

## EDUCATION

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### University of California, Santa Barbara

*B.S. Applied Mathematics and Data Science*

Santa Barbara, CA

*August 2022 – August 2026*

- CS/Math Coursework: Data Structures and Algorithms, Machine Learning, Probability and Statistics, Stochastic Process, Advanced Linear Algebra, Linear Regression, Multivariable Calculus, Real Analysis, Numerical Analysis

## UPCOMING RESEARCH PUBLICATIONS AND POSTERS

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- [1] H. Jamiree, **K. J. Chang**, E. Yeung, *et al.*, “Data-driven engineering, optimization, and phenotypic clustering of a novel hybrid promoter library for mixed-phase expression in prokaryotes,” expected ACS Syn Bio.
- [2] **K. J. Chang** and E. Yeung, “Robust, Hysteretic Gene Network in *E. coli* with Deep Learning Modeling,” expected journal Cell Systems.
- [3] **K. J. Chang**, E. Yeung, *et al.*, “Robust, Hysteretic Gene Network in *E. coli* with Deep Learning Modeling” QBio Winter Poster Session, 2025.
- [4] **K. J. Chang**, E. Gemmill, *et al.*, “Computational analysis of border cell cluster texture to elucidate the cell mechanics of collective migration,” University of California, Santa Barbara, URCA.
- [5] E. Gemmill, **K. J. Chang**, *et al.*, “Modulation of membrane curvature and Septin organization by Rho1 and its effectors,” in preparation.
- [6] **K. J. Chang**, E. Yeung, *et al.*, “Genetic Sequence Clustering Using Unsupervised Clustering Algorithms and Statistically Mapping Genotype to Phenotype” QBio Winter Poster Session, 2023.

## WORK AND RESEARCH

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### BioClustIQ

Santa Barbara, CA

*Researcher at Yeung Lab*

*Aug 2023 – Present*

- Designed unsupervised clustering pipeline with Scikit-learn, SciPy for feature selection on 1000+ DNA sequences
- Benchmarked classification algorithms (K-means, C-means, kNN algorithms) using Python, NumPy, Biopython, Matplotlib
- Validated 13 clusters across multiple datastreams, revealing hidden biological correlation
- Two first-author manuscripts in preparation; presented research at multiple national conferences, engaging over 200 industry experts from Caltech, MIT, etc.

### Modeling Biocircuits

Santa Barbara, CA

*Researcher at Yeung Lab*

*Jan 2024 – Present*

- Optimized parameter estimation methods for genetic circuit designs
- Processed high-throughput experimental data into Numpy, then quantified experimental differences

### Ilastik Pipeline

Santa Barbara, CA

*Researcher at Montell Lab*

*Jan 2024 – Jun 2025*

- Developed computer vision pipeline for 3D image segmentation to enable accurate quantitative analysis using MATLAB
- Analyzed 1000+ images across 3 conditions using MATLAB, revealing treatment-specific morphology changes
- Quantified surface texture in MATLAB using spectral decomposition techniques

## ACHIEVEMENTS

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- **Outstanding Undergraduate Research Award:** Reward for fixing Flow Cytometer at BCCL

## SKILLS

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**Languages:** Python, R, MATLAB

**Data Analysis:** Deep Learning frameworks including Jupyter Notebook, Pandas, NumPy, SciPy, Scikit-learn, K-means, DBSCAN, Unsupervised Learning

**Molecular Biology Techniques:** PCR, Gel Electrophoresis and Extraction, Gibson and Golden Gate Assembly, Transformation, Genetic Circuit Design, Immunofluorescence, Western Blotting, etc.

**Tools:** Github, Bash Scripting

**Language:** English, Mandarin/Chinese, Japanese (Basic)