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**EDUCATION**

**University of California, Irvine (UCI)**  **Planned June 2027**

Doctor of Philosophy in Biology

**California State University, San Bernardino (CSUSB)** **July 2022**

Master of Science in Biology   
Thesis: “*Early-Exercise Effects on Mice Tendon Remodeling*”

**California State University, Long Beach (CSULB)**   **May 2018**

Bachelor of Science in Biology Education

**East Los Angeles College (ELAC) May 2015**

Associate of Arts: Natural Sciences, and Social & Behavioral Sciences - *Honors Program Certified*

**RESEARCH EXPERIENCE**

**Dr. Manny Azizi, UCI –** [**muscle physiology & biomechanics lab**](https://azizi.bio.uci.edu/) **Aug. 2022 – Present**

Graduate Researcher

* Experimentally altered tendon materials properties using genipin to systematically characterize properties of in-series muscles
* Investigating the regional variation in tendon materials properties and how this might affect the mechanical relationship between skeletal muscles and in-series tendons
* Lead a team of undergraduate researchers investigating the effects of functional control on tendon mechanical properties by comparing the tail tendons of kangaroo rats and lab rats
* Designed a custom rig equipped with an ergometer to conduct materials testing on tendon fascicles while submerged in Ringer’s solution and a high-speed video camera to capture 2 orientations simultaneously

**Dr. Angela Horner, CSUSB –** [**functional morphology & biomechanics lab**](https://hornerlabcsusb.org/) **July 2019 – July 2022**

Graduate Researcher

* Investigated the effects of maturation and exercise on mice tendon remodeling using a mice colony artificially selected for high-voluntary wheel running behavior called [High-Runners](https://sites.google.com/ucr.edu/hrmice/home)
* Conducted a pilot study to assess the effects of different training protocols on mice tendon materials properties
* Drafted custom code in RStudio for importing, wrangling, and plotting exploratory graphs concerning mice wheel training
* Housed 2 cohorts of 60 mice consisting of normal and High-Runner linetypes, and recorded the wheel activity of 20 mice simultaneously
* Measured mice tendon morphometrics using an image processing software (ImageJ, NIH), measured forces using an ergometer and physiological data analysis software (ADInstruments LabChart), recorded high-speed videos of materials testing on tendon to visually track mechanical strain (ProCapture, XCitex), and finally, conducted data analysis using IGOR Pro
* Performed analyses using the statistical program JMP and produced data visualization using custom code in RStudio
* Collaborated with computer science researchers to design a 3D printable jump platform to quantify jump frequencies of mice in separate cages using infrared sensors and a raspberry Pi
* Wrote, revised, and completed a master’s thesis titled: "Early-Exercise Effects on Mice Tendon Remodeling"

**Dr. Sandy Kawano, CSULB –** [**Fins and Limbs Lab**](https://sandykawano.weebly.com/)

Hispanic Opportunities for Graduate Access and Retention (HOGAR) Program **Mar. 2019 – July 2019**

Post-Baccalaureate Researcher

* Improved the protocols of 2 teaching labs for Comparative Animal Physiology
* Applied an array of water temperatures to marine ectotherms to show the cardiovascular responses of animals with different physiologies
* Developed a teaching lab investigating the effects of neurotransmitters on the cardiovascular system utilizing the transparent carapace of Ghost Shrimp and affordable digital microscopes
* Conducted a literature review on the physiologies of marine ectotherms and incorporated relevant studies into the teaching lab protocols
* Collaborated with team to improve the lab activity’s readability for students
* Identified the Student Learning Outcomes, and verified that the lab activity achieved them
* Coauthored a teaching article about ectotherm physiology

Volunteer Researcher **June 2018 – Mar. 2019**

* Investigated the locomotor strategies of Spanish ribbed newts that primarily live in semi-aquatic conditions, so we may compare the differences in 3D kinematics with studies on terrestrial salamanders and better understand the water-to-land transition in vertebrate evolution
* Tracked 6 landmarks on the forelimb and pectoral girdle using XMALab and calculated joint angles, duty factor, and speed using custom code in RStudio
* Performed linear mixed model effects using RStudio to calculate statistical differences between the kinematic variables of the semi-aquatic and terrestrial salamanders

