

# VICTORIA CHEUNG

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## EDUCATION

(UCSF) University of California, San Francisco  
(UCSD) University of California, San Diego  
Genentech Discovery Program  
Cold Spring Harbor Laboratory

**PhD**  
**BS**  
**Certification**  
Vision: Linking Circuits, Perception, and Behavior  
Genetics conc. Systems Neuroscience  
Microbiology  
L.E.A.D Supply Chain

## TECHNICAL SKILLS

|                                   |                                    |                              |
|-----------------------------------|------------------------------------|------------------------------|
| Data Analysis (Python, R, MATLAB) | Adobe Creative Suite (Ai, Lr, Ps ) | Animal Research/Surgery      |
| Linux (bash, zsh)                 | Arduino                            | PCR/qPCR                     |
| AWS (EC2, S3)                     | CAD (Onshape, Cura, eMachineShop)  | Microscopy                   |
| Experimental Design               | Histology/Immunohistochemistry     | Image Processing (FIJI, Zen) |
| SQL (PostgreSQL)                  | Single-cell Omics                  |                              |

## CAREER EXPERIENCE

### [Freenome](#) | **Computational Biologist**

*APR 2022 — PRESENT*

- Apply bioinformatics, data science, and computational methods to analyze multi-omic data to reveal, model, and interpret changes in both the cancer (pathways, gene activities, proteins) and the immune system (composition, activity, and repertoires) associated with clinical outcomes.
  - Generate new insights and interpretations. Leverage existing computational methods and develop new ones to extract immunological signals from existing and new data.
- Partner cross-functionally in the scientific planning and execution of collaborative projects, such as molecular and cancer biologists, immunologists, computational biologists, medical affairs, commercial, business development.
- Execute research projects to model various biological changes resulting from diseases such as cancer, autoimmune disease, and infection with various business partners.

### [Genentech](#) | **Oncology Bioinformatics and Molecular Oncology PhD Intern**

*SEP 2021 — APR 2022*

- Characterized gene signature development and refinement for T cell signaling pathways in cancer models
  - Wrote a data processing pipeline utilizing Scanpy, Numpy, Pandas, scikit-learn, SciPy
  - Performed statistical analyses on different drug treatment populations: gene set enrichment analysis, differential gene expression analysis.
  - Utilized supervised batch correction techniques and unsupervised clustering algorithms (UMAP, topic modeling) to visualize and analyze single cell RNA seq data outputs.
- Wrote custom plotting functions using Matplotlib to better visualize the effect of drug treatments.

### [UCSF @Evan Feinberg Lab](#) | **Graduate Researcher in Single-cell Omics, Systems Neuroscience**

*JUL 2016 — DEC 2021*

- **Project 1:** Developed a multiplexed, high-throughput, single-cell sequencing method for neurons that preserve connectivity information in addition to obtaining molecular identity (VECTORseq).
  - Wrote the data processing pipeline using Python after genome alignment using Cellranger (10x Genomics) on an AWS EC2 instance.
    - Used unsupervised machine learning techniques such as t-SNE/UMAP clustering to match molecular identities to cellular function and role in behavioral output.
    - Implemented nearest neighbors algorithms to account for batch differences when merging datasets.
  - Streamlined brain dissociation techniques and increased neuron survivability yield 100-fold based on data-driven outcomes from clustering analyses.
  - Validated clustering results of single-cell sequencing against the [2020 10x sequencing dataset from the Allen Atlas](#) and that the methodology was functional.
    - Evaluated range of highly variable genes expressed per cluster for the validation of cell identity.
  - Managed collaborations with the Chan-Zuckerberg Biohub (Spyros Darmanis Group, now @ Genentech)
- **Project 2:** Designed an audition-based behavioral paradigm to study sensorimotor integration in the context of mice.
  - Wrote custom software to support custom-built hardware using serial communication between MATLAB and an Arduino microprocessor, which increased productivity by 6-fold from the parallelization and automation of data acquisition, storage, and analysis.
    - Used this system in exploring how sensory input is represented in the brain and transformed into behavioral commands, using mice as the model organism.
  - Wrote custom analyses software to automate, refine, and interpret both raw behavioral data and fiber photometry signals. Used CAD software to design and 3D print custom behavioral apparatuses.
  - Refined surgical protocols to increase survival surgery success by 20%. Delivery of viruses, drugs, and organic dyes into the mouse brain.
  - Performed physiology recordings on brain slices to validate optogenetic and fiber photometry experiments.

- Assembled fiber photometry and optogenetic manipulation equipment to record and perturb neuronal activity in the context of quantitative behavioral assays.

