

Yuelai (Mollie) Feng

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RESEARCH INTERESTS

Learning and memory, spatial and temporal perception, decision making, abstraction, neural representation

EDUCATION

- September 2020 – June 2024 **University of California, Los Angeles (UCLA)**
Bachelor of Science, Computational and Systems Biology, Minor in Mathematics
- Cumulative GPA: 4.0/4.0
 - Relevant Coursework: Neuroscience (cellular, systems, molecular, developmental, cognitive, and behavioral), Mathematics (calculus, linear algebra, differential equations, modeling, networks), Neuroengineering, Systems and Signals
- September 2017 – May 2020 **Shanghai Pinghe School (China)**
International Baccalaureate Diploma Programme
- Grade: 45/45

RESEARCH EXPERIENCE

- January 2023 – Present **W. M. Keck Center for Neurophysics at UCLA**
Researcher, Advisor: Dr. Mayank Mehta
- Studying the neural mechanism of spatial perception, learning, and memory in rats
 - Constructing Neuropixels probes and performing rat craniotomy surgeries
 - Handling and training rats for experiments
 - Processing and analyzing neural signals using Python and MATLAB
 - Planning and designing a thesis research project
- March 2022 – June 2023 **Ritz Lab, UCLA Fielding School of Public Health**
Research Assistant, Principal Investigator: Dr. Beate Ritz
- Worked for the Parkinson's Environment and Genes (PEG) Project, which studies the environmental, genetic, and lifestyle risk factors of Parkinson's disease
 - Managed research database (entry, cleaning, query) using Microsoft Access
 - Conducted interviews and the Montreal Cognitive Assessment (MoCA)
 - Participated in field trips and assisted in blood sample collection
- September 2021 – August 2022 **Silva Lab, UCLA Department of Neurobiology**
Research Assistant, Principal Investigator: Dr. Alcino Silva
- Investigated the cellular mechanism of memory allocation in mice
 - Participated in mice craniotomy surgeries for infusion and Miniscope insertion
 - Collected data in conditioned taste aversion (CTA) experiments
 - Performed mice handling, training, post-operative care, and colony maintenance
 - Performed brain slicing, immunostaining, and mounting
 - Assisted in analyzing experimental data and brain images
- March 2019 – June 2020 **Zhongshan Hospital of Fudan University, Shanghai, China**
Researcher, Advisor: Dr. Chang Jiang
- Investigated the protective effect of *Apocynum venetum* leaf extract on neurons
 - Conducted literature review and participated in designing the experiment
 - Cultured PC12 cells and performed protein assays and cell viability assays
 - Analyzed experimental data and wrote a research report

PUBLICATIONS

June 2020

Feng, Y., Jiang, C., Yang, F., Chen, Z., & Li, Z. (2020). Apocynum venetum leaf extract protects against H₂O₂-induced oxidative stress by increasing autophagy in PC12 cells. *Biomedical Reports*, 13, 6.

RESEARCH PROJECTS

July 2023

Neural Correlates of Decision-Making Certainty (Neuromatch Academy)

Mentor: Dr. Jonathan Beagan

- Completed a 3-week project on the neural correlates of decision-making certainty
- Analyzed neural data from Steinmetz et al. (2019) using Python
- Evaluated behavioral proxies for decision-making certainty
- Analyzed the correlation between decision-making certainty and neural activities in selected brain regions
- Constructed a logistic regression model to decode neural activities in these regions and assessed the model's performance

February 2023 – March 2023

Frequency-Based Multilayer Brain Networks

- Completed a 4-week project based on the paper by Buldú and Porter (2018)
- Investigated the differences between Pearson correlation and mutual information in constructing frequency-based multilayer brain networks
- Processed MEG recordings from the Human Connectome Project and constructed brain networks using MATLAB
- Calculated and compared the algebraic connectivity, edge heterogeneity, and missing interlayer edges between different networks

CLUBS & ORGANIZATIONS

April 2023 – Present

In Transcription at UCLA

Media Committee Member, Column Leader

- Writing and posting articles on club events, study guides, and resources for life science students at UCLA (1k+ views)
- Leading the popular science column and posting articles on life science topics
- Taking photographs for club events

June 2020 – Present

Neureality (China)

Translator, Content Creator

- Translating (from English to Chinese) popular science writings on neuroscience, cognitive science, psychology, and philosophy (50k+ views)
- Producing educational videos on neuroscience and psychology (100k+ views)

November 2022 – June 2023

UCLA Undergraduate Science Journal

Review Board Member

- Reviewed research and review papers written by UCLA undergraduates and provided constructive feedback
- Participated in journal clubs and peer review workshops

VOLUNTEER & SOCIAL WORK

October 2023 – Present

Chrysalis (Santa Monica & Downtown LA)

Volunteer

- Assisting individuals navigating workforce barriers craft their resumés
- Conducting practice interviews with clients and provide constructive feedback

September 2022 – Present	Woof On Campus at UCLA <i>Marketing Team Member</i> <ul style="list-style-type: none"> • Encouraging college students to foster and adopt rescue animals • Designing marketing materials for fundraising events and guest speakers
September 2018 – June 2019	Bridge (Shanghai, China) <i>Co-Founder</i> <ul style="list-style-type: none"> • Co-founded the club to help senior citizens navigate modern technology • Held smartphone workshops with over 200 seniors in local communities • Compiled 3 user-friendly smartphone guidebooks for senior citizens • Posted articles and videos for raising awareness (20k+ views)

TRAINING, COURSES & CERTIFICATIONS

July 2023	Neuromatch Academy: Computational Neuroscience Course Modules: Modeling, Machine Learning, Dynamical Systems, Stochastic Processes
August 2022 – September 2022	MIT OpenCourseWare: Introduction to Neural Computation Collaborative Institutional Training Initiative (CITI) January 2023 Working with Rats in Research Settings April 2022 Human Research - Group 1: Human Subjects Research February 2022 Aseptic surgery - Lab Animal Research September 2021 Working with Mice in Research Settings UCLA Division of Laboratory Animal Medicine (DLAM) March 2023 Aseptic Techniques - Rodent February 2023 Species Specific Training - Rat October 2021 Species Specific Training - Mouse April 2022 Montreal Cognitive Assessment (MoCA) Certificate April 2021 NIDA Clinical Trials Network: Good Clinical Practice

AWARDS & HONORS

Fall 2020 – Spring 2023	UCLA Dean's Honors List (all quarters)
April 2019	USA Biology Olympiad: Silver Award
April 2018	China Thinks Big Research and Innovation Competition: Global Gold Award
March 2018	China National Brain Bee Championship: First Prize

SKILLS & HOBBIES

Programming	MATLAB, Python, R, C++
Softwares	SpikeGLX, Open Ephys, Visual Studio Code, RStudio, Xcode, Microsoft Access, Final Cut Pro X, Office Suites (Google, Microsoft, Apple)
Laboratory	Neuropixels, Rodent Craniotomy Surgery, Rodent Handling and Training, Brain Slicing and Mounting, Cell Counting, Pipetting, Database Query
Languages	English (fluent), Mandarin Chinese (native), French (beginner)
Art & Design	Photography, Video Editing, Graphic Design, Digital Illustration
Soft Skills	Problem Solving, Critical Thinking, Learning Agility, Organization, Communication
Hobbies	Tennis, Guitar, Film Photography, Calligraphy, Movies