

Education

MD/PhD Candidate

Starting July 2024

Columbia University Vagelos College of Physicians & Surgeons

B.S. Neuroscience

2018 - 2022

University of California, Davis | GPA: 3.98 (*summa cum laude*) | MCAT: 524 (100th percentile)

Honors & Scholarships

2022

Chancellor's Award for Excellence in Undergraduate Research

University's most prestigious research award, presented to 4 students from a class of 9600+

2022

Dean Keith Simonton Prize

Major university scholarship/distinction for research rigor and creativity

2022

College of Biological Sciences (CBS) Distinguished Scholar

Award recognizing significant contributions to campus bioscience research

2018 - 2022

University of California (UC) Regents Scholarship, University Honors Scholar

2016

Division 3rd Place, Regeneron International Science & Engineering Fair

2015

Division 1st Place, California State Science Fair

Research Experiences (see [research summary](#))

AI/ML Research Associate, Computational Biology Division | Bio-Techne Corp.

2024 - Present

A leading provider of reagents and services for life science research, therapeutics, and diagnostics

- Build machine learning (ML) / deep learning (DL) pipelines for antibody feature analysis
- Spearhead development of novel platform for high-throughput quality control (QC) triaging and annotation/preparation of sequences for training predictive ML binding models
- Leverage structural modeling platforms (Maestro) for *in silico* optimization of antibody leads
- Integrate diverse modalities, including ESM, BioLuminate-derived descriptors, and high-throughput assays (NGS, ELISA) to enhance hybridoma-based antibody discovery workflows

ProneVR Software Lead & Clinical Researcher | UC Davis Pain Clinic

2023 - Present

- Lead development of novel virtual reality therapy platforms (PAW-VR) for pain management
- Work with clinicians to advance patient-based studies of chronic/acute pain interventions

Researcher in Diaz Lab, Neuroscience Department | UCD School of Medicine

2019 - 2024

- Employed integrated computational and experimental approaches to study BAI2 (post-synaptic aGPCR involved in neurogenesis & synapse development, with links to autism/cancer)
- Used molecular modeling frameworks (Rosetta) to study functional impact of BAI2 mutants
- Conducted single-cell transcriptomic profiling of aGPCRs in gliomas and metastatic tumors
- Developed novel software tools, including a synapse colocalization plugin (improving lab workflow efficiency by >500%), regression tool for surface-labeled neuroreceptor trafficking (reducing analysis time by >90%), and deep learning framework for synapse classification

STEM Education Investigator | UCD Molecular & Cellular Biology Department

2021 - 2023

- Developed an interactive simulation/game-based platform to enhance genetics education

Computational Skills Overview

Proficient Languages: Python, R, Java, C#, JavaScript, SQL, JSON/XML, HTML/CSS

ML/DL: Experience with PyTorch/TensorFlow, CNNs, SVMs, random forests, gradient boosting

Environments: Well-versed with key Python packages (e.g. *biopython*), Unix/Linux, PowerShell, Git/GitHub, conda, AWS, LaTeX, RStudio, Visual Studio, Android Studio, Jupyter, Unity, Docker

Select Publications & Research Tools [Including software releases]

- Low, H. & Ellefson, M. (2024). Developing An Immersive Educational Game-Based Platform for Learning Genetics. *Simulation & Gaming*, 55(2), 302-322. [doi:10.1177/10468781231220728](https://doi.org/10.1177/10468781231220728)
- Low, H. & Diaz, E. (2022). [DEPT-REVIEWED THESIS]. "BAI2: CNS tumor expression and synaptic colocalization analysis". *UCD NPB*. doi.org/10.5281/zenodo.8173585
- Low, H. & Diaz, E. (2022). [COMPUTER SOFTWARE]. "ColocalVision: an analysis tool for evaluating fluorescent colocalization". doi.org/10.5281/zenodo.8173500
- Low, H. & Diaz, E. (2021). [COMPUTER SOFTWARE]. "NeuroRadar: an automated tool for classification of neuroreceptor trafficking". doi.org/10.5281/zenodo.8173504
- Low, H. & Diaz, E. (2020). [COMPUTER SOFTWARE]. "ViolaRNA: a pipeline tool for analyzing RNA-seq distribution profiles". doi.org/10.5281/zenodo.8173508

Select Posters & Presentations

- Low, H. (2023). "BAI2 modeling/docking: investigating mutant effects in ASD". *Dept. of Pharmacology, UCD School of Medicine (SOM)*. [Link](#)
- Low, H., Specia, D., & Diaz, E. (2022). "HGG expression profiles & image analysis pipeline". *CBS Dean's Symposium*. doi.org/10.5281/zenodo.8175007
- Low, H. (2022). "Developing ANNs for image analysis in biological applications". *Dept. of Pharmacology, UCD SOM*. doi.org/10.5281/zenodo.8175005
- Low, H. (2021). "Designing pipelines for synaptic marker colocalization". *Dept. of Pharmacology, UCD SOM*. doi.org/10.5281/zenodo.8174974
- Low, H. (2020). "Assessing BAI family RNA-seq enrichment in CNS malignancies". *Dept. of Pharmacology, UCD SOM*. doi.org/10.5281/zenodo.8174989
- Low, H. (2021). [JOURNAL CLUB TALK]. "SynNotch CAR-T as a treatment modality for glioblastoma". *Dept. of Pharmacology, UCD SOM*. doi.org/10.5281/zenodo.8174991
- Low, H. (2020). [JOURNAL CLUB TALK]. "Computational psychiatry and generative embedding". *Dept. of Pharmacology, UCD SOM*. doi.org/10.5281/zenodo.8174995

Relevant Service, Teaching, & Leadership Experiences

- 2023 - Present **Mentor for Machine Learning Course - DeepLearning.AI**
- 1 of 6 mentors for an online class w/ 300k+ students on ML APIs for developers
- 2022 - Present **Founder & CEO - GenomiGo, Inc.** (education technology 501(c)(3) nonprofit)
- 2020 - 2022 **Tutor - UCD Academic Assistance & Tutoring Centers** (taught R, physics, chemistry)
- 2019 - 2022 **Academic Assistant - UCD** (assist instruction in multiple undergraduate courses)

Software Development Portfolio: Community Health & Education

Punnett Farms: Instructional Game-Based Platform for Mendelian/Molecular Genetics ① - ④

- Very positively received, seeing implementation in community college/high school classes

Tranquility: Mental Health Support App with Novel Interactive Mindfulness Resources ⑤ - ⑥

- 5000+ users to-date, including usage by Placer HHS, Network of Care, & MI OCD Foundation

Additional Creations: Pain Medicine VR, Wellness Apps, and Assorted Educational Games ⑦ - ⑩

- PAW-VR (a VR therapy platform for chronic pain), *Breathe* (pandemic wellness modules), *Dash* (presented at UCSF-Microsoft event), *Synapse Surf/Chronicles/Sky Highway* (educational games)

