



Caltech

A WALKING TOUR



The California Institute of Technology is a community of scientists, an independent, privately supported university that conducts research and instruction in math, science and engineering. The Institute has 322 professorial faculty and a student body of 978 undergraduates and 1208 graduate students, and operates several off-campus research facilities, including the Jet Propulsion Laboratory; the Palomar, LIGO, Owens, Submillimeter, Chajnantor and W.M. Keck Observatories; CARMA; and the Thirty Meter Telescope.

Since 1923, Caltech faculty and alumni have won 32 Nobel Prizes and five Crafoord Prizes. Fifty-six faculty and alumni have been awarded the National Medal of Science, and 10 have received the National Medal of Technology.



Welcome to Caltech!

Caltech offers an unparalleled undergraduate education, with a 3:1 student-faculty ratio, a wealth of hands-on research opportunities, and an unusually collegial and collaborative academic community.

Undergraduates earn Bachelor of Science degrees, with options (majors) in applied and computational mathematics; applied physics; astrophysics; bioengineering; biology; business economics and management; chemical engineering; chemistry; computer science; economics; electrical engineering; engineering and applied science; english; geobiology; geochemistry; geology; geophysics; history; history and philosophy of science; independent studies; mathematics; mechanical engineering; philosophy; physics; planetary science; and political science.

Caltech's students, affectionately known as "Techers," receive a positive, broad-based education both inside and outside of the classroom. Each academic year consists of three 10-week terms and lasts from September until June. The required core curriculum stretches across a spectrum of fields to prepare students for dynamic careers. A majority of undergraduates also pursue internships and conduct summer research projects with scientists, engineers and scholars of their choice. They also participate in more than 150 clubs, pursuing interests in service, international cultures, science, math, engineering, art, theater, music, business, religion, recreation, sports, cooking, gardening, and more.

You are about to embark on a 60-minute walking tour of Caltech's campus. The tour will cover Caltech's architecture and academic opportunities, and you will hear from the Techers themselves about student life at the Institute. We hope you enjoy exploring our campus and learning all about the academic and social opportunities available at Caltech!

Enrollment

(first term 2012)

Undergraduate students
597 men, 381 women
Graduate students
857 men, 351 women
Total students 2,175

Freshman Class

(entering September 2012)

men 167, women 98
Middle 50% SAT scores: 2230–2350

Faculty in residence

(as of September 2012)

Professorial faculty	322
Postdoctoral scholars	621

Awards and Honors

(as of December 2010)

Caltech faculty and alumni have received wide recognition for their achievements in science and engineering.

Nobel Prize: 31 recipients, 32 prizes
Crafoord Prize: 6 recipients
Kavli Prize: 4 recipients
California Scientist of the Year: 15 recipients
Fellow, American Academy of Arts and Sciences: 87 faculty
Member, National Academy of Sciences: 75 faculty
Member, National Academy of Sciences, Institute of Medicine: 4 faculty
Member, National Academy of Engineering: 31 faculty
National Medal of Technology: 10 recipients
National Medal of Science: 56 recipients

SURF Program

Each year, more than 400 students design and complete research projects with scientists, engineers, and scholars of their choice—usually Caltech and JPL researchers—through Caltech's Summer Undergraduate Research Fellowships program.

Learn more at www.surf.caltech.edu or call 626/395-2885.

Premed Programs

Caltech students get outstanding clinical and research experience through joint programs with City of Hope, Huntington Memorial Hospital, Children's Hospital LA, and the UCLA Medical Center. The Caltech–UC San Diego Medical Scholars program awards selected Caltech students early admission to the UCSD School of Medicine.

Learn more at www.admissions.caltech.edu or call 626/395-6341.

Overseas Opportunities

Caltech undergraduates can participate in study-abroad programs at Cambridge University, École Polytechnique, the University of Copenhagen and the Technical University of Denmark, the University of Edinburgh, University College London, and the University of Melbourne.

Learn more at www.fasa.caltech.edu or call 626/395-2150.

Your walking tour starts here!