Undergraduate Research Assistant **Sep. 2017 – May 2018**

* Investigated the locomotor strategies utilized by African mudskippers for different environmental features, which then informed models for the water-to-land transition in vertebrate evolution
* Tracked 3-4 landmarks on amphibious fish using the DLTdv5 GUI in MATLAB; these landmarks were converted into 3D kinematics where we determined displacement, bending of the body, and the degree of fin protraction and retraction
* Coordinated animal husbandry and assisted with live animal care for the Dr. Kawano’s research and teaching labs
* Conducted mock peer reviews of manuscripts with 3 lab members

**Dr. Ted Stankowich, CSULB –** [**Mammal Lab**](https://www.csulb.edu/biological-sciences/mammal-lab) **June 2018 – Aug. 2018**

Volunteer Researcher

* Dissected cranial muscles from coyotes to measure the differences in biting forces of rural and urban coyotes by estimating the bite muscles of the jaws through anatomical dissections

**PUBLICATIONS**

1. **Valencia M**, Yamauchi E**U**, McGowan C, Azizi M, “Tale of two tails: material properties of kangaroo rat (*Dipodomys deserti*) and lab rat (*Rattus sp.* BNx344) tail tendon fascicles” (2025\*). *In prep\**.
2. **Valencia M**, Monroy J, Garland T, Horner A, “Exercise effects on tendon in mice selectively bred for high running” (2024\*). *In prep\**.
3. **Valencia M**, "Early-Exercise Effects on Mice Tendon Remodeling" (**2022**). *Electronic Theses, Projects, and Dissertations*. 1554. <https://scholarworks.lib.csusb.edu/etd/1554>

**U** = Undergraduate coauthor

**TEACHING EXPERIENCE**

**UCI School of Biological Sciences Sep. 2022 – Present**

Graduate Teaching Assistant

BIO SCI 100 – *Scientific Writing* (1 quarter)

* Guided discussions with students to better comprehend research hypotheses and figures

BIO SCI D170 – *Applied Human Anatomy* (4 quarter)

* Facilitated active learning strategies like jigsaw groupwork

BIO SCI E112L – *Physiology Lab* (1 quarter)

* Facilitated experiments that used BIOPAC data acquisition systems to explain physiological concepts

**CSUSB College of Natural Sciences Sep. 2019 – July 2022**

Graduate Teaching Assistant

BIOL 100 Lab – *Topics in Biology* (1 quarter)

* Tailored lectures about the scientific method and core biology concepts to the interests and applications for non-biology major undergraduates
* Guided classrooms of 24 students through exercises such as microscope slide preparation

BIOL 201 Lab – *Biology of Organisms* (1 quarter)

* Designed lectures about organismal diversity that promoted a class culture of student engagement
* Taught proper microscopy techniques including gram stains to classrooms of 24 students

BIOL 224 Lab – *Human Anatomy and Physiology II* (1 quarter)

* Produced and edited online lectures using Zoom and Camtasia
* Taught students about different organ systems (i.e. the peripheral circulatory system)

BIOL 2230 & 2240 Lab – *Human Anatomy and Physiology I & II* (4 semesters)

* Developed lectures incorporating physical and virtual models for teaching Anatomy and Physiology through a virtual classroom (i.e. AnatomyStandard.com)
* Replicated an in-person experience for students by integrating group work using tools such as zoom breakout rooms, BlackBoard discussion boards, and Google JamBoards.
* Demonstrated cat dissections while explaining musculoskeletal elements

**CSULB College of Natural Sciences Jan. 2018 – May 2018**

Laboratory Instructor’s Aide

BIOL 213 Lab – *Biology: Introduction to Ecology & Physiology* (1 semester)

* Corrected and provided feedback for quizzes
* Presented two lectures on ecology and the cardiovascular system to sophomore and juniors
* Assisted and demonstrated techniques in laboratory exercises and dissections

**PROFESSIONAL EXPERIENCE**

**Coyote Research Ambassador Aug. 2020 – May 2021**

Office of Student Research, CSUSB

* Informed undergraduate classes about college resources that help make research accessible
* Peer mentored undergraduates to help achieve their research goals (i.e. construct a research poster)
* Co-/Hosted virtual workshops to 60+ audience members about research topics such as getting involved with research, and grant proposal writing
* Developed a workshop for preparing graduate students to be successful in their graduate programs
* Hosted faculty interviews on Instagram to increase outreach to the student population
* Participated in a search committee for a new director for the Office of Student Research

