



**SUMMER
SPRINGBOARD**
Look Inward. Go Upward.

Biotechnology Infosheet

New student admissions for
Summer 2024 are open.



Academic Program Overview

UCSD

Are you interested in medicine, science, and technology? Is your goal to create a life-saving drug? This is a unique opportunity for high school students to gain real exposure and hands-on experience working in a biotechnology lab utilizing state-of-the-art equipment. The goal of this program is to provide students intensive laboratory skills experience, and to understand fundamental chemical processes common in prokaryotic and eukaryotic biology, and classical and molecular genetics with an emphasis on gene expression and genetic engineering. The biotechnology industry draws from a variety of different specialties, with microbiology, genetics, biochemistry, and I.T. all having a significant impact. In addition to lab work, students will have an opportunity to visit biotech incubators and hear from industry professionals.

Berkeley

Students in Biotech @ Berkeley will explore environmental biotechnology and the discovery of antibiotics from soil microbes. In this course, students will learn how to isolate and test whether microbes found in soil can produce the next generation of antibiotics. In this course, they will experience this fun introduction to microbiology, the scientific process, and modern laboratory techniques. Students will also explore the CRISPR Revolution: From Discovery to Application. They will re-trace the steps of scientists who found and developed this groundbreaking technology used to modify DNA in genomes. Students will work to understand the fundamentals of CRISPR engineering at a molecular level and apply it with hands-on labs. They will perform sample collection, data analysis, and work with fluorescent proteins in a scientific process using sophisticated lab tools.



Program Highlights

UCSD

- Work alongside scientists discovering treatments for various diseases.
- Start with molecule design and compound creation, and follow the process to the point of in vitro biological activity.
- Take part in a trypsin purification program as well as grow a protein in e-coli
- Learn how to harvest and isolate a protein, and see how it reacts to various compounds in an advanced research laboratory.
- Create a molecule, and test its biological results practicing the scientific method from hypothesis to conclusion.

Berkeley

- Uncover the secrets hidden beneath the soil under our feet and explore the study of microbiology.
- Learn how to isolate and test for the potential to yield the next generation of antibiotics.
- Discover the incredible power to modify DNA within genomes and witness its transformational impact.
- Utilize sophisticated lab tools, from pipettes to gene-editing technology, as you dive deep into the art of scientific discovery.

Instructors

UCSD - Dr. Vicki Nienaber-Meadows, Ph.D.

Dr. Nienaber has over 30 years' experience at large companies, mid-sized biotech, and her own biotech, Zenobia Therapeutics. Throughout Dr. Nienaber's career she has been both an early adopter as well as an inventor of instrumentation and technology directed towards early-stage drug discovery. She is best known as lead inventor of the crystallographic fragment-based lead discovery method that is still used worldwide to identify clinical candidates and marketed products. She was also the technical lead for invention of the first crystal mounting and alignment robot, ACTORTM, which was recognized with an R & D top 100 innovations award. The robot is now sold commercially by Rigaku. Dr. Nienaber has overseen large multinational drug discovery programs, early-stage drug discovery pipelines and build platforms consisting of robotics, procedures, and relational databases and two companies. She has been awarded grants from the Michael J Fox Foundation, California Institute for Regenerative Medicine, National Institutes of Health and National Science Foundation. For more information, click [here](#).

Berkeley - Luis Valentin Alvarado

Dr. Luis Valentin Alvarado, PhD candidate in Microbiology at UC Berkeley. Luis is a PhD candidate and Graduate Student Researcher at the Innovative Genomics Institute. He received his bachelors in Microbiology and Chemistry from University of Puerto Rico. He worked as a research assistant at the Woods Hole Oceanographic Institution, Massachusetts Institute of Technology, and the University of Bergen before starting his PhD at Berkeley.



Course Structure

There are nine 3-hour class sessions over the two-week course. During week one, students have class from 9am-12pm Monday - Friday. During week two, students have class from 9am-12pm Monday through Thursday. Wednesday afternoons of each week are dedicated to students' course-specific academic excursion, guest speaker, or activity.



Tuition Information:

Residential Students:

- Includes: all meals, lodging, excursions, academic course, weekend excursions
- Excludes: optional airport pickup and drop off service (available for an additional fee)
- Price: See prices under 2024 dates

Commuter Students:

- Includes: lunch, academic course, excursions, programming from 9am to 6pm, Monday-Friday
- Excludes: lodging, breakfast, dinner, weekend excursions
 - Weekend excursions can be added on for \$125 per day
- Price: \$3,198

Supplements:

- Application fee: \$99 (mandatory, non-refundable)
- Tuition Protection Plan: Allows for cancellation for any reason up until the day of the program. Click [here](#) for more info.

More info on [Airport Transfer](#)

More info on [Unaccompanied Minor Service](#)

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Summer Springboard programs are not run by our campus partners (with the exception of Cal Poly which is run in partnership with SSB). Universities and their affiliated departments and partners do not control and are not responsible or liable in any manner for any part of the Summer Springboard program.



2024 Dates

BERKELEY (\$5,898)

- Session 2: June 23 - July 05
- Session 4: July 07 - July 19
- Session 6: July 21 - August 02

UC SAN DIEGO (\$5,498)

- Session 1: June 30 - July 12
- Session 2: July 14 - July 26
- Session 3: July 28 - August 9



Typical Schedule



Excursions

Students do their daily class directly inside a biotechnology lab. In San Diego, past summer's visits have been to J Labs, Calibr, Bio Tech & Beyond, and other incubators in the San Diego area. Students at UC Berkeley do their daily work inside a UC Berkeley lab and have visited leading biotech companies such as Thermo Fisher Scientific, as well as leading local research labs like the Innovative Genomics Institute (IGI).