

# Katie Sie

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## EDUCATION

### University of Washington

*Ph.D. Bioengineering with Data Science Option*

*Sep 2025 - Present*

Advisors: Suzie H. Pun, Frank DiMaio

### University of California, Berkeley

*B.S. Bioengineering & Electrical Engineering and Computer Science, High Honors*

*May 2025*

- Honor Societies: Tau Beta Pi Engineering Honor Society, UC Berkeley Electrical Engineering and Computer Science Honors Program, UC Berkeley Bioengineering Honor Society

## RESEARCH & LAB EXPERIENCE

### BioMarin Pharmaceutical

San Rafael, CA

*Neuroscience Analytical Pathology Intern*

*June - Aug 2025*

- Developed an improved pipeline for puncta detection in chromogenically-stained images
- Characterized mice models to assess their representation of human disease
- Technical Skills: immunohistochemistry, in situ hybridization, histology, ImageJ

### Bakar BioEngenuity Hub

Berkeley, CA

*Research and Development Intern at Inapill*

*April - Oct 2024*

- Initialize company's standard assays for characterization of mammalian cell lines and protein interactions to develop an immunometabolic, anti-inflammatory therapeutic and produce data for seed funding
- Technical Skills: quantitative PCR, western blot, flow cytometry, ELISA, tissue culture, transfection

### Innovative Genomics Institute

Berkeley, CA

*Undergraduate Researcher at the Arkin Lab*

*Aug 2022 - May 2025*

- Develop a reporter strain for rational design of microbial communities to treat cystic fibrosis for the ARPA-H Pro/Prebiotic Regulation for Optimized Treatment and Eradication of Clinical Threats (PROTECT) project
- Optimize design and isolation of phage tail-like bacteriocins (tailocin) from *P. aeruginosa* and *E. coli* to target bacterial strains for experimental and therapeutic applications in combating antibiotic resistance as part of the Lawrence Berkeley National Lab's Ecosystems & Networks Integrated with Genes & Molecular Assemblies (ENIGMA) consortium
- Streamlined metabolic engineering of *A. platensis* for production of bioactive molecules through screening of genetic regulatory components and development of non-model organism gene editing tools as part of NASA's Center for the Utilization of Biological Engineering in Space (CUBES)
- Technical Skills: primer design, molecular cloning, PCR, assembly, and transformation; tailocin isolation via sonication, precipitation, and centrifugation; plaque assays for tailocin quantification

*Undergraduate Researcher at the Lareau Lab*

*March 2024 - May 2025*

- Improve efficiency of alternative splicing junction prediction through fine tuning a large language model trained on the human genome; developed competitive model with 97% accuracy in <5 minutes of training
- Technical Skills: machine learning, data processing, Weights & Biases, python, tmux

### International Genetically Engineered Machine (iGEM)

Berkeley, CA

*Experimental Team Member*

*Aug 2021 - May 2025*

- Engineer a one-step, inducible, self-clearing and gene editing plasmid system to optimize gene knockouts

### Feinstein Institute of Molecular Medicine

Manhasset, NY

*Research Intern*

*May - July 2023*

- Constructed bioinformatic, non-invasive methods of tracking lupus prognosis using single-cell RNA sequencing of urine samples to elucidate disease chronicity and R packages (Seurat, ggplot2, dplyr)

**iResearch Institute**

Queens, NY

*Research Intern**June - Aug 2020*

- Investigated targetable genes and cellular pathways with potential to re-sensitize treatment-resistant small cell lung cancer using public datasets and bioinformatic analysis (R and Gene Set Enrichment Analysis)
- Published in the Journal of Young Investigators, Finalist at the 2021 Terra NYC Fair, 2<sup>nd</sup> place in Biomedical Engineering at the 2021 Journal of Young Explorers Meta Competition

**TEACHING & MENTORSHIP EXPERIENCE****International Genetically Engineered Machine (iGEM)**

Berkeley, CA

*Training Team Director**May 2023 - May 2025*

- Develop and teach synthetic and computational biology curriculum, including design challenge and 5 week student-run wet-lab experiment, for >35 UC Berkeley students to increase accessibility to research

