# Claire Hsieh

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LinkedIn | Github | Website

## EDUCATION

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:

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

## TECHNICAL SKILLS

**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

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

## RESEARCH INTERESTS

- Statistical Genomics
- Cancer and aging-related research
- Metabolomics
- Machine learning with clinical applications
- Markov Models

## AWARDS

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

## RESEARCH EXPERIENCE

**Research Assistant | Topological Molecular Biology Lab | Apr 2022 – Present**
- Analyzed viral datasets to extract and annotate proteins using sequence and structural similarity
- Utilized profile HMMs in predicting SARS COV-2 mutation probabilities weighted by country
- Cleaned and aligned genomic datasets using MAFFT and Clustal Omega
- Grew and collected microbial cultures
- Set up and performed gel electrophoresis
- Prepared frozen samples using GP2 and imaged using Cryo-EM
- Designed primers and performed qPCR to quantify DNA
- Extracted DNA using miniprep or chloroform

**Research Assistant | Korf Lab | Dec 2022 – Present**
- Developed Python programs that use intron position to predict gene enhancement
- Examined orthologous genes to identify introns with potential for enhancing genes
- Created algorithms to identify motifs using discretized position weight matrices, regular expressions, and k-mers
- Implemented 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 probability, Monte Carlo methods, linear models, generalized linear models, causal inference, and Bayesian statistics
- Used R and machine learning to predict presence of colorectal cancer using metabolomics

## WORK EXPERIENCE

**Accounting Assistant | Quicklinks Advisor 365 | Aug 2020 – Dec 2022**
- Create and update financial statements
- Reconcile transactions and identify discrepancies

## CLUBS

**Davis Data Science Club | Social Media Officer |Sep 2022 – Present**
- Designed and distributed posters to promote club meetings and events

## COMMUNITY SERVICE

**Priceless Pets | Jan. 2019 – Feb. 2020**
- Walked dogs
- Trained new volunteers
- Cleaned kennels
- Fed and medicated animals

## LANGUAGES

**English**: Native Language
**Mandarin**: Intermediate Listener, Intermediate Speaker, Beginner reading and writing

**PROFESSIONAL TRAINING**

### 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

### Data Analysis with Python | freeCodeCamp |Jan 2023
- https://www.freecodecamp.org/certification/Claire_Hsieh/data-analysis-with-python-v7

**OTHER**

**Hobbies**: Reading, Playing guitar, Running