

CHRISTOPHER AHN

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Summary

Second-year Biological Engineering student with hands-on experience in experimental design, data analytics (R), and histological techniques, seeking an internship in Quality Control, Analytical Development, or Supply Chain Management at a cell and gene therapy CDMO. Independent research on the physiological effects of acoustic stressors on marine organisms involved statistical modeling, assay development, and biological systems analysis—reinforcing principles of data integrity, reproducibility, and process control. Field-based research with the Pacific Whale Foundation and Hawaii Wildlife Fund provided experience in biomonitoring, sample handling, and environmental data management under dynamic conditions. Participated in advanced science programs at Harvard Summer School, UH Mānoa, Hurricane Island, and Earthwatch Institute, gaining exposure to molecular biology, bioinstrumentation, and coordinated research logistics. Brings a systems-level understanding of biology and a commitment to precision, operational rigor, and cross-functional collaboration in support of CGT innovation and manufacturing excellence.

Experience

Independent Research - The Effect of Anthropogenic Noise on the Predator-Prey Responses of Minnows

Phillips Academy|Andover, MA

June 2020 – Current

Designed and conducted a controlled behavioral study to evaluate how marine noise pollution (MNP) impacts anti-predator responses in *Pimephales promelas* (rosy red minnows) under varying stress conditions, including predation chemical cues and shoal size. Used sheltering and emergence assays to assess flight response and boldness in response to a 2kHz sinusoidal wave simulating anthropogenic noise.

Key findings showed that MNP reduces both responsiveness and boldness in minnows, especially when isolated or exposed to additional predator stress. While shoaling offered a temporary protective effect, its benefits diminished under combined stressors, indicating MNP's compounding threat to survival behaviors. The research contributes to the growing body of evidence supporting the regulation of ocean noise to restore and protect vulnerable marine populations.

In support of this project, I independently built and maintained a functional **cell and molecular biology lab in my basement**, equipping it with **environmental controls and HEPA filtration** to ensure clean, reproducible conditions. This setup enabled safe experimentation with live specimens and chemical cues under lab-like standards of containment and cleanliness.

Skills Acquired:

- Experimental design and variable control
- Behavioral assay execution (sheltering/emergence)
- Statistical analysis using Student's T-test ($\alpha = 0.05$)
- Environmental chamber setup and filtration system implementation
- Laboratory self-management and protocol adherence
- Quantitative data collection, analysis, and synthesis
- Scientific writing and literature-based justification of methodology

This experience demonstrated not only scientific rigor and creativity, but also a high degree of initiative, technical precision, and independent lab operation—skills directly applicable to roles in quality control, analytical development, and regulated biomanufacturing environments.

Pacific Whale Foundation | Maui, Hawai'i

Coastal Marine Debris Program Volunteer | June–August 2021

Volunteered with the Pacific Whale Foundation's science-based marine conservation initiative focused on mitigating ocean stressors through community-based action and data-driven strategies. Contributed to fieldwork efforts aimed at reducing marine debris through organized shoreline cleanups, public education, and waste stream analysis.

Collected, sorted, and cataloged marine debris from coastal zones across Maui, helping build datasets used to track pollution patterns, identify high-impact debris types, and inform targeted conservation strategies. Assisted in environmental surveys that supported the Foundation's mission to protect marine life through evidence-based policy and habitat restoration initiatives.

Skills Acquired:

- Field data collection and standardized environmental sampling
- Data logging and classification of anthropogenic marine debris
- Exposure to community science and public outreach methods
- Team collaboration in field logistics and conservation education
- Application of research to real-world ecosystem protection efforts

This experience strengthened my ability to work within mission-driven, data-centered field programs and provided direct insight into how applied environmental science can shape policy and guide resource allocation—skills increasingly relevant to sustainability-focused biotech, QC environmental monitoring, and regulatory compliance roles.

U.S. Fish and Wildlife Service & Hawai'i Wildlife Fund | *Maui, Hawai'i*

Dawn Nest Patrol Volunteer – Sea Turtle Recovery Project | *June–August 2021*

Volunteered with the Hawai'i Wildlife Fund's Sea Turtle Recovery Project in collaboration with the U.S. Fish and Wildlife Service to help monitor, protect, and restore critical nesting habitats for endangered Hawaiian green sea turtles (*Chelonia mydas*). Participated in early morning patrols along nesting beaches to collect data, identify nest activity, and document environmental conditions impacting reproductive success.

Conducted nest surveys, marked and monitored active nesting sites, and assisted with recording hatchling emergence data. Supported conservation research by contributing to longitudinal datasets used to inform habitat protection policies and species recovery efforts.

Skills Acquired:

- Field survey techniques and environmental data logging
- Species tracking and behavioral observation under time-sensitive conditions
- GIS-based location marking and nest monitoring procedures
- Hands-on experience in endangered species conservation protocols
- Adherence to wildlife protection regulations and ethical field practices

This experience deepened my commitment to conservation biology and enhanced my precision, observational acuity, and familiarity with protocol-driven fieldwork—transferable skills for environmental QC, biosurveillance, and data integrity roles in biotech and regulated lab environments.