**Biology and Mathematics Tutor Oct. 2018 – Oct. 2019**

Varsity Tutors, Online Platform

* Networked with parents to gain biology and mathematics students
* Organized appointments considering tutoring locations as well as students’ time restraints
* Built a strong rapport with students and parents by showing my mastery of subjects and altering my tutoring style according to the students’ needs

**Tutor Manager Oct. 2016 – May 2019**

Athletic Boosters, Christian Valley High School

* Tutored 9th through 12th grade student athletes, - predominantly from African American and Latino communities
* Organized the tutoring schedule for students, parents, and tutors
* Reinforced concepts taught in class from Algebra I to Trigonometry by modeling problem-solving techniques and helping students practice with examples
* Explained scientific concepts for classes such as Biology and Physiology

**English and Writing Tutor Jan. 2014 – Jan. 2017**

Writing Center, ELAC

* Assessed the learning performance of students and then modified the curriculum accordingly to improve their educational experiences
* Guided students with their ideas to correctly answer their prompts and fostered their confidence to attempt independent progress with their writing
* Taught grammar and writing workshops to classes up to 15 students
* Assessed co-tutors’ skills and provided constructive feedback to improve tutoring capabilities

**MENTORING & OUTREACH**

**Near-Peer Mentor, UCI July – Sep. 2024**

Integrative Movement Sciences Institute

* Mentored 4 undergraduate researchers involved with 3 independent projects
* Trained mentees on materials testing protocols including field-specific programs and equipment

**Professional Development Chair, UCI Aug. 2023 – Present**

UCI Chapter of SACNAS

* Coordinated MENTORÍA, a mentoring program designed to cultivate a sense of community among underrepresented students and empower students to reach their goals
* Connected with resource centers on campus to organize joint workshops addressing the needs of both our demographics; workshops include: Getting Involved with Research, Student Organization Panel, Applying to Graduate School, SURP Proposal Workshop, and more.

**Graduate Panel on *Origin Stories*, CSUSB Nov. 2023**

**Best Student Poster Presentation Judge, SWOB Nov. 2023**

**Graduate Research Mentor, UCI Sep. – Dec. 2023**

Transfer-to-Teaching NOYCE Scholarship Program

* Demystified research for future educators by highlighting current research in the lab
* Guiding mentees through data collection and analysis for materials testing research

**Science Writing Integrated Mentoring (SWIM) Program Sept. 2022 – Dec. 2022**

Ecology and Evolutionary Biology Department, UCI

* Guided 5 students from generating research ideas to finalizing their individual research proposals
* Revised and provided comments to improve students’ research proposal drafts

**Panel Discussion on *Students Accepted into Graduate Programs*,** **CSUSB Apr. 2021**

* Discussed the difficulties of applying to graduate programs, and shared the lessons learned throughout my master’s program and going into my PhD program

**AFSA’s Education Committee Jan. 2021 – Jan. 2023**

* Collaborated with committee in organizing and coordinating projects that increase awareness of Filipino science (i.e. Kumustahans, podcasts and Youtube series highlighting Filipino researchers)

**AFSA Mentorship Program, Online**  **Oct. 2020 – Jan. 2023**

* Shared about our Filipino identities as well as career & personal goals
* Identified application requirements for fellowships and graduate schools in the Philippines
* Coordinated 2nd-to-present iterations of program by collaborating with team about mentor-mentee pairs and organizing guest speakers for skill-building workshops

**National Biomechanics Day at CSULB**  **Apr. 2019**

* Coordinated with the movement science and robotics labs to introduce students to biomechanics
* Engaged students in a biomechanics activity on lever systems using vertebrate skeletons
* Emphasized the overlapping areas of biorobotics, human and animal biomechanics

**Jordan High School visit at CSULB**  **Nov. 2018**

* Presented ongoing research projects in Dr. Sandy Kawano’s lab to high school seniors
* Engaged students in a biomechanics activity on lever systems using vertebrate skeletons
* Informed groups about applications of biomechanics research to the medical field

