Miles Valencia

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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
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

Graduate Researcher **July 2019 – July 2022**
Dr. Manny Azizi's Lab, UCI

- Designed an apparatus to conduct materials testing on tendon fascicles with 2 orientations visible while keeping fascicles submerged in Ringer's solution

Graduate Researcher **July 2019 – July 2022**
Dr. Angela Horner's Lab, CSUSB

- Conducted a pilot study on mice tendons by subjecting mice to different exercise treatments and comparing their mechanical properties
- Measured the mice tendon morphometrics using an image processing software (ImageJ, NIH) and calculated their mechanical properties using a servomotor and physiological data analysis software (ADInstruments LabChart)
- Performed analyses using the statistical program JMP and produced data visualization using custom code in RStudio
- 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 that has been artificially selected for high voluntary wheel running, and recorded the wheel activity of 20 mice simultaneously
- 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
- Recorded high-speed videography of materials testing on tendon to visually track mechanical strain
- Wrote, revised, and completed a master's thesis titled: "Early-Exercise Effects on Mice Tendon Remodeling"

Post-Baccalaureate Researcher **Mar. 2019 – July 2019**
Hispanic Opportunities for Graduate Access and Retention (HOGAR) Program
Dr. Sandy Kawano's Lab, CSULB

- Applied an array of water temperatures to marine ectotherms to show the cardiovascular responses of animals with different physiologies
- Troubleshot the protocol of teaching labs for Comparative Animal Physiology
- Read into the physiology of marine ectotherms and edited the background literature to include relevant and recent research
- 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**

Dr. Sandy Kawano's Lab, CSULB

- 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

Volunteer Researcher **June 2018 – Aug. 2018**

Dr. Ted Stankowich's Lab, CSULB

- Assisted a graduate student dissect 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

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

Dr. Sandy Kawano's Lab, CSULB

- Tracked 3-4 landmarks on amphibious fish using the DLTdv5 GUI in MATLAB; these landmarks are converted into 3D kinematics where we can determine displacement, bending of the body, and the degree of fin protraction and retraction
- With the 3D kinematics, we can better understand the performance of different locomotive strategies utilized by African mudskippers
- Applied techniques in biomechanics and functional morphology to quantify how the terrestrial locomotion of amphibious mudskipper fishes changes as they move along a sloped substrate.
- Understanding the locomotor strategies utilized by mudskippers for different environmental features helps modeling the water-to-land transition in vertebrate evolution because fishes and tetrapods likely needed to move up inclined shorelines to move onto land
- Helped coordinate animal husbandry protocol and then assisted with live animal care for the Principal Investigator's research and teaching labs
- Collaborated with 3 lab members in mock peer reviews of manuscripts

PUBLICATIONS

Valencia, Miles, "Early-Exercise Effects on Mice Tendon Remodeling" (**2022**). *Electronic Theses, Projects, and Dissertations*. 1554. https://scholarworks.lib.csusb.edu/etd/1554

PROFESSIONAL EXPERIENCE

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

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

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- 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, Cerritos, California

- 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, Monterey Park, California

- 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

TEACHING EXPERIENCE

Graduate Teaching Assistant **Sep. 2022 – Present**
School of Biological Sciences
University of California, Irvine
BIO SCI 100 – Scientific Writing (1 quarter)

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

BIO SCI D170 – Applied Human Anatomy (2 quarter)

- Facilitated active learning strategies like jigsaw groupwork

Graduate Teaching Assistant **Sep. 2019 – July 2022**
College of Natural Sciences
California State University, San Bernardino
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

Laboratory Instructor's Aide **Jan. 2018 – May 2018**
College of Natural Sciences
California State University, Long Beach
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

GRANTS, AWARDS, AND FELLOWSHIPS

UCI DTEI Graduate Scholars Program (**$5000**)	**June 2023**
UCI Ecology and Evolutionary Biology Travel Award (**$500**)	**May 2023**
Ecology and Evolutionary Biology: SWIM Mentorship (**$500**)	**Dec. 2022**
College of Natural Sciences: Outstanding Graduate Student Award	**May 2022**
Office of Student Research: Student Travel Award (**$819.90**)	**Jan. 2022**
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**
Broadening Participation Travel Award (**$500**)	**Jan. 2019, 2020**

Cumulative funds – $11,119.90

PROFESSIONAL AFFILIATIONS

American Physiological Society **Dec. 2022 – Present**
Attending National American Physiology Summit (APS) Conference in April 2023
Society of Integrative and Comparative Biology (SICB) **Nov. 2017 – Present**
Attended National SICB Conference in January 2018-2020, 2022
Attended Southwest Regional Meetings of Organismal Biologists (SWOB) in November 2018
Association of Filipino Scientists in America (AFSA) **Oct. 2020 – Present**
Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) **Aug. 2021 – Aug. 2022**

INVITED TALKS AND GUEST LECTURES

Guest Lecture: UCI D170 – Heart Structures and Blood Flow **May 2023**

- Planning to incorporate a PowerPoint lecture with think-pair-share group activities

Guest Lecture: UCI D170 – Muscles and Joints **May 2023**

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

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

Guest Lecture: CSUSB Biology 4240 – Animal Physiology **Nov. 2021**

- PowerPoint presentation explaining tendon anatomy & physiology and my master's research

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ABSTRACTS AND PRESENTATIONS

APS National Meeting **Apr. 2023**
- Poster: "Wheel running intensity effects on mice tendon mechanics."

SICB National Meeting **Jan. 2023**
- PowerPoint: "Effects of wheel training intensity on tendon mechanics"

SICB National Meeting, Online **Jan. 2022**
- PowerPoint: "Jumping ahead of aging: exercise effects on early life mice tendon remodeling"

Society of Experimental Biology Virtual Conference **July 2021**
- PowerPoint: "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**
- PowerPoint: "Exercise training to increase stress?"

CSUSB Meeting of the Minds, San Bernardino, California **May 2020**
- PowerPoint: "Exercise training to increase stress?"

SICB National Meeting, Austin, Texas **Jan. 2020**
- Poster: "The effects of different exercise regimens on tendon remodeling in mice (*Mus musculus)*"

SICB National Meeting, Tampa, Florida **Jan. 2019**
- Poster: "Comparative kinematics of the forelimb during terrestrial locomotion in semi-aquatic versus terrestrial salamanders"

SWOB, San Marcos, California **Nov. 2018**
- Poster: "Biomechanical comparisons of forelimb function in walking semi-aquatic and terrestrial salamanders"

PUBLIC OUTREACH

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 – Present**
- 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

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PROFESSIONAL TRAINING

Certificate of Teaching Excellence – Division of Teaching Excellence and Innovation
University of California, Irvine **June 2023**

- Will apply pedagogy approaches taught in University studies 390X within a classroom setting
- Will observe 3 classes and provide constructive feedback for the presenters, and vice versa 3 times

Intro to Higher Ed Research – Division of Teaching Excellence and Innovation
University of California, Irvine **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

Developing Pedagogy – University Studies 390X
University of California, Irvine **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 – Summer Research Institute,
University of California, Irvine **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