

# Claire Hsieh

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[LinkedIn](#) | [Github](#) | [Website](#)

## EDUCATION

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Bachelor of Science in **Genetics and Genomics** at University of California, Davis Expected June 2024

Minor: **Quantitative Biology and Bioinformatics, Statistics**

GPA: 3.736

Relevant coursework:

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|---|---------------------------------------|
| • Statistical Data Science  | • Comparative Genomics                |
| • Regression Analysis   | • Functional Genomics                 |
| • Probability & Stochastic Processes with Applications to Biology | • Genes and Gene Expression           |
| • Linear Algebra  | • Human Genetics and Genomics         |
| • Mathematical Statistics   | • Data Structures                     |
|   | • Theory & Practice of Bioinformatics |

## TECHNICAL SKILLS

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**Programming Languages:** Python (numpy, pandas, matplotlib), R, Perl, SQL, MATLAB

**Software:** YASARA, BLAST

**Operating System / Scripting Language:** Windows, Linux, Unix, Bash

**Version Control:** Git

## RESEARCH SKILLS

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|-----------------------|--|
| • General Laboratory  | • Grid Preparation (Electron Microscopy) |
| • Bacteriology        | • Plaque Assay                           |
| • Gel Electrophoresis | • Miniprep (DNA extraction)              |
| • qPCR                |  |

## RESEARCH INTERESTS

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- Statistical Genomics
- Machine learning with clinical applications
- Markov Models
- Alzheimer's
- Cancer
- Metabolomics

## AWARDS

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- 2023 College of Biological Sciences Summer Undergraduate Research Award for \$7000 (declined)

## RESEARCH EXPERIENCE

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### **Research Assistant | Topological Molecular Biology Lab | Apr 2022 – Present**

- Analyze viral datasets to extract and model proteins using sequence and structural similarity
- Utilize profile HMMs in predicting SARS COV-2 mutation probabilities weighted by country
- Clean and align genomic datasets using MAFFT and Clustal Omega
- Grow and collect microbial cultures
- Set up and perform gel electrophoresis
- Prepare frozen samples using GP2 and easi-Glow then image using Cryo-EM
- Design primers and perform qPCR to quantify DNA
- Extract DNA using miniprep or chloroform

### **Research Assistant | Korf Lab | Dec 2022 – Present**

- Develop Python programs using intron position to predict gene enhancement
- Examine orthologous genes to identify introns with potential for enhancing genes
- Create algorithms to identify motifs using discretized position weight matrices, regular expressions, and k-mers
- Implement a Stochastic Viterbi and forward-backwards algorithm in Python to generate random, probable isoforms

### **Irvine Summer Institute in Biostatistics and Undergraduate Data Science | UC Irvine | Jul 2023 – Aug 2023**

- Learned fundamentals of statistics: probability, Monte Carlo methods, linear models, generalized linear models, causal inference, and Bayesian statistics
- Used R and machine learning models to predict presence of colorectal cancer using metabolomics

## WORK EXPERIENCE

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### **Accounting Assistant | Quicklinks Advisor 365 | Aug 2020 – Dec 2022**

- Created and updated financial statements
- Reconciled transactions and identified discrepancies

## CLUBS

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### **Davis Data Science Club | Social Media Officer | Sep 2022 – Present**

- Design and distribute posters to promote club meetings and events

## COMMUNITY SERVICE

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### **Priceless Pets | Jan. 2019 – Feb. 2020**

- Walked dogs
- Trained new volunteers
- Cleaned kennels
- Fed and medicated animals

## LANGUAGES

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**English:** Native Language

**Mandarin:** Intermediate Listener, Intermediate Speaker, Beginner reading and writing

## PROFESSIONAL TRAINING

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### **US Cyber Challenge | Jul 2022**

- Coursework: Memory Forensics, Network Forensics, Linux

### **Scientific Computing with Python | freeCodeCamp | Mar 2022**

- [https://www.freecodecamp.org/certification/Claire\\_Hsieh/scientific-computing-with-python-v7](https://www.freecodecamp.org/certification/Claire_Hsieh/scientific-computing-with-python-v7)

### **Data Analysis with Python | freeCodeCamp | Jan 2023**

- [https://www.freecodecamp.org/certification/Claire\\_Hsieh/data-analysis-with-python-v7](https://www.freecodecamp.org/certification/Claire_Hsieh/data-analysis-with-python-v7)

## OTHER

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**Hobbies:** [Reading](#), Playing guitar, Running