Your numbered tour of campus begins at the **Office of Undergraduate Admissions** and the Financial Aid Office. On pages 14 and 15, you will find a campus map with a key for this walking tour. Our first stop is down the street, so proceed south (away from the mountains) on Hill Avenue.

Founded as Throop University in 1891, the Institute officially became the California Institute of Technology in 1920. Founding father George Hale wanted to expand Caltech's architecture in a distinctly California style, so he turned to architect Bertram Grosvenor Goodhue to build the new campus and realize his vision. You will see many of Goodhue's buildings on your tour today. They were designed in a Spanish Renaissance theme expressed through the use of arcades, courtyards, reflecting pools and tilework.

In 1930, architect Gordon Kaufman designed the Athenaeum and student houses in a style known as Mediterranean eclectic, a style richer in detail than Caltech's previous buildings. After World War II, the campus expanded north of San Pasqual Boulevard, with various architects designing a diverse mix of functional buildings. A 1989 Master Plan established by the City of Pasadena provides guidelines for the architects of the future, who strive to conform to current architectural trends while meeting the highest standards of energy conservation.



Caltech gives you the sense that anything is possible.



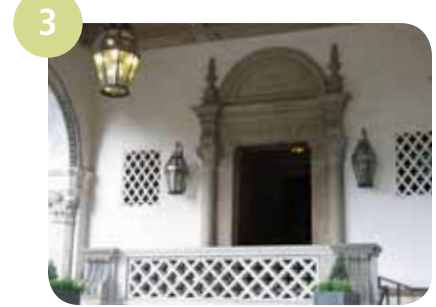
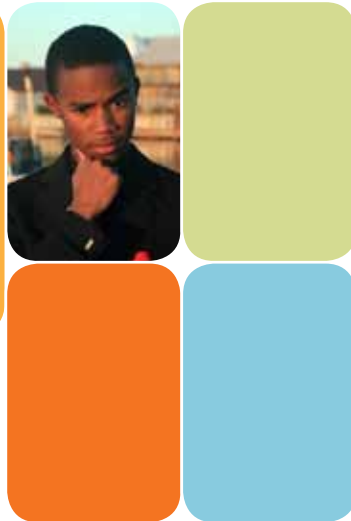
This is the **President's Residence**. Our current president, Dr. Jean-Lou Chameau, assumed the presidency on September 1, 2006, making him the eighth president of Caltech. The freshman class traditionally begins the year here, with a backyard picnic the evening before the students leave for a three-day new-student orientation program.

On the corner of Hill Avenue and San Pasqual Street are two graduate residences, where some of Caltech's 1,200 graduate students live. Located at the opposite end of campus, on Catalina Avenue (not show on map), are three complexes with 200 more grad student apartments.

Cross San Pasqual Street and continue down Hill Avenue. On your left is the home of Caltech's Master of the Student Houses, or "MOSH." The position of MOSH is held by a faculty member, who acts as a liaison between Caltech undergraduates and faculty to promote the well-being of our students, both socially and academically. The current MOSH, Dr. Geoffrey Blake, along with his wife Karen (affectionately known as "Mrs. MOSH") organize several students events each year, from hosting students for dinner to organizing trips to the opera, theater, and symphony.

"Caltech seemed to have everything I wanted. It was on a small campus with a group of people that exuded a strong sense of camaraderie. Caltech spoke to me in a way no other college or university could."

Nick Parker '15 (Corpus Christi, TX)
OPTION: Chemical Engineering
HOUSE: Avery



Continue down Hill Avenue—our next stop will be on your right. About halfway down the block between San Pasqual Street and California Boulevard, you will come to the entrance to the parking lot of the **Athenaeum**, Caltech's faculty club. Proceed up the driveway from the sidewalk and bear right. Go up the stairs and enter the lobby.

