAL printing.

Bioprinting@Berkeley — Advisor: Dr. Michael Conboy

Aug 2021 – May 2025

Project: Establishing Viability in Bioprinted Heart Tissue

- Founded and directed a 3D cell culture project to evaluate the viability of a bioprinted aortic valve scaffold in mimicking native cardiac tissue. Presented preliminary findings at the 2023 UC Berkeley Translational Medicine and Stem Cell Conference.
- Achieved project milestones in cardiac cell culture and partial-fidelity hydrogel-based valve prototyping, laying groundwork for ongoing integration into a functional 3D cell-culture scaffold.

WORK EXPERIENCE

Clinical Informatics Specialist @ Oak Street Health

May 2025 – Apr 2026

- Documented patient encounters in real time, including history of present illness, assessment, plan, and physical exam, using ICD-10 and CPT coding.
- Supported value-based care delivery by helping providers identify and close care gaps in chronic condition management through accurate, specific clinical documentation.
- Prepared for daily care team huddles and clinical documentation reviews, and used EMR systems to support pre-visit planning and generate after-visit summaries.

Course Liaison and Tutor @ UC Berkeley Student Learning Center

Jan 2024 – Dec 2024

- Coordinated with Course Staff to design effective study material and provide free tutoring services for UC Berkeley's flagship biochemistry course.
- Tutored 500+ students in group and individual settings, and facilitated large-scale review sessions before semester exams.
- Managed the biochemistry tutoring team, providing training and logistical support regarding work shifts.

Academic Course Reader @ UC Berkeley Department of Data Science

Jan 2024 – Dec 2024

- Graded weekly assignments and midterm/final exams for 300+ students over the Spring 2024 and Fall 2024 academic semesters.
- Curated detailed rubrics for effective and equitable scoring of student submissions and coursework.
- Worked with course instructors to proctor exams, hold office hours, explore relevant literature, and shape learning pedagogy.

VOLUNTEER SERVICE

American Red Cross at Cal — Chairman of Disaster Services

Aug 2021 – May 2025

Service Initiative: Sound The Alarm

- Led volunteer efforts installing thousands of free smoke alarms across underserved Bay Area communities as part of the Red Cross's national home fire preparedness campaign, directly reducing fire injury and fatality risk for at-risk households.

Service Initiative: Missing Maps

- Directed volunteer mapping events to highlight humanitarian aid hotspots across dozens of developing countries to support disaster response and relief planning in under-mapped regions.

RESEARCH INTERESTS

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| • Gene Editing & AAV-Mediated Gene Therapy | • Machine Learning for Medical Data Analysis |
| • Mechanisms of Retinal Degeneration | • Addressing Social Determinants of Health |
| • Stem Cell Therapeutics | • Cancer Biologics in Immunoprivileged Regions |