**UC Berkeley College of Engineering Course Staff**

Berkeley, CA

*Tutor for Designing Information Devices and Systems I**Aug 2022 - May 2024*

- Lead office hours, lab sections, tutoring sessions, and homework parties for >1,000 students

**The Lawrence Hall of Science Teen Research Programs**

Berkeley, CA

*Biotech Genetics Instructor**May 2023 - June 2023*

- Facilitated interactive lessons to teach lab and genetic engineering techniques to >20 high school students

**Girls in Engineering**

Berkeley, CA

*Camp Counselor**June 2022 - Aug 2022*

- Executed administrative organization of 100+ campers; fostered a creative, encouraging environment for middle schoolers from underrepresented communities; conceptualized biodegradable plastics module

**Bioengineering High School Competition**

Berkeley, CA

*Mentor**Jan 2024 - April 2025*

- Guide a team of 4 high school students through a 6 week design challenge, culminating in an in-person symposium with a poster presentation and an industry panel judging session

**Bioengineering Mentorship Program**

Berkeley, CA

*Mentor**Aug 2023 - May 2025*

- Advise first and second year Bioengineering students during biweekly meetings with a focus on resume building, course selection, and resources for academic support and professional development

**LEADERSHIP EXPERIENCE****Bioengineering Honor Society**

Berkeley, CA

*Academic Chair, Internal Vice President, Senior Advisor**Jan 2022 - May 2025*

- Strengthened supportive and productive community through designing the candidate experience, increasing general member participation, organizing retreats, and hosting general meetings for 300+ members

**Society of Women Engineers**

Berkeley, CA

*Orientation Host Program Committee Member**Jan - May 2022*

- Coordinated professor and student panels, socials, and club fairs for over 1,000 UC Berkeley admitted nonbinary and female undergraduates in STEM to foster community

**AWARDS****NSF Graduate Research Fellow (GRFP, 2025)***Awarded by the National Science Foundation***The Dr. Thomas Budinger Bioengineering Exploration Award (Sep 2023, Sep 2024)***Scholarship by UC Berkeley Bioengineering Department*

**The Leadership Award** (2021, 2022, 2023)  
*Scholarship by the Cal Alumni Association*

**PUBLICATIONS & PRESENTATIONS (\*presenter)**

**Sie, K.\***, Faizi, M., Lareau, L. HyenaSplice: Optimized DNA Splice Junction Prediction via Large Language Models. Annual Biomedical Research Conference for Minoritized Scientists. November 13-16, 2024. Pittsburgh, PA. *Poster*.

**Sie, K.\***, Subramanian, M., McCalla, S. Bioinformatic Analyses Determine Biomarkers for Resistant Small Cell Lung Cancer. MIT IEEE Undergraduate Research Technology Conference. October 6-8, 2023. Cambridge, MA. *Lightning Talk*.

**Sie, K.**, Subramanian, M., & McCalla, S. (2022). Therapeutic Targets for Resistant Small Cell Lung Cancer Determined Through Bioinformatic Analyses. *Journal of Young Investigators*, 41(2), 7-18.  
doi:10.22186/jyi.41.2.7-18

Hilzinger, J.M.\*, Reyes, CE., Sander, K.B., Ahnn, H., **Sie, K.**, Wahyudi, J., Friedline, S., Clark, Douglas S., Skerker, J.M., Arkin, A.P. Harnessing cyanobacterial diversity to expand hosts and enzymes for photoautotrophic production. Molecular Basis of Microbial One-Carbon Metabolism Gordon Conference. August 11-16, 2024. Waterville Valley, NH. *Poster*.

**SKILLS & INTERESTS**

**Technical:** Molecular Cloning, Bacterial/Mammalian Cell Culturing, Characterization of Protein Function and Cell Lines, Immunohistochemistry, Python, Java, C, R, Ruby

**Extracurricular:** Kayaking, Running, Crocheting, Baking Macarons, Adobe Photoshop & Premiere Pro