#### *Insight Data Science @Silicon Valley* | **Health Data Science Fellow**

*MAY 2020 – JULY 2020*

- Developed a predictive clinical calculator to assess Acute Kidney Injury in hospitalized patients, which would result in better management, care/medication dosing, injury prevention, and reduced hospital length of stay, thus freeing up occupied resources and minimizing financial costs to both patient and hospital.
- Utilized PostgreSQL querying to gather relevant data from the MIMIC-III database and manipulated the data with Python Pandas from 25 tables of data, 46,000 patients, thousands of diagnoses and lab tests, and clinical documentation--generating over 3 million rows of data and 70 unique features comprising lab tests and demographic information.
- Used supervised machine learning in Python such as regression models from scikit-learn and XGBoost to forecast Acute Kidney Injury, with a predictive accuracy of ~91%.
- *Medium Article in Towards Data Science:* [Predicting Acute Kidney Injury in Hospitalized Patients Using Machine Learning](#)

#### **OTHER EXPERIENCE**

##### *Genentech certification course* | **Genentech Discovery Program: L.E.A.D. Supply Chain**

*JULY 2020 – AUG 2020*

- Learned about the fundamentals of supply chain, how the supply chain spans a variety of roles throughout Genentech's delivery of therapies as well as its involvement in providing medication access to underserved communities and its drive towards sustainability.
- Chatted with supply chain business leaders to interact with individuals in the industry. Discussed the transferability of skills from the PhD to business/supply chain.
- Participated as Operations Lead in a *supply chain simulation* where my team and I **placed second** overall.

#### **MENTORSHIP | DIVERSITY**

##### *Evan Feinberg Lab @UCSF* | **Mentor for Undergraduates**

*JUN 2016 – SEP 2021*

- Trained and mentored 3 undergraduates on performing research tasks on how to: think independently, plan experiments, perform surgical protocols, and analyze data. Provided career/research advice.
  - Post-graduation outcomes of the 3 undergraduates: (1)data analyst @BoxLunch. (2)research scientist @Alkahest. (3)applying to medical school

##### *UCSF SRTP* | **Student Advisor**

*JUN 2019 – AUG 2019*

University of California, San Francisco (UCSF) Summer Research Training Program (SRTP)

- Developed curriculum to teach rising junior and senior undergraduates on how to: become a strong graduate school applicant, create compelling posters and presentations, write personal statements, read and dissect scientific papers

##### *UCSF Science & Health Education Partnership (SEP)* | **Student Teacher**

*JAN 2016 – JUN 2016*

- Created and developed a series of interactive and investigative lesson plans to teach freshman biology.
- Mentored URMs and socioeconomically disadvantaged students on different career paths in science.

##### *UC LEADS (University of California, Leadership Excellence through Advanced Degrees)* | **Scholar**

*MAR 2013 – JUN 2015*

- Mentorship program for underprivileged and socioeconomically disadvantaged undergraduates for success in graduate school to later assume positions of leadership in industry, government, public service, and academia following completion of a doctoral STEM degree. Two-way avenue: (1)Received mentorship from prior two cohorts as part of the incoming cohort. (2)Provided mentorship to the next two cohorts while progressing through the program.

#### **HONORS | AWARDS**

|      |  |
|------|--|
| 2022 | UCSF Diversity Graduation, Graduate Division Speaker   |
| 2017 | Helmsley Scholar                                       |
| 2015 | UC LEADS Symposium Presentation Award                  |
| 2014 | SACNAS National Research Conference Travel Scholarship |
| 2013 | UCSD STARS Scholarly Presentation Award                |
| 2013 | SACNAS National Research Conference Travel Scholarship |
| 2013 | UCSD Provost Honors                                    |
| 2012 | UCSD Provost Honors                                    |
| 2011 | UCSD Provost Honors                                    |
| 2012 | Kaiser Permanente Valuable Volunteer Award             |
| 2011 | Kaiser Permanente Student Achievement Award            |

#### **PUBLICATIONS**

**Cheung, V.**, Chung, P., and Feinberg, E.H. (2022) [Transcriptional profiling of mouse projection neurons with VECTORseq](#). STAR Protocols, 3(3):101625

**Cheung, V.**, Chung, P., Bjorni, M., Shvareva, V.A., Lopez, Y.C., and Feinberg, E.H. (2021) [Virally Encoded Connectivity Transgenic Overlay RNA sequencing \(VECTORseq\) defines projection neurons involved in sensorimotor integration](#). Cell Reports, 37(12):110131

**Cheung, V.** "Predicting Acute Kidney Injury in Hospitalized Patients Using Machine Learning" *Towards Data Science*. Medium, 20 Jun. 2020. Web.