Jesus A. Quiroz-Garcia

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EDUCATION

University of California Santa Cruz, Santa Cruz, CA **Sept. 2021-June 2025**
B.S. Biology w/Honors, GPA: 3.64/4.0, June 12th, 2025
Dean's List: (5 quarters: Winter '24 - Spring '25)

LAB RESEARCH EXPERIENCE

Undergraduate Researcher, University of California Santa Cruz, Molecular, Cell and Development Biology **Jan. 2025-Ongoing**
Research Advisor: *Dr. Jeremy Lee*

Consulted with:
Dr. Yi Zuo, MCD Biology, UC Santa Cruz
Dr. David Olson, Chemistry, UC Davis
Paige Wilson, former Junior Specialist, Ori-Mckenney Lab, UC Davis

Presented at:
UCSC's Science Day Undergraduate Research Poster Symposium

"Synaptic Plasticity in Alzheimer's Disease Research (SPAR): Characterizing the effects of psychoplastogens in an Alzheimer's disease model organism"

- Networked with PIs & former junior specialist across UC, Santa Cruz and UC, Davis to integrate interdisciplinary topics in neuroplasticity, neurodegeneration, and therapeutics to reveal mechanistic insights, further developed through literature review to synthesize a novel research question, central hypothesis, aims, and approach
- Characterized & troubleshooted behavioral effects of DOI (psychoplastogen) in *Drosophila* expressing $A\beta_{42}$ peptide via GAL4-UAS system through longevity and motor assays and optimized protocols for consistent drug dosage, controlled lab environment, and training
- Mentored 2 undergraduates in scientific inquiry, experimental design, and communication for project continuation

Undergraduate Researcher, University of California Santa Cruz, Molecular, Cell and Development Biology **April 2024-June 2025**
Research Advisor: *Dr. Jeremy Lee*
Presented at: (i) 66th Annual Drosophila Research Conference **(ii)** STEM Diversity at UCSC's 2024 Annual Summer Research Symposium

"The Effects of Mutated Amyloid Peptide Expression in a Drosophila Model of Alzheimer's Disease"

- Transformed bacteria to generate transgenic *Drosophila* expressing altered forms of Alzheimer's linked peptide, $A\beta_{42}$, for *in vivo* study via the GAL4-UAS system

- Characterized rational point modifications to altered forms of $A\beta_{42}$ through a longevity and eye development assay which revealed significant rescue in lifespan and unclear effects in eye development
- Developed a protocol to address genotype contaminations through rationalization of phenotype ratios, optimizing cleaning procedures, and hosting learning workshops
- Mentored 3 new members on lab protocols and scientific reasoning

COURSE-BASED RESEARCH EXPERIENCE

Scientific Writing (NIH R21 Mock Proposal), *Professor Zhu Wang* **Spring 2025**

"A proposal to characterize the effects of psychoplastogens in an Alzheimer's disease model organism"

- Drafted an NIH R21-style grant proposal integrating preliminary data from my independent research in Dr. Jeremy Lee's lab
- Developed specific aims, significance, innovation, approach, research design, limitations, and alternative strategies supported by figures and literature citations
- Presented my hypothesis-driven aims with experimental rationale and anticipated outcomes

Protein Engineering Course Proposal, *Professor Andy Yeh* **Winter 2025**

"Improving bio-circuits through rational mutagenesis of the Geobacter pilA-N"

- Co-modeled Geobacter pilA-N conductivity variants using PyMOL and AlphaFold; applied rational mutagenesis and directed-evolution concepts
- Co-developed an abstract, background, significance, goals, innovation, experimental approach, anticipated hurdles, and alternative approaches to apply class theory onto unresolved issues
- Co-presented findings in a mock "investment-pitch" format to simulate real-world communication and application of research

Molecular Biology Laboratory, *Professor Michael Doody* **Fall 2024**

"Generating, expressing, and purifying a recombinant GST-EGFP fusion protein"

- Constructed recombinant plasmids using pET41a(+) and EGFP insert through restriction digestion (NotI/NcoI) and ligation, followed by verification through gel electrophoresis and PCR analysis
- Expressed GST-EGFP in E. coli BL21(DE3) and verified successful fusion protein production via SDS-PAGE and anti-GFP Western blot
- Purified fusion protein through glutathione affinity chromatography; interpreted degradation and flow-through anomalies as possible linker cleavage between GST and EGFP
- Authored a full experimental report integrating reasoning, results, and interpretation, concluding that "the unknown protein is a fusion protein."

SKILLS

Molecular Biology: PCR, RT-PCR, molecular cloning, gel electrophoresis, Drosophila rearing & behavioral assays

Data & Analysis: Excel, Python (basic data handling, visualization), Benchling, BLAST, AlphaFold3

Scientific Communication: Lab & poster presentation, grant & proposal writing (NIH R21 mock grant)

Computational Tools: HTML, CSS, Javascript, Figma

Languages: English/Spanish (Native in both)

CONFERENCE & SYMPOSIUM PRESENTATIONS

Science Day Undergraduate Research Poster Symposium, *Poster Presenter* **May 2025**

"Synaptic Plasticity Alzheimer's Research, Characterizing the Effects of Serotonergic Stimulation in an $A\beta_{42}$ peptide-expressing Drosophila Model"

Wrote abstract, crafted poster, and connected with undergraduates to share the research opportunities available at UC, Santa Cruz through my independent research in the Lee lab