**GRANTS, AWARDS, AND FELLOWSHIPS**

Integrative Movement Sciences-Summer Research Institute (**$500**) **Sep. 2024**

UCI Ecology and Evolutionary Biology Travel Award (**$500**) **July 2024**

GAANN Research Funds (**$3000**) **June 2024**

GAANN Fellowship (**$8631**) **June 2024**

UCI Associated Graduate Students Travel Award (**$250**) **Aug. 2023**

UCI DTEI Graduate Scholars Program (**$5000**) **June 2023**

UCI Ecology and Evolutionary Biology Travel Award (**$500**) **May 2023**

UCI EEB Department nomination for Faculty Mentor Fellowship **Mar. 2023, 2024**

UCI Ecology and Evolutionary Biology: SWIM Mentorship (**$500**) **Dec. 2022**

CSUSB College of Natural Sciences: Outstanding Graduate Student Award **May 2022**

CSUSB Office of Student Research: Student Travel Award (**$819.90**) **Jan. 2022**

SICB Broadening Participation Travel Award (**$300**) **Jan. 2022**

Integrative Movement Sciences-Summer Research Institute (**$2000**) **Jul. 2021**

Outstanding Graduate Student Researcher (**$500**) **Apr. 2021**

Office of Student Research: Research Supplies Grant (**$1000**) **Mar. 2020**

SICB Charlotte Mangum Travel Award (**$75** x2) **Jan. 2019, 2020**

SICB Broadening Participation Travel Award (**$500** x2) **Jan. 2019, 2020**

**Cumulative funds – $24,650.90**

**\*funds awarded to undergraduate students whom I provided application revisions\***

UCI UROP Summer Undergraduate Research Program (**$1500** x2) **June 2024**

UCI UROP Travel Award (**$1000**) **Dec. 2023**

UCI UROP Research Experience Fellowship (**$1000**) **Dec. 2023**

UCI UROP Summer Undergraduate Research Program (**$1500** x2) **June 2023**

CSUSB Undergraduate Summer Research Program (**$2800** x3) **June 2021**

**Cumulative funds – $13,600**

**PROFESSIONAL AFFILIATIONS**

**Society for the Advancement of Biology Education Research (SABER) Jan. 2024 – Present**

*Attended SABER West Conference in January 2024*

**American Physiological Society (APS)** **Dec. 2022 – Present**

*Attended National American Physiology Summit Conference in April 2023*

**Society of Integrative and Comparative Biology (SICB)** **Nov. 2017 – Present**

*Attended National SICB Conference in January 2018-2020, 2022-2024*

*Attended Southwest Regional Meetings of Organismal Biologists (SWOB) in November 2018, 2023*

**Association of Filipino Scientists in America (AFSA)** **Oct. 2020 – Present**

**Society for Advancement of Chicanos/Hispanics and Native Americans in Science  
(SACNAS) Aug. 2021 – Present**

**INVITED TALKS AND GUEST LECTURES**

**Guest Lectures**

UCI D170 – Applied Human Anatomy

*Heart Structures and Blood Flow* **May 2023**

* PowerPoint lecture incorporated with think-pair-share group activities

*Muscles and Joints* **May 2023**

* Short lecture followed by groupwork to understand how muscles act on joints

CSUSB Biology 4240 – Animal Physiology

*Tendons* **Nov. 2021**

* PowerPoint presentation explaining tendon anatomy & physiology and my master’s research

**Invited Talks**

CSUSB Office of Student Research Undergraduate Summer Research Program  **July 2021**

* Opening talk sharing my academic journey with undergraduate researchers followed by a Q&A

**ABSTRACTS AND PRESENTATIONS**

**American Association for the Advancement of Science, Pacific Division**

* Talk: “A tale of two tails: material properties of kangaroo rat and lab rat tendons” **June 2024**

**Winter Ecology and Evolutionary Biology Graduate Student Symposium**

* Talk: “Regional variation in tendon fascicle properties.” **Mar. 2024**

**SICB National Meeting**

* Talk: “Regional variation in tendon fascicle properties” **Jan. 2024**
* Talk:“Effects of wheel training intensity on tendon mechanics” **Jan. 2023**
* Talk (online): **Jan. 2022**  
  “Jumping ahead of aging: exercise effects on early life mice tendon remodeling”
* Poster: **Jan. 2020**  
  “The effects of different exercise regimens on tendon remodeling in mice (*Mus musculus)*”
* Poster: “Comparative kinematics of the forelimb during **Jan. 2019**  
  terrestrial locomotion in semi-aquatic versus terrestrial salamanders”

**SICB Regional Meeting, SWOB**

* Poster: “Biomechanical comparisons of forelimb **Nov. 2018**  
  function in walking semi-aquatic and terrestrial salamanders”

**APS National Meeting Apr. 2023**

* Poster: “Wheel running intensity effects on mice tendon mechanics.”