The Athenaeum was modeled after the faculty clubs at Oxford and Cambridge universities in a style that recalls an Italian villa with an Andalusia flavor. It is the center of social activities for the teaching, research, and administrative staffs of Caltech. The Athenaeum was designed by architect Gordon Kaufmann and built in 1930, although its first formal dinner was delayed until 1931, when Albert Einstein arrived for a three-month visit to campus. Giovanni Smeraldi, a Vatican-trained architect, designed the ceilings in the entry hall and dining rooms. The building was funded by Mr. and Mrs. Allan Balch, who gave a substantial gift of stocks and bonds to Caltech in 1929, which the Institute astutely sold shortly before the stock-market crash. The building also serves as an on-campus hotel, with twenty-four guest rooms and four suites (including the aptly named "Einstein suite"). The building may look familiar to you, because filmmakers often use its lounge and courtyards as movie sets.

Proceed down the short hall to your left (or straight ahead, if you've been in the lounge), and exit through the door leading into the courtyard.



4

Ahead of you stretches a path called the **Olive Walk**, named for the olive trees planted as part of the Mediterranean theme of the Athenaeum, and the south student houses (on your left). The Olive Walk was designed by Florence Yoch, a landscape architect who also designed the gardens in *Gone With the Wind*. The south student houses consist of **Blacker House**, **Dabney House**, **Fleming House**, and **Ricketts House**. Gordon Kaufman was also the architect of these four houses. They were built in 1931 and, like the Athenaeum, were designed around a system of hallways and courtyards. Inside are smaller units called “alleys,” a concept based on the residence system at Oxford University. That particular design was selected to try to develop both loyalty and “wholesome rivalry” among students.

Take a look at the reliefs carved atop the double columns in Ricketts House’s western hallway. The reliefs represent a well-rounded undergraduate experience, featuring scenes from academia and leisure activities.



“The House System is one of the many unique qualities about Caltech. I love the House System for providing me with a community to call home and friends that I consider to be an extension of my family.”

Karsyn Bailey '15 (Cary, NC)
OPTION: Bioengineering **HOUSE:** Fleming



5

The Student Activities Center, in the houses’ interconnected basements, contains reading, club, and game room; soundproof music rehearsal rooms; a silk-screen press; and facilities for many other extracurricular activities. The three student houses on your right (**Lloyd House**, **Page House** and **Ruddock House**) were constructed in 1960. More modern in style, they too were built around a system of courtyards and alleys.

The 1.3 ton cannon that sits in front of Fleming House is a relic of the Franco-Prussian War, and is on loan from Southwestern Academy in San Marino. A harmless—but noisy—charge is fired to celebrate such occasions as commencement or the last day of the academic term.

Turn left onto the intersecting brick walkway and proceed down the stairs. One the right is a windowless building known as the **Synchrotron Lab** (the synchrotron lab itself, a one-billion-volt electron accelerator, was dismantled in 1970). The building was originally a giant clean room built for the decade-long (1936-1946) job of grinding and polishing the mirror for the 200-inch Hale Telescope at Palomar Observatory.

Over the decades Caltech has maintained several off-campus facilities for research. Most of these are for astronomy, which requires much darker skies and clearer air than Pasadena can provide. Our astronomers do much of their work in San Diego County, at the **Palomar Observatory**, home of (among other instruments) the 200-inch Hale Telescope. The 200-inch was until recently the most powerful optical telescope in the world, and is still one of the most productive. A new generation of technology has made it possible to build even larger telescopes. The largest of these are the twin 10-meter **Keck Telescopes**, which Caltech operates in cooperation with the University of California on Mauna Kea, Hawaii. The two telescopes combine their light through a process called interferometry, effectively functioning as a single telescope with a mirror 85 meters in diameter.



