BIRCH AQUARIUM
at Scripps Institution of Oceanography
UC San Diego

SCHOOL PROGRAMS
Exploring the Science of Our Ocean Planet

Registration opens on August 27

FALL 2019 to SPRING 2020
Welcome to the 2019–20 school year and programming offered by Birch Aquarium at Scripps Institution of Oceanography, UC San Diego. We are dedicated to providing interactive and hands-on programming that connects your students to the ocean, Earth, and atmosphere while developing critical thinking skills.

**AT THE AQUARIUM**

**DISCOVERY LABS**
Offered: Sept. 30, 2019 to June 5, 2020
Instructor-led, hands-on programs in one of our classrooms are available weekdays. Aquarium admission is included in fee.

**Start Times**
- Age 2–Gr. 1: 9:45, 11, or 12:15 p.m
- Gr. 2–12: 9:45, 11:15, or 1 p.m.
- All ages: $11/student

**SELF-GUIDED VISITS**
Offered: Year Round
Explore Birch Aquarium at your own pace without structured programming. Offered daily, year-round, during regular aquarium hours. Pre-registration is required.

*Minimum: 10 students*
- Age 3–Gr. 12: $9/student

**OUTREACH TO YOUR SITE**

**AQUARIUM EXPRESS OUTREACH**
Offered: October–June, Weekdays
Our Aquarium Express van can travel to your school. Students will experience a variety of hands-on Discovery Labs in the comfort of their own classroom. Book multiple sessions to serve your entire grade.

*See our website for pricing and booking requirements. Additional fees may apply.*

**MEET US AT THE BEACH**

**BEACH TEACHES**
Offered: November–June
Two-hour exploration with Birch Aquarium educators on the beach at the Matlahuayl State Marine Reserve (La Jolla Shores).

*Includes same day aquarium admission.*
See our website for booking requirements. Program dates determined by low tides.
- Gr. 3–12: $20/student
- Note: Meets at La Jolla Shores

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**THE KEY**
- Meet Us at the Beach
- Includes Dissection
- Live Animal Touch
- Can Travel to You
- Note: Meets at La Jolla Shores
**Registration**

Registration is required four weeks in advance. We recommend that you register as soon as possible to ensure a visit on the date and time(s) of choice. Availability is limited.

**Program Size**

To best serve your students, we require that your class size remains below the maximum number of students per program. Small classes are welcome, but please note that you are required to pay for the student minimum per program.

**FAQs**

Please see our website for frequently asked questions, booking tips, and guidelines.

**Chaperones**

Adult chaperones get in free within our recommended ratios. Additional adult chaperones are $16/person.

**Financial Aid**

Financial aid is available for on-site Discovery Labs, Self-Guided Visits, Aquarium Express Outreach, and Beach Teach programs. Apply online. Funds are limited and based on need.

**Book Your Programs Today:**

If you have any questions or want to check available dates:

- **Book online:** aquarium.ucsd.edu
- **Email:** birchaquariumprograms@ucsd.edu
- **Call:** 858.534.7336
All our Discovery Lab programs have been revised to align with the Next Generation Science Standards. See each title for the Disciplinary Core Ideas, Science and Engineering Practices, and Crosscutting Concepts.

**DISCIPLINARY CORE IDEAS (DCI)**

**LIFE SCIENCE**
- LS1.A: Structure and Function
- LS1.D: Information Processing
- LS2.A: Interdependent Relationships in Ecosystems
- LS2.B: Cycles of Matter and Energy Transfer in Ecosystems
- LS2.C: Ecosystem Dynamics, Functioning, and Resilience
- LS4.B: Natural Selection
- LS4.C: Adaptation
- LS4.D: Biodiversity and Humans

**EARTH AND SPACE SCIENCE**
- ESS2.A: Earth Materials and Systems
- ESS3.A: Natural Resources
- ESS3.C: Human Impacts on Earth Systems