**Society of Experimental Biology Virtual Conference July 2021**

* Talk: “Quantification of Jump Activity in Rodent Home Cages Using Wireless IR Sensors”

**CSUSB Student Research Competition - 1st place in Bio. and Agricultural Sciences Feb. 2021**

* Talk: “Exercise training to increase stress?”

**CSUSB Meeting of the Minds,** San Bernardino, California **May 2020**

* Talk: “Exercise training to increase stress?”

**PROFESSIONAL TRAINING**

**Inclusive Mentoring Certificate – Integrative Movement Sciences Institute Sep. 2024**

* Learned about navigating mentoring relationships considering mental health, mentee understanding, healthy boundaries, and more.

**Graduate Leadership – Course 203B Jan. – Mar. 2024**

* Co-organized the Winter Ecology and Evolutionary Biology Graduate Student Symposium where students from the department present oral and poster presentations of their research
* Collaborated on future departmental projects addressing department culture, program requirements, improvements to graduate courses, and more

**Using Classroom Observation Protocol Data to Document Professional Growth in your Teaching**

**SABER West Workshop Jan. 2024**

* Learned about the Classroom Observation Protocol for Undergraduate STEM (COPUS) to characterize how faculty and students are spending their time in the classroom
* Practiced using COPUS method to quantify and evaluate teaching practices

**Certificate in Mentoring Excellence – UCI Graduate Division Nov. 2023**

* Learned about effective mentoring practices including topics covering mentoring philosophies, identity salience, conflict resolution, and resilience.

**Certificate in Inclusive Course Design**

**UCI Division of Teaching Excellence and Innovation Aug. 2023**

* Assisted in converting a 300+ student class from an in-person to hybrid format
* Discussed how to incorporate specifications grading into a course design

**Certificate of Teaching Excellence**

**UCI Division of Teaching Excellence and Innovation May 2023**

* Applied pedagogy approaches taught in University studies 390X within a classroom setting
* Observed 3 classes and provided constructive feedback for the presenters, and vice versa 3 times

**Intro to Higher Ed Research Workshop Series**

**UCI Division of Teaching Excellence and Innovation Jan. – Mar. 2023**

* Learned about qualitative and quantitative approaches to address pedagogical questions
* Developed a comprehensive plan to study how reducing prerequisites affect pre-nursing student success in Anatomy and Physiology courses at CSUSB

**University Studies 390X: Developing Pedagogy – UCI Aug. – Dec. 2022**

* Learned about a variety of teaching topics including active learning, promoting inclusivity and accessibility, assessment types and selection, instructional technologies, and more
* Applied pedagogical approaches within simulated classes and discussed feedback from observers
* Designed a course syllabus for Anatomy and Physiology

**Integrative Movement Sciences – UCI Summer Research Institute July 2021**

* Collaborated with interdisciplinary scientists tackling biomechanical questions from different organizational scales
* Addressed how optimal control modeling could predict locomotor strategies of kangaroo rats competing for food resources

**Issues-X Online Teaching Workshop – CSUSB July 2020**

* Practiced applying computer applications for implementing group activities in a virtual setting   
  (i.e. Google JamBoards)
* Learned different ways to encourage and maintain student engagement (i.e. Breakout rooms)

**Broadening Participation Meeting Mentorship Program – SICB Jan. 2018 – 2020, 2022**

* Acknowledged academic weaknesses with mentor and discussed exercises to strengthen them
* Coordinated meetings with students and faculty from potential labs for graduate school
* Discussed plans for success such as applying for the NSF Graduate Research Fellowship Program

**SKILLS & ABILITIES**

* Intermediate experience with RStudio to manipulate data (package: tidyverse), conduct statistics (i.e., linear regressions and ANCOVAs), and graph results (package: ggplot2)
* Intermediate experience with quantifying animal movements using XMALab and DLTdv5 in MATLAB
* Intermediate experience with quantifying materials properties using LabChart8, ProAnalyst, and IGOR