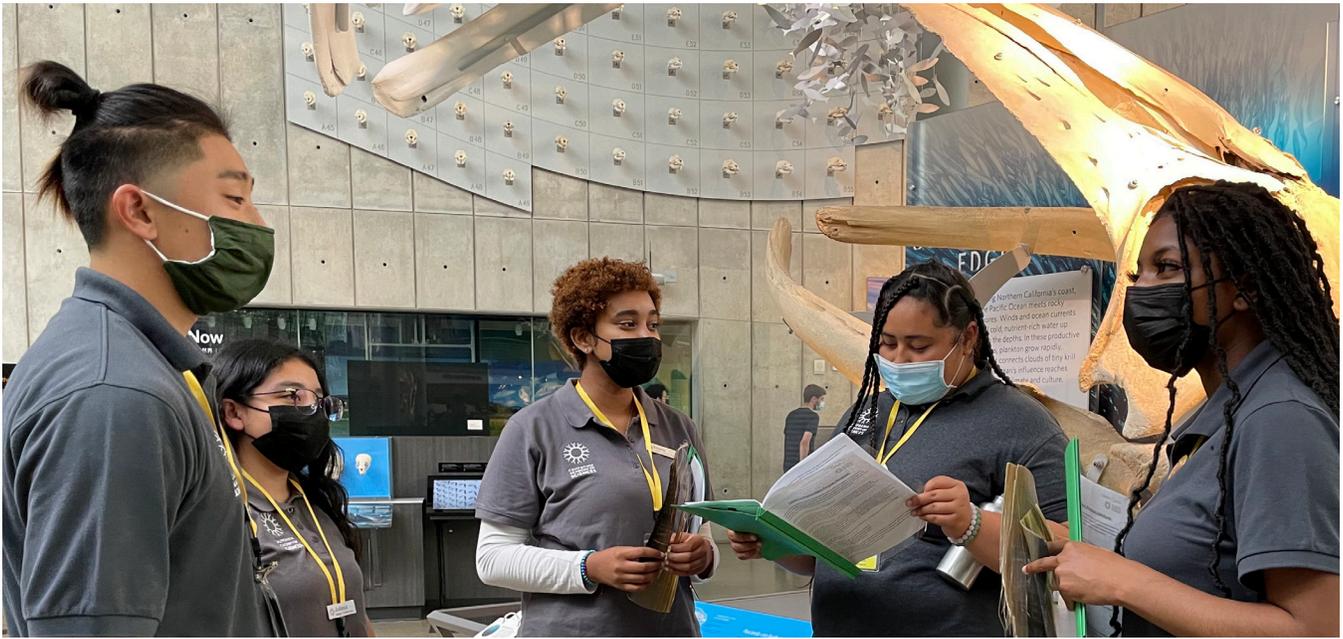


# Careers in Science Intern Program

Annual Report

January 1 – December 31, 2021



Thanks to our generous donors, the California Academy of Sciences continues to inspire the next generation of bright scientists and environmental leaders through the Careers in Science internship program.

This year marks the 25th anniversary of Careers in Science, a year-round paid internship that serves highly motivated teenagers from San Francisco high schools and includes one-on-one mentorship with Academy scientists and educators. Youth develop transferable workplace skills, scientific literacy, and a sense of environmental stewardship through field research in the outdoors, collaborative work, and time spent directly engaging Academy visitors.

Since 1996, Careers in Science has supported Bay Area students from backgrounds that are underrepresented in science, technology, engineering, and mathematics (STEM) fields to find their paths to success. This year, in response to COVID-19 health and safety guidelines, we introduced a hybrid learning model to continue meeting the educational and mentorship needs of our dedicated interns. In 2021, we served a total of 48 interns: 33 in the spring, 37 in the summer, and 32 in the fall. In May, 10 interns graduated from the program and four stayed on in leadership roles, helping train the 15 new interns hired in June. This report features program highlights from January 1 to December 31, 2021.

## Hybrid Learning

With the Academy closed to the public due to the COVID-19 global pandemic, our Youth Programs staff made the decision to prioritize our interns' health and safety by transitioning to a virtual learning environment. Interns met by video conference on weekdays after school to engage in science learning and workforce development skill building. While the majority of the 2021 Careers in Science program remained virtual (January through August), we were thrilled to introduce a hybrid learning model beginning in the fall (September through December). While adhering to COVID-19 safety guidelines, interns were able to return to the museum for on-site learning, public floor work, field studies, and collaborations with mentors and peers.

The hybrid learning experience allowed students to conduct field research in Golden Gate Park and contribute to community science at Ocean Beach as well as attend in-person trainings at the Academy every two weeks. Assistant Curator of Botany Sarah Jacobs, PhD, kept students engaged at home by sending them personal USB digital microscopes. Then she brought interns to the San Francisco Botanical Garden—one of the most diverse gardens in the world—to investigate plants in a living lab.



## Trainings & Speaker Series

Careers in Science interns attend trainings to increase their understanding of science concepts, enhance STEM career awareness, and develop professional and life skills ranging from professional networking to goal setting. Training topics vary every year depending on youth interest, and this year's diversity of topics included: the college application process, ichthyology, imposter syndrome, mental health and self care, microbiology, and time management.

One of these sessions included attending Dr. Dione Rossiter's virtual lecture, *Science Self-Fandom: How to Promote Your Science and Your Worth*, which dove into highlighting professional strengths and promoting one's work. She also spoke on the importance of diversifying the scientific workforce. Dr. Rossiter's presentation resonated deeply with many interns who said her work was "informative and empowering."

## Special Interest Groups

Careers in Science offers a ladder of leadership opportunities by which interns earn promotions and gain increased responsibility. Level 1 interns participate in special interest groups (SIGs), which are planned and facilitated by the Careers in Science Leadership Council (Level 3 interns) with support from adult staff. In SIGs, youth identify a pressing environmental issue, explore it in depth, and design ways to address it. This year's topics included microcosms, environmentalism, the food industry, and space tourism.

Additionally, 14 interns planned and hosted the virtual #TeenScienceNight 2021, a teen-only science event where youth explore the power of science and wonders of the natural world alongside their peers. Interns worked on event production, managed communications and marketing strategies, and engaged community partners—making this year's event a success, with 144 attendees representing 9 Bay Area counties, 13 states, and 8 countries.





## Project Groups

To foster STEM and workforce development skills, Level 2 and 3 interns participate in project groups—semester-long opportunities for small groups of interns to work closely with Academy professionals and community partners on an endeavor of personal and professional relevance.

### **Botany Project Group**

Interns worked with Sarah Jacobs, PhD, an assistant curator of botany and Howell Chair of Western North American Botany in the Academy's Institute for Biodiversity Science and Sustainability (IBSS). For this project, interns attended Dr. Jacobs' weekly presentations, used the Academy's iNaturalist app to make biodiversity observations, dissected plants using digital microscopes, and visited the San Francisco Botanical Gardens for field experience.

"I would love to turn every single student I meet into a botanist, I think we should have more botanists in the world, but if I can just inspire them or pique their interest to something about science that would be just as great, too."—*Dr. Sarah Jacobs, assistant curator of botany and Howell Chair of Western North American Botany*

### **LiMPETS Project Group**

The Long-term Monitoring Program and Experiential Training for Students (LiMPETS) is a program from the Greater Farallones Association. LiMPETS connects more than 5,000 students to the ocean each year, providing hands-on, science-based environmental education.

Students collected and analyzed data gathered from three different locations on Ocean Beach to protect mole crabs, an indicator species off the San Francisco coast.

### **Geology Project Group**

Interns worked with Collections Manager for Geology Christine Garcia, PhD, and Curatorial Assistant Marie Angel to digitally transcribe the catalogs from a Henry Hemphill expedition. Interns also learned to use the World Register of Marine Species to update the taxonomic names. In the fall semester, they analyzed their data and presented their findings at The American Geophysical Union (AGU) Conference in December.

"It has been incredibly rewarding working with the interns and seeing them go through the process of helping develop a research project. It's been awesome to watch them grow and learn how to present science on their own in that kind of professional setting beyond the Academy's public floor."  
—*Dr. Christine Garcia, collections manager for geology*

### **Herpetology Project Group**

Working with Curator of Herpetology Rayna Bell, PhD, and Assistant Professor at Utah State University Molly Womack, interns used iNaturalist to find information about blue frog observations made in the app. They collected data and discussed the importance of community observations and the rarity of the color blue in nature, leading to questions like: Why are blue frog observations more common in one species than another?



## Mentorships

Level 3 interns are eligible for two-on-one mentorships with Academy professionals to further develop their workforce skills and provide deeper exposure to careers in STEM. Mentorships provide an authentic work experience for youth, and support scientific endeavors as well as the Academy's mission.

### **Morrison Planetarium Mentorship**

Under the guidance of former Supervisor of Planetary Programs Josh Roberts and Senior Planetarium Presenter Mary Holt, Level 3 interns Xaria and Jeannie designed and presented an original planetarium show. Jeannie explored NASA's Mars expeditions, both past and present, and Xaria learned about cultural star maps and their evolution through time. For both, it was a great opportunity to learn about individual aspects of astronomy that interested them while also gaining experience within the field.

### **Anthropology Mentorship**

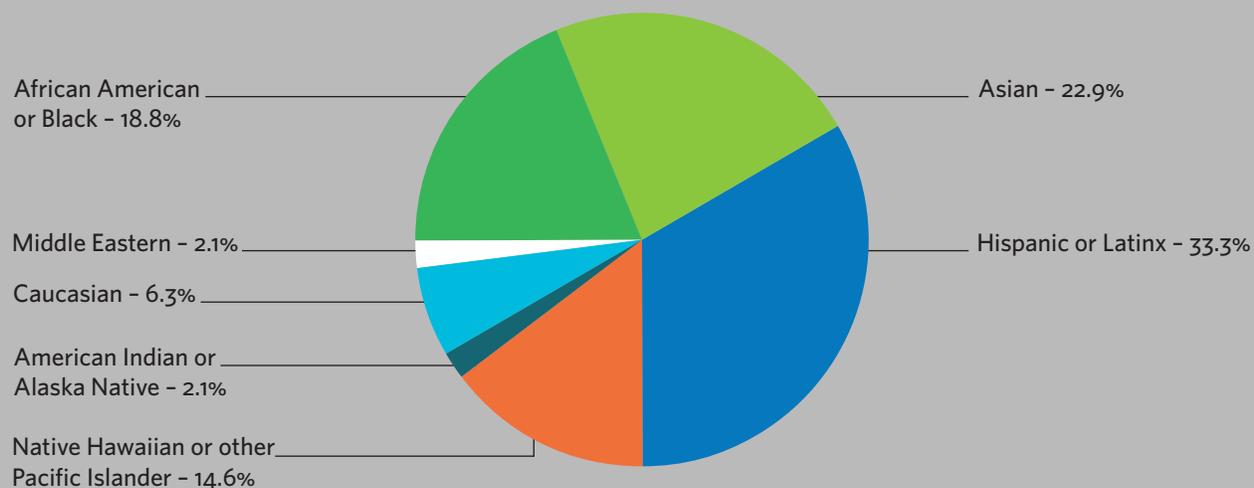
Level 3 interns Connie and Rhea, with support from Curatorial Assistant of Anthropology Cheryl Tripathi, learned about the different fields and applications of anthropology, and used this knowledge to study anthropological specimens. Through this mentorship, they learned how to research, analyze data, and use online specimen collection data, like the Smithsonian and Academy databases. Connie and Rhea developed insights and firsthand knowledge of how important anthropology is to learning about human history and evolution.

### **Geology Mentorship**

Under the mentorship of Roxanne Banker, PhD, a postdoctoral researcher in the Department of Invertebrate Zoology and Geology, Level 3 interns Viva and Marion learned to read, dissect, and analyze research papers. Dr. Banker provided youth with techniques and tools to write abstracts for scientific papers. They learned to use RStudio to generate graphs that represent scientific data, and created a field guide with information, images, and measurements of specimens from the Academy's collections. Viva and Marion presented their field guide at the AGU Conference in December.



## 2021 Participant Demographics



## College Attendance

We are committed to supporting Careers in Science interns through high school and offer them resources to succeed as they prepare for their future. A 20-year longitudinal study of the program conducted in 2016 highlighted the program's powerful impact. Of all Careers in Science graduates, 98% of alumni enrolled in a college or university; 90% of alumni earned a college degree; and 61% of all college graduates earned a STEM-related degree. Currently, we are updating this study with new data that will be available in early 2022.

We are happy to report that 14 Careers in Science interns graduated from high school and enrolled in college for fall 2021. This group was accepted by over 40 universities with scholarships collectively totalling more than \$100,000 for their first year.

"I really enjoyed the Careers in Science program! I think it was a great part of my high school experience where I got to do things I would've never had the opportunity to do. I hope other youth get to experience the internship, as well."  
—Chris, Alumnus

"Science is for everyone. People view science as something only some can pursue, which is not true. Anyone and everyone can be a scientist. Because of Careers in Science, I've learned that my contributions are meaningful and that I can make a difference."  
—Ivonne, Alumna

## Student Spotlights



“The internship has given me so much confidence in myself—especially as a woman of color going into the STEM field, which is predominantly white and male. The internship has given me the opportunity to have my voice heard.”—*Gaby, Level 2 intern*

Since joining Careers in Science in early 2020, Gaby has created a thoughtful video on the California wildfires; published her own opinion piece on KQED’s website; and presented at the American Geophysical Union Conference alongside peers. She enjoyed gaining knowledge in the different fields of science: “I really feel like this internship opened the door to the possibilities of science, and what I can do with my career and my interests.”

Her next steps include finding intersections between technology and biomedicine as she prepares for college.

“When I get to college,” she says, “thanks to the Academy, I’ll be able to really jump into these disciplines and interconnect them.”



“The Careers in Science program is a very important part of scientific workforce development, especially for students of color and underrepresented communities.”  
—*Natalia, Level 2 intern*

A valuable aspect of Careers in Science is its ability to introduce youth to Academy experts and career professionals. Program staff guide youth like Natalia, who worked closely with the Academy’s Chief of Science Shannon Bennett, PhD, into positions of increased responsibility and leadership. Natalia spoke alongside Dr. Bennett at the Youth Climate Action Summit, helping lead a conversation on biodiversity and diversity in science.

Another rewarding aspect of the program is the Training and Speaker series. Dr. Dione Rossiter’s presentation on diversifying the scientific workforce resonated deeply with Natalia, who is passionate about addressing racism in science, specifically in scientific communication.

## Thank you for your partnership

Thanks to generous philanthropic support, 2021 was another successful year of the Careers in Science program. As we look ahead, we are energized by our interns’ vision, dedication, and curiosity. We are committed to providing greater access and opportunities in STEM; advancing diversity and removing structural barriers to success; and supporting all youth to pursue their dreams. Thank you for the critical role you play in this work.