**ENGINEERING, TECHNOLOGY, AND THE APPLICATION OF SCIENCE**
- ETS1.A: Defining and Delimiting Engineering Problems
- ETS1.B: Developing Possible Solutions
- ETS1.C: Optimizing the Design Solution

**SCIENCE AND ENGINEERING PRACTICES (SEP)**
1. Asking Questions and Defining Problems
2. Developing and Using Models
3. Planning and Carrying Out Investigations
4. Analyzing and Interpreting Data
5. Using Mathematics and Computational Thinking
6. Constructing Explanations and Designing Solutions
7. Engaging in Argument from Evidence
8. Obtaining, Evaluating, and Communicating Information

**CROSSCUTTING CONCEPTS (CCC)**
1. Patterns
2. Cause and Effect
3. Scale, Proportion, and Quantity
4. Systems and System Models
5. Energy and Matter
6. Structure and Function
7. Stability and Change
MEET AND GREET THE SEA

Swim, crawl, walk: there are a lot of ways to get around in the sea. Learn how different animals move through play and live animal interactions.

*Properties and Characteristics of Living Things, Observation and Investigation*

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COLOSSAL KELP

Grades K, 1

Dive into the wonderful world of kelp as students learn about this habitat and meet the amazing critters that call this underwater forest home.

*NGSS: DCI: (K) LS1.C, ESS3.A, (Gr. 1) LS1.A, LSI.D; SEP: 4,7; CCC: 1,4,6*

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TIDE POOL TREASURES

Grades K, 1

Students explore the world of tide pools and learn how tide pool creatures find food, protect themselves, and move in this dynamic habitat.

*NGSS: DCI: (K) LS1.C, ESS3.A, (Gr. 1) LS1.A, LSI.D; SEP: 4,7; CCC: 1,6*

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FASCINATING FISH

Grade 1

What makes a fish a fish? Through exploration of a real fish specimen, students will investigate the unique structures of fish.

*NGSS: DCI: LS1.A; SEP: 6; CCC: 1,4*

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SANDY SHORES

Grade 2

How does water affect the sandy shore habitat? Students explore what sand is made of, how it is created, and the animals that live in it.

*NGSS: DCI: ESS2.A; SEP: 2,6,7; CCC: 1,2,6,7*
**FISH DIVERSITY**
Grades 3, 4
Through hands-on exploration of biofacts and specimens, students will develop an understanding of the roles that adaptations in body shape, coloration, and teeth play in enabling fish to survive in diverse habitats.
NGSS: DCI: (Gr. 3) LS4.C, (Gr. 4) LS1.A; SEP: 6, 7; CCC: 1, 2

**CREATURES OF THE KELP**
Grades 3, 5
Discover an underwater forest and its importance to marine organisms. How can changes in the environment affect this ecosystem?
NGSS: DCI: (Gr. 3) LS4.C, LS2.C, (Gr. 5) LS2.A; SEP: 2, 4; CCC: 4

**SENSATIONAL SHARKS**
Grade 4
Discover the body structures that have helped sharks thrive in the ocean for millions of years. Students will explore data from local scientists to understand how these adaptations can impact shark behavior.
NGSS: DCI: LS1.A; SEP: 4, 6, 7; CCC: 2, 6

**FISH OR SQUID DISSECTION**
Grades 4, 5
Examine fish or squid inside and out through dissection of the animal. Gr. 4 students will discover the structures that help the animal to swim, eat, and protect itself in the open ocean habitat. Gr. 5 will explore the role of the animal in the food chain based on their body structures and functions.
NGSS: DCI: (Gr. 4) LS1.A, (Gr. 5) LS2.A, LS2.B; SEP: 6, 7, 8; CCC: 4, 6

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**Beach Teach BEACH INVESTIGATION**
Grades 3-5
Students discover what makes a sandy beach habitat unique through exploration of seaweed, sand, and local animal adaptations.
*Includes same day aquarium admission.*