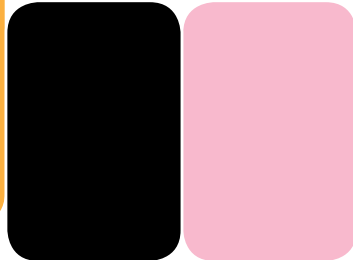
6



The **Owens Valley Radio Observatory (OVRO)** sits about 250 miles north of campus, in Big Pine, California. Here, scientists study the universe as millimeter wavelengths, the portion of the electromagnetic spectrum at which the events leading up to star and galaxy formation leave their signature. Near OVRO, at Cedar Flat in the Inyo Mountains, Caltech and the Universities of California (Berkeley), Illinois, and Maryland recently began operation of a 15-element millimeter-wave interferometer, CARMA, the Combined Array for Research in Millimeter-wave Astronomy. The **Chajnantor Observatory**, situated at an altitude of 16,700 feet in the Chilean Andes, is engaged in high-sensitivity observations of the very early universe with the Cosmic Background Imager—a 13-element interferometer array of telescopes.

"I did research last summer (summer after my frosh year) in the Allman lab via the SURF program—I was involved in a quantitative, hands-on project, with a "grand scheme" end goal of determining why certain people survive longer (with an intact memory) as compared to others. I also did research last term (winter term 2011-2012) in the Allman lab, where I investigated how gene expression differed between people of normal age and elderly people."

Victor Chen '15 (San Jose, CA)
 OPTION: Biology HOUSE: Ricketts



Retrace your steps and return to the Olive Walk. There are about 130 olive trees on campus. Recently, a group of students and staff members decided to harvest the olives and make oil. A Santa Barbara company has since been engaged to press the frit for them, and now one can buy Caltech olive oil in the bookstore. President Chameau himself instituted Caltech's first Olive Harvest Festival, which took place in fall 2007.

Ahead and slightly to your left is the two-story **Winnett Student Center**. (Go ahead and walk through the arches; you'll want to take a closer look at that brick wall. The bricks with names on them were salvaged from the fireplace in the Dugout, a 1920s student hangout. Students purchased the bricks for \$1 apiece to help fund the Dugout's construction, and many left behind some unique insignias.) This building houses the Caltech Bookstore, the Caltech Wired computer store, a lounge, a clubroom, and the Red Door Café.

Across the Olive walk from Winnett are the three buildings that make up the Graduate Aeronautical Laboratories: **Firestone, Guggenheim** and **Karman** (all around the corner behind Guggenheim). Because Firestone Tire Company donated the money for the Firestone Lab, student mythology has it that the latticework on the front of the building represents tire tracks (it was actually inspired by Moorish window grilles and Mayan ornamentation).





7

On the roof of **Guggenheim**, the building connected to Firestone by the latticework-covered bridge, is the T5 hypervelocity shock tunnel, which is used to simulate such phenomena as entry into planetary atmospheres and aerodynamic braking. Guggenheim was built to encourage graduate work in aeronautics led by Theodore von Karman, the first head of Caltech's **Jet Propulsion Laboratory (JPL)**. The entry hall features light fixtures meant to represent and on-going study of jellyfish locomotion.

The aircraft carvings over Guggenheim's doors represent two Douglas World Cruiser seaplanes that successfully traveled around the world.

Guggenheim itself houses wind tunnels used to test the aerodynamics of airplanes, automobiles, and other vehicles. These laboratories played a vital role in the development of the aircraft industry in Southern California, and they spawned JPL, where many of the first successful modern rockets were developed.

"I am part of Caltech-Occidental's symphony and chamber groups, where I play the violin and viola, respectively. The symphony practices Tuesday nights for 3 hours and has concerts once a term on weekends. The Caltech chamber group meets once a week for one hour, and I fit in practice time for 30 minutes every day before dinner. I am also a member of the Society of Women Engineers."

Ratnalekha Viswanadham '15 (Cupertino, CA)
 OPTION: Applied & Computational Mathematics HOUSE: Avery



Administered by Caltech, JPL is a NASA laboratory located about 7 miles northwest of campus. It is best known for robotic space flight. JPL spacecraft have visited every planet in the solar system. Notable recent missions have included Galileo (to Jupiter), Cassini (to Saturn), Pathfinder, Global Survey, and the Odyssey missions to Mars. JPL also conducts Earth-observation missions, using satellites to study phenomena such as devastating storms and glacial movement.

To your right is the **Thomas Laboratory of Engineering**, where, along with projects in civil and mechanical engineering, engineers are developing ways to build more earthquake-resistant dams, buildings, and power plants. Thomas was designed by Caltech students to reflect Goodhue's architectural style, defined by horizontal shapes and pronounced doorways and entrances.



Ahead of you is a landscaped area marking the site of Throop Hall, the first building on the Caltech campus. Built in 1910, Throop was torn down after suffering extensive damage in the 1971 Sylmar earthquake (magnitude 6.7). The site is now marked by the Caltech turtle pond. Take a moment to say hello to our reptilian friends as they sun themselves on the rocks. The rocks you see around the pools are up to 75 million years old and were chosen by the members of the geological planetary science division as examples of various rock types in the San Gabriel Mountains just north of Pasadena. The rock collection also includes two 20-year old "pseudoliths"; see if you can spot them. A list of the rocks, grouped by age and type, is affixed to one of the large boulders.

8

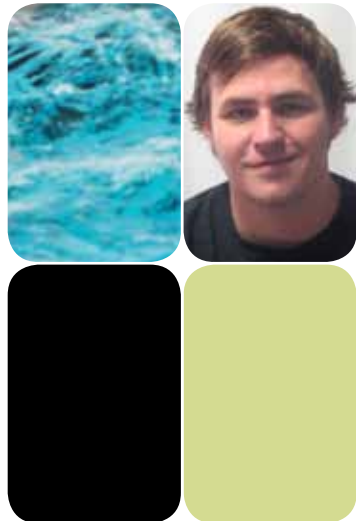




9

As you proceed along the garden path and up the stairs, you will see the nine-story **Millikan Library** building, which houses the main campus library as well as Caltech's fund-raising offices. The money for Millikan Library was donated by Seeley Mudd on the condition that he would select both the architect and style of the building. Millikan represents a necessary shift away from the universal modernism style. Providing adequate space with a low-profile building would have used up all of the lush green space, so a multi-story building was constructed instead. Complete in 1967, it was designed to withstand earthquakes of magnitude 8.0.

Every Halloween, Dabney House stages a pumpkin drop from the top of Millikan Library, the highest point on campus. (According to tradition, a claim was once made that the shattering of a pumpkin frozen in liquid nitrogen and dropped from a sufficient height would produce a triboluminescent spark.)



"I'm currently on the fencing team and I played a season of water polo. I'm also on the Caltech Rover team and have participated in theatre. I'm also on Lloyd's social team. One of my favorite traditions is Lloyd Christmas Tree. Every Christmas, Lloydies string enormous ropes of lights from the top of Millikan Library to make a huge Christmas tree, topped by an enormous Lloyd L. It's a great bonding experience for the whole house!"

Harrison Miller '15 (Grand Prairie, TX)

OPTION: Mechanical Engineering

HOUSE: Lloyd

The building on your left is actually two buildings. On the left-hand side, where the clock is, is **Kellogg Radiation Laboratory**. The high-current, high-stability particle accelerator in Kellogg Lab was custom designed by our own physicists to study nuclear astrophysics, and is the only one of its kind in the world. This is also where the late Willy Fowler (who won the 1983 Nobel Prize in Physics) studied how the elements that make up our world were formed inside stars.

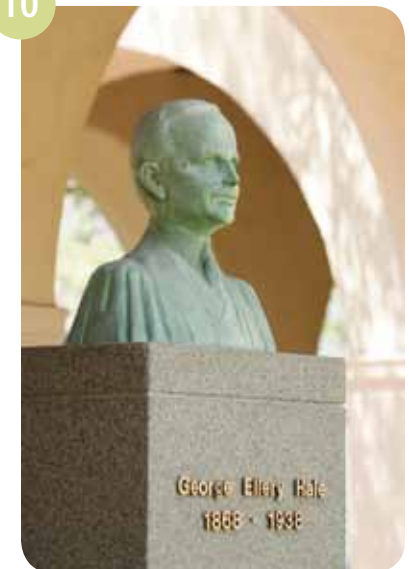
On the right-hand side, where the arches begin, is the **Sloan Laboratory of Mathematics and Physics**, where scientists study nanostructures—devices that contain several hundred to a few thousand atoms and that obey the laws of quantum mechanics instead of classical physics. Formerly the Edison High Voltage Laboratory, the windows were added only after the mathematicians moved in!

As you walk along the arcade on the left-hand side of the pond surrounding Millikan Memorial, you will find the bust of Robert A. Millikan, the administrative head of the Institute from 1921 to 1945 (he declined the title of president). His nose is shiny from students having rubbed it for luck before exams.

Look across the pond, behind the 400-year old Engelmann oak, and you will see the bust of Millikan's colleague, George Ellery Hale. Together with chemist Arthur Amos Noyes, Millikan and Hale set Caltech on its modern course.

In the pond is **Water Forms 1991**, a sculpture by local artist George Baker. It was commissioned by friends of Caltech in honor of the Institute's centennial.

10





11

The arcade on your left continues past the **Bridge Laboratory of Physics**, where all Caltech undergraduates take five terms of physics courses. The building was constructed in 1922 to lure Robert Millikan to Caltech as the new head of the physics division. Some of the medallions displayed between the windows represent earth, air, fire, and water, while others represent modern physics. Go inside the first door, marked "East Bridge." Halfway down the main hallway, on the left, is a display case holding what was once the world's smallest motor. In 1960 the late Richard Feynman offered \$1,000 to the first person who could design a rotating electric motor that could be controlled from the outside and was only 1/64 inch cubed. Here you see what William McLellan (Caltech class of '50) presented to Feynman two and a half months of lunch hours later. The McLellan Micromotor weighs 350 millionths of a gram, has 13 parts, and was built with the aid of a microscope, a watchmaker's lathe, and a toothpick. Unfortunately, the motor is worn out and no longer runs.

12



Exit Bridge the way you came in, turn left, and walk down the next arcade. There, the second doorway on the left is the main entry to the **Arms Laboratory of the Geological Sciences**. Geologists here study such things as how minerals concentrate into ores, how to read ancient climates from traces of radioactive elements left in rocks and seafloor sediments, and how glaciers move. Arms also houses the Gem Room, the collection of minerals and gemstones, including benitoite, the official gemstone of the state of California. Also on display are gem minerals and stones cut from pegmatites, attractive copper minerals from Michigan and the Southwest, and other interesting specimens from Europe and the Americas.

The *Smilodon fatalis* skeleton (saber-toothed cat) displayed is a prime example of a composite skeleton. Its 227 bones came from ten different sites, excavated between 1913 and 1915. These fossils were recovered from late Pleistocene asphalt deposits at Rancho La Brea, California, which date from 10,000 and 40,000 years ago. Dr. Chester Stock, former professor in the geology department, was a world's expert on these and other large cats from Rancho La Brea.



"I am currently a member of the Dabiri group, working under Dr. John Dabiri. The research in question actually involves jellyfish and their propulsion systems through water."

Aditya Bhattaru '15 (Bridgewater, NJ)
OPTION: Mechanical Engineering
HOUSE: Ricketts

The education that students get at Caltech is, at its best, a hands-on apprenticeship in science.

13



Continuing along the arcade, you will find a small courtyard just beyond Arms. On its far side is the **Linde + Robinson Laboratory**. This laboratory was originally constructed in 1932 for the polishing and operation of the 200-inch Hale Telescope currently installed on Palomar Mountain. The dome on the roof was built to house a 1/10-scale model of the Hale Telescope. The model was built to test the engineering principles used in the design of the giant telescope, which was first light in 1948. Linde + Robinson also served as the headquarters of the astrophysics division before the opening of the Cahill Center in 2008. You will see the Cahill Center later on the tour.

The Linde Center will be housed in the Linde+Robinson Laboratory. Completed around 1935 to house the astronomy department and the development of the Palomar telescope, the laboratory is getting its first significant update. The pioneering green renovation is expected to make Linde +Robinson the nation's most energy-efficient science lab and the first LEED Platinum-rated lab in a historic building. The renovation will restore the building to its original luster, while also providing state-of-the-art laboratories for geochemistry, microbiology, and atmospheric and oceanic science.

The Ronald and Maxine Linde Center for Global Environmental Science was founded in 2008 to address the complex issue of global climate change from a wide range of disciplines. The Center unites faculty from chemistry, engineering, geology, environmental science, and other fields. Many of the faculty members associated with the center teach and research in Caltech's Environmental Science and Engineering Department—a multidivisional program of graduate and undergraduate study.

The sculpture in the patio courtyard just west of Arms has been nicknamed the Quad Angel. Trustee Harvey Mudd presented this marble bird-bath to the Institute in 1939, when the gology lab commemorating his father, Seeley W. Mudd, was dedicated. That building familiarly known as **North Mudd**, stands out to the right of the sculpture.

If you step out from under the arcade into Bechtel Mall and look around, you will note the architectural similarities in the buildings, which date from the 1930s. The facades are decorated with lively reliefs symbolizing the types of research and study done inside (at least at the time the buildings were designed).



“My frosh research, sponsored by Professor Tom Tombrello, explored how to accurately rate basketball players/teams using data analysis and principles from physics. My advisor likes to describe it as ‘Moneyball’ for basketball. A patent application is in the process.”

Zachary Rivkin '14 (New York, NY)
OPTION: Mathematics **HOUSE:** Avery

CALIFORNIA INSTITUTE OF TECHNOLOGY

Your walking tour starts at the Admissions Office at 383 South Hill Avenue. Following this guide, your tour should take an hour to an hour and a half.

You are welcome to visit our libraries and our bookstore. If you would like to take a coffee break, we recommend the Red Door or Café at Broad.

While you are visiting Caltech, you might also be interested in a tour of JPL. This can be arranged by visiting www.jpl.nasa.gov/events/tours. Caltech and JPL are just seven miles apart in Pasadena, a vibrant, culturally rich city of 150,000 at the foot of the San Gabriel Mountains. Caltech's 124-acre campus is 10 miles northeast of downtown Los Angeles and 27 miles from the ocean.

For more information about Caltech, visit our website.

www.caltech.edu





14

Proceed along the arcade in front of the **Mudd Laboratory of the Geological Sciences**, as North Mudd is officially known. Here, geobiologists study the impact of life on the chemical and physical evolution of the planet, and the imprint of global changes in the surface environment of the earth on the planet's genetic and molecular systems. The environmental scientists address air and water quality, past and potential future climate changes, and the dynamics of biogeochemical cycles and ecosystems. Geologists focus on field and laboratory-based approaches to understanding the tectonics of the earth's upper crust and deep crust at timescales dating back to billions of years, in addition to the study of petrologic, climatic, and surface processes.

"I conducted research concerning the ignition of combustible mixtures due to small hot metal particles being injected into them. This SURF allowed me to design and guild an optical pyrometer for non-contact temperature measurement necessary for the experiment. It also gave me a glimpse into what life as a researching grad student might be like, a path I'll probably pursue after Caltech."

Sebastian Rojas Mata '13 (San Jose, Costa Rica)
OPTION: Mechanical Engineering
HOUSE: Ricketts



15



At the end of the mall, turn left at the sidewalk (be sure to notice the particularly spectacular set of reliefs on the street side of North Mudd). Walk down to the corner of California Boulevard and Wilson Avenue. Here you will find **South Mudd**, the home of the Seismological Laboratory, which is a hub of activity following any significant earthquake. Go inside and up the stairs to the lobby; there you will find an interactive exhibit about earthquakes and seismology.

Earthquake study has a long history at Caltech. In the early 1930s, Beno Gutenberg and Charles Richter developed the well-known scale for grading an earthquake's severity. The Richter Scale has been replaced (for seismological use, at any rate) by the moment-magnitude scale, developed by the Seismo Lab's former director, Hiroo Kanamori.

Other geological investigations taking place in South Mudd concern volcanoes, global and regional plate motion, marine magnetics, dynamic meteorology and climatology, and the evolution of the earