

Nemo “Nim” Valentin Robles

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EDUCATION

Stanford University, Ph.D. in Biology 2023 – Present

Brown University, B.Sc. in Geology-Biology, Honors 2018 – 2022

University of Exeter January – May 2022

Courses: Wildlife Disease, Biology of Aquatic Vertebrates, Marine Ecology, Symbiosis in Marine Systems

RESEARCH EXPERIENCE

Schumer Lab, Stanford University July 2023 – Present

Advisor: Dr. Molly Schumer

- Study the evolution and mechanisms of post-fertilization maternal nutrient provisioning (matrotrophy) in *Xiphophorus malinche*, particularly (1) how matrotrophy varies with environmental conditions and throughout development, and (2) establishing whether matrotrophy also occurs in other *Xiphophorus*.
- Study how defective cardiac function and morphology, due to a mito-nuclear incompatibility only present in hybrid offspring of *X. malinche* and *X. birchmanni*, differentially impacts survival in lab-reared and wild-caught fish.
- Study whether the mechanisms underpinning malignant melanoma in different *Xiphophorus* hybrids (*X. malinche* x *X. birchmanni*, *X. cortezi* x *X. birchmanni*, and *X. xiphidium* x *X. couchianus*) are shared and whether fitness impacts differ among hybrid crosses.

USGS Alaska Science Center June 2022 – April 2023

Supervisor: Kim Kloecker, George Esslinger

- Processed boat survey data and evaluated population trends from Alaskan national parks. Compared findings from boat surveys to aerial population estimates to assess accuracy and reproducibility.
- Managing and collating aerial survey data using ArcMap through quality assurance/control and metadata creation.
- Collected and entered foraging data (scan samples and foraging bouts) from Cook Inlet. Traveled from Anchorage to Homer, AK and observed otter foraging using binoculars from shore.
- Sorted and measured mussel cores, for Alaska Gulfwatch, the Alaska Science Center’s long-term monitoring program in southcentral Alaska. Removed teeth from sea otter skulls for age analysis and prepared skulls for submission to the University of Alaska, Museum of the North.

Witman Lab, Brown University June 2019 – May 2022

Advisor: Dr. Jon Witman and Dr. Tim Herbert

- Honors thesis: *Demographic modeling of an invasive coral species in the Galapagos Islands*. Quantified the vital rates and population growth parameters of *Tubastrea coccinea* over time to determine the population’s rate of increase, estimate parameters for a stable population, and predict population size 10 and 20 years in the future.
- Assessed videos and photos to assess barnacle recruitment over time and record reef fish interactions such as herbivory, cleaning, and predation.
- Promoted outreach efforts by designing and producing animations centering marine community ecology and the El Nino Southern Oscillation (ENSO).

Marine Biological Laboratory June 2021 – August 2021

Advisor: Dr. Javier Lloret

- Processed 20+ years of field surveys, aerial images, and ground truth measurements to examine long-term change in salt marsh vegetation in response to nutrient enrichment and sea level rise.
- Digitized vegetation cover of plots in Great Sippewissett Marsh using qGIS.

Smithsonian National Museum of Natural History

May 2019 – August 2019

Advisor: Dr. Karen Osborn

- Developed 3D models of neural and optical systems in Hyperiid amphipod specimens using Amira.
- Encouraged museum visitors to engage with invertebrate zoology research during *International Polychaete Day* and *Expert Is In* by handling living or preserved specimens and through animations.

PUBLICATIONS

BioRxiv

June 2025

Admixture mapping reveals evidence for multiple mitonuclear incompatibilities in swordtail fish hybrids; <https://doi.org/10.1101/2025.01.30.635158>; Robles et. al. 2025.

EcoEvoRxiv

April 2025

The molecular evolutionary basis of species formation revisited; <https://doi.org/10.32942/X2CP9B>; Frayer, Robles...et. al. 2025.

BioRxiv

May 2024

Recent evolution of large offspring size and post-fertilization nutrient provisioning in swordtails; <https://doi.org/10.1101/2023.12.15.571831>; Payne et. al. 2024.

POSTERS

Evolution

July 2024

Exploring recent evolution of matrotrophy in swordtails (Xiphophorus)

Society for Molecular Biology and Evolution

July 2024

Exploring recent evolution of matrotrophy in swordtails (Xiphophorus)

Sea Otter Conservation Workshop XIII, Seattle Aquarium

March 2023

Assessing trend and status in sea otter populations through boat-based and aerial surveys

The Society of Integrative and Comparative Biology

January 2022

Combined effects of nutrient enrichment and sea level rise on salt marsh vegetation

American Geophysical Union

December 2021

Combined effects of nutrient enrichment and sea level rise on salt marsh vegetation

The Society of Integrative and Comparative Biology

January 2020

Visualizing deep-sea eye adaptations using micro-CT 3D reconstructions

Course-based Undergraduate Research Experiences (CURE) Research Symposium December 2019

The effects of Ziram at ecologically relevant levels on dopamine-related genes in Zebrafish

TEACHING EXPERIENCE

Genetics, Ethics, and Society

Spring 2025

Guest Lecturer

- Taught a guest lecture on CRISPR to approximately 20 students in a graduate course.

Genetics

Graduate Teaching Assistant

Winter 2025

- Hosted weekly sections reviewing lecture material and guided students through additional practice problems.
- Assisted in developing assignments, exams, and evaluated student performance.

Evolution

Winter 2024

Graduate Teaching Assistant

- Hosted weekly sections reviewing lecture material and guided students through additional practice problems.
- Assisted in developing assignments, exams, and evaluated student performance.

Mars, Moon, and Earth

Fall 2021

Undergraduate Teaching Assistant

- Hosted office hours to assist students in completing and/or reviewing assignments.
- Evaluated student performance and adjusted assignment and class activities accordingly.

Principles of Ecology

Spring and Summer 2021

Head Teaching Assistant

- Hosted weekly discussions of primary literature and evaluated student performance.
- Organized instructional activities and facilitated student faculty communication.

Cell and Molecular Biology

Spring and Summer 2021

Undergraduate Teaching Assistant

- Reviewed lecture material using Kahoot and other instructional activities to increase student understanding and engagement.

ACADEMIC ACTIVITIES

Centro de Investigaciones Científicas de las Huastecas "Aguazarca" (CICHAZ)

Outreach Student Lead

Fall 2023-Present

- Co-led an ecology & evolution workshop for 10th grade students in the nursing track at the Colegio de Estudios Científicos y Tecnológicos del Estado de Hidalgo in Calnali, MX.
- Co-led a one-week intensive genetics course for Clubes de Ciencias Mexico at the Universidad Veracruzana aimed at high school and early undergraduate students in Xalapa, MX.

Biology Preview Program (BPP)

Organizer

Summer 2024-Present

- Co-leader of Mentorship Committee. Evaluated BPP participant applications, matched BPP participants with current Stanford PhD student mentors, and helped create graduate application resources and mentorship resources.

Mentor

- Facilitated the graduate application process, connected them with faculty, and provided mentee with personalized guidance on application materials and interview preparation.

Stanford at The Tech

Intern

Spring 2025 – Fall 2026

- Led 2-hr workshops at the Tech Interactive in San Jose, CA for low-income, underrepresented students. Workshops included DNA extractions, gel electrophoresis, cell imaging, sustainable fishing, ancient DNA, and PTA taste tests.
- Wrote general science articles in response to visitor questions through the Ask-a-Geneticist blog.
 - [Humans vs birds: who is evolving more rapidly?](#)
 - [Beyond A, B, O: why is our blood type positive or negative?](#)

Building Up Developing Scientists (BioBUDS)

Volunteer

Fall 2023 – Present

- Led small group discussion (rotated with several student groups) regarding personal experience in choosing a major, finding a field, choosing to pursue a graduate degree, finding a lab, research experience, how/why research interests develop.

Society for Advancement of Chicanos/Hispanics and Native American in Science (SACNAS)

Councilor

Fall 2019 – Fall 2021

- Led workshops, bonding events, and networking sessions for underrepresented students in STEM.
- Aided board members with group management, funding, and intercampus communication.

Swearer Tutoring Enrichment in Math and Science (STEMS)

Tutor

Winter 2019 – Spring 2020

- Tutored students in math, science, and English.
- Assisted in special needs education courses.
- Led student exercises and encouraged student engagement with new instructional material.

SKILLS

Fluent in Spanish

Computer: ArcGIS, ArcGIS Pro, QGIS, Excel, R, SPSS, JMP

Lab: PCR, qPCR, DNA extraction, Bacterial culture

HONORS AND AWARDS

Gilliam Fellows Program, Howard Hughes Medical Institute	2025
Graduate Research Excellence Grant (GREG) R.C. Lewontin Early Award, Society for the Study of Evolution	2025
Excellence in Teaching Award, Stanford University	2024
Graduate Research Fellowship Program, National Science Foundation	2024
Irene L. Brown Fund Award, Stanford University	2024
Biology Ecology and Evolution Travel Fund Award, Stanford University	2024
Special Thanks for Achievement (STAR) Award, Alaska Science Center	2022
Elected Associate Member, Sigma Xi Research Honor Society	2022
Charlotte Mangum Support Award, Society for Integrative and Comparative Biology	2022, 2020
American Geophysical Union Fall Meeting Student Travel Grant	2021
BIO REU Travel Grant, Rocky Mountain Biological Laboratory	2021
Hispanic Scholarship Fund (HSF) Scholar	2020, 2018
Sidney E. Frank Scholar	2018-2022
QuestBridge Scholar	2017-2022