Price: $20/student
Program Duration: 2 Hours
Chaperone Ratio: 1:5
NGSS: DCI: LS4.D, LS2.A; SEP: 8; CCC: 2, 4
SHARK SCIENCE
Grades 6, 7
For over 50 years, locals have observed large numbers of Leopard Sharks gathering off of La Jolla. Students become the scientists, as they explore this phenomenon and understand why sharks are our yearly visitors.
NGSS: DCI: (Gr. 6) LS1.B, (Gr. 7) LS2; SEP 4,7,8; CCC: 1,2,4,6

FISH OR SQUID DISSECTION
Grades 6, 7, 9-12
As scientists, students use the mackerel or squid as their model subject. Gr. 6 students will identify animal structures and their functions, as well as determine the system to which they belong. Gr. 7 will explore how the adaptations of the animal help them avoid predation and compete for resources within their ecosystem. Gr. 9-12 students deepen the exploration of animal structures and their functions to discuss how the interactions of their systems help the animal survive.
NGSS: DCI: (Gr. 6, 9-12) LS1.A, (Gr. 7) LS2.A; SEP: 6,7,8; CCC: 2,4,6

ENERGY ENGINEERING CHALLENGE
Grades 6, 8, 9-12
Examine the use of natural resources for energy and the impacts of human activities. Students investigate alternative energy sources and engineer solutions for the energy needs of a growing world.

Beach Teach TIDEPOOLING
Grades 6-12
Like local scientists, students survey a tide pool to learn more about patterns in this ecosystem. Students collect and analyze data about the biodiversity of this changing habitat. Includes same day aquarium admission.

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Program Duration: 2 Hours
Chaperone Ratio: 1:5
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Swim, crawl, walk: there are a lot of ways to get around in the sea. Learn how different animals move through play and live animal interactions.

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We’re connecting our hands-on lessons to your classroom with PRE/POST DISCOVERY LAB activities. The learning doesn’t stop at Birch Aquarium.

FREE PRE-VISIT FOR TEACHERS!
Visit the aquarium free of charge before your scheduled field trip. Teachers must show school ID. Guests must pay admission.

BOOKING A LARGE GROUP?
We recommend booking at least two months in advance to ensure your dates and times

ENHANCE YOUR AQUARIUM EXPERIENCE with Self-Guided Exploration Flip Cards for grades K-5! Find them online or at the information booth in the Galleria. Plan ahead and download a Self-Guided Worksheet for middle and high school students.

Join us at our local tide pools and sandy shores for in-depth investigations during a BEACH TEACH program, which now includes aquarium admission!

We’ve CHANGED OUR DISCOVERY LAB TIMES to better accommodate your transportation needs! Book back to back Discovery Labs beginning at 9:45 to make the most of your visit for your entire group.

THANK YOU TO OUR EDUCATION SUPPORTERS
Charles & Ruth Billingsley Foundation • Coastal Community Foundation
Daphne Seybolt Culpeper Memorial Foundation • Don and Cheryl Ward
Ellen Lehman and Charles Kennel • McCarthy Family Foundation
Nordson Corporation Foundation • Price Philanthropies Foundation
SDG&E • Stephen and Mary Birch Foundation • Sue Randerson • Union Bank
US Bank • Veerabhadran Ramanathan

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Free for all teachers!

TEACHER APPRECIATION NIGHT

A night just for educators on Tuesday, October 1, 5-7 p.m.

Be our guest as you are introduced to the world beneath the waves and the resources available to you through Birch Aquarium at Scripps.

- Learn about our Pre-K to Gr. 12 programs
- Discover new financial aid and outreach opportunities
- Participate in educational activities
- Explore aquarium exhibits
- Win fabulous prizes

Pre-registration required. Free!
Please call 858.534.7336 or sign up online at aquarium.ucsd.edu/teachers.