Genetics Society of America (66th Annual Drosophila Research Conference), *Poster Presenter* **March 2025**

"Characterizing Alzheimer's Disease in a Drosophila Model Carrying Synthetic Mutations of Amyloid Beta ($A\beta_{42}$)"

Co-wrote abstract, co-crafted poster, & co-presented Lee lab findings to *Drosophila* researchers across a five day scientific conference in San Diego

STEM Diversity at UCSC's 2024 Annual Summer Research Symposium, *Poster Presenter* **August 2024**

"Characterizing Alzheimer's in a Drosophila Model Carrying Synthetic Mutations of Amyloid $A\beta_{42}$ Plaques"

Wrote abstract, crafted poster, & presented ongoing and previous Lee lab findings in an engaging and informative presentation to supervisors and peers

LITERATURE PRESENTATIONS

Quiroz, J. "Farmer et al., 2025 – Structural-functional analyses of Huntingtin/HAP40." **May 2025**
Independent literature presentation, Lee Lab, UC Santa Cruz

Quiroz, J. "Lu et al., 2021 – Psychedelic analog restores neural circuits under stress." **Dec 2024**
Co-presented literature presentation, Lee Lab, UC Santa Cruz

PROFESSIONAL ACTIVITIES

CAMPOS, UCSC STEM Diversity Programs, *Participant* **May 2025**

Participated in a mentorship initiative connecting undocumented and first-generation STEM students with academic and professional resources to promote persistence and belonging through scientific excursions into UCSC's Natural Reserves

Summer Research Experience, UC Santa Cruz STEM Diversity Research Programs, *Participant* **July -Aug 2024**

Participated in graduate school prep workshops, networked with underrepresented STEM undergraduate researchers, and developed scientific communication skills

Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS) — UC Santa Cruz Chapter, **2024-2025**
Member & Panel Participant

Attended meetings and participated in a graduate school Q&A panel offering insights and guidance to undergraduates exploring scientific careers

Habitat Restoration Internship at Younger Lagoon Reserve **Fall 2021**

Maintained & propagated sensitive native flora while e, maintained existing restoration sites, cut back trails, and conducted ecological monitoring throughout a quarter

AWARDS & HONORS

Osterbrock Rising Graduate Fellowship ($500) **Nov 2025**

Selected as one of six UCSC undergraduates recognized for being on track to submit high-quality graduate school applications, awarded to off-set the burden fees may impose

PBSci-Dean's Diversity Travel Grant ($1000) — **March 2025**

Due to my acceptance to the STEM Diversity Research programs, I was awarded to support transportation, housing, & meal costs incurred at a conference of my choosing (66th Annual Drosophila Research Conference)

PBSci-Dean's Diversity Fund ($3600) — **Sept 2024 – June 2025**

Due to my acceptance to the STEM Diversity Research programs, I was awarded three academic quarter stipends (~$1200/per) to focus my research pursuits in Dr. Jeremy Lee's lab

The President's Experiential Learning Fellowship ($2000) — **Fall 2024, Spring 2025**

Awarded (~$1000/per) to students enrolled in courses that provided practical, hands-on experience aligned with professional goals

PBSci-Dean's Diversity Fund, Summer Research Experience ($4000) — **July-Aug 2024**

Due to my acceptance to the STEM Diversity Research programs, I was awarded a stipend to spend a summer solely focused on research pursuits in Dr. Jeremy Lee's lab

Bill Wilson Center & I AM GROUP Scholarship ($5000) — **2021**

Awarded scholarship due to participation in Family Advocacy Services (FAS) program that engaged my community to provide educational resources

QuestBridge National College Match, *Finalist* — **2021**

Selected as a finalist for the QuestBridge National College Match program, a nationwide scholarship competition offering full four-year scholarships to partner universities for high-achieving, low-income students

President's Education Award for Academic Excellence, U.S. Department of Education — **2021**

College Board AP Scholar Award — **2021**

California Seal of Biliteracy — **2021**

ALLIED (African American and Latinx Leaders in Equity Development) Student Recognition Award, Oak Grove School District — **2014, 2016**

Upper-division Coursework

Genetics ⁜ Cell Biology ⁜ Molecular Biology ⁜ Biochemistry ⁜ Neuroscience ⁜ Cancer Biology ⁜ Scientific Writing ⁜ Molecular Biology Lab ⁜ Protein Engineering ⁜ Organic Chemistry ⁜ Evolution ⁜ Anatomy ⁜ Microbiology ⁜ Human Variation/Adaptation

Pre-Collegiate STEM Engagement

Kapor Center's SMASH Academy – Stanford University, *Participant* **2017–2020**

- Selected for a no-cost, 3-year STEM program supporting underrepresented students
- Completed two residential summers on Stanford's campus and a virtual final year due to COVID-19
- Engaged in monthly year-round mentorship and workshops focused on leadership, college readiness, and applied STEM
- Collaborated with peers across SMASH sites to design a COVID-19–response app prototype in a national pitch competition, won 2nd place

Mission College – Solar Suitcase STEM Camp, *Participant* **Summer 2017 & 2018**

Built solar panel suitcase units for deployment in electricity-limited communities while engaging in workshops about renewable energy, electronics, and sustainability

Bronco Academy STEAM Camps - Cal Poly Pomona, *Participant* **Summer 2015**

Attended a week-long on-campus program for middle school students incorporating robotics and coding through "Learn by Doing" workshops

REFERENCES

Upon Request