Education and Training

Cornell University | Ithaca, NY

September 2023 – Current

- GPA: 3.5
- College of Agricultural and Life Sciences
- Major: Biological Engineering
- Coursework: biology (physiology, investigative biology), chemistry (general chemistry, organic chemistry), physics (general physics, electromagnetism), math (calculus, differential equations, linear algebra).

Phillips Academy | Andover, MA

September 2018 – June 2022

- AP Calculus
- Head of Poongmul (Korean Traditional Drumming) club
- Head of Ocean Ecology club
- Chemistry peer tutor
- Percussionist for Andover orchestra and concert bands

Harvard Summer School | Cambridge, MA

BIOS S-74: Marine Life and Ecosystems of the Sea | *Summer 2021*

Completed an intensive, interdisciplinary course focused on the biology, chemistry, and physics of marine ecosystems. Explored the life histories, adaptations, and interactions of marine organisms from molecular to ecosystem levels, with an emphasis on how climate change, pollution, habitat fragmentation, and human activity impact oceanic resilience and biodiversity.

Developed practical skills in scientific research design, field-based data collection, and quantitative analysis of ecological trends. Applied core principles of marine biology to examine recruitment dynamics, trophic relationships, population genetics, and ecosystem stability. Strengthened abilities in literature review, hypothesis testing, collaborative fieldwork, and presenting scientific findings in both written and oral formats. Gained experience synthesizing complex environmental data to evaluate ecosystem health and inform sustainable resource management strategies.

This experience laid a strong foundation in systems biology, environmental data interpretation, and ecological risk assessment.

UH Mānoa Marine Science Investigations (Hawai'i Institute of Marine Biology) | *Moku o Lo'e (Coconut Island), O'ahu*

Field Research Participant | *Summer 2021*

Selected to participate in a competitive, week-long immersive research program hosted by the University of Hawai'i at Mānoa's School of Ocean and Earth Science and Technology. Conducted hands-on marine fieldwork at the Hawai'i Institute of Marine Biology on Moku o Lo'e, focusing on ecological monitoring, data collection, and species identification in a live reef environment.

Gained practical experience in core field research methods, including transect surveys, water quality testing, species population counts, and coral health assessments. Learned to handle scientific instrumentation and sampling tools in challenging marine conditions, enhancing adaptability and attention to procedural detail. Strengthened skills in field-based data analysis, collaborative problem-solving, and scientific documentation under real-time environmental conditions.

This experience sharpened my ability to work effectively in dynamic, team-based research environments and deepened my appreciation for protocol-driven science.

Hurricane Island Center for Science and Leadership | *Vinalhaven, ME*

Field Researcher & Student Participant | *Summer 2019*

Engaged in an immersive marine science and leadership program designed to integrate scientific inquiry with field-based environmental research. Collaborated with peers and mentors to explore marine ecosystems through hands-on research and aquaculture projects, focusing on the application of the scientific method in real-world ecological contexts.

Developed leadership and team coordination skills while conducting field investigations of marine debris, intertidal biodiversity, and oceanographic conditions. Utilized various sampling techniques to collect and analyze oceanographic and biological data both onshore and at sea, including plankton tows, water quality monitoring, and substrate sampling. Participated in lobster trap hauling and aquaculture site evaluations, gaining insight into sustainable fisheries and the socioeconomic dimensions of marine resource management.

This experience enhanced my ability to formulate research questions, execute field protocols, and synthesize environmental data in collaborative, fast-paced settings.

Earthwatch Institute: Marine Mammals and Predators | *Golfo Dulce, Costa Rica*

Field Research Assistant | *Summer 2019*

Participated in a conservation-focused field research expedition in collaboration with marine biologists studying cetaceans and apex predators in one of the world's few tropical fjords. Supported data-driven efforts to identify biologically significant habitats for bottlenose and pantropical spotted dolphins, estimate population sizes and social structure, and evaluate the ecological role of marine predators within Golfo Dulce.

Assisted with systematic boat-based surveys and photo-identification (photo-ID) techniques to track individual dolphins, record behavioral patterns, and map spatial distribution relative to anthropogenic threats such as boat traffic and fishing pressure. Collected and logged environmental parameters including sea surface temperature, salinity, and turbidity using handheld instrumentation. Contributed to shark population studies through baited remote underwater video surveys (BRUVS) and net trawling, helping assess biodiversity and species abundance across various trophic levels.

This fieldwork refined my skills in species identification, GPS-based habitat mapping, behavioral observation, and field data recording under variable marine conditions. The experience also fostered an understanding of conservation research methodologies and strengthened my ability to follow rigorous protocols in support of long-term ecological monitoring—foundational skills that translate directly to quality documentation, sampling precision, and analytical accuracy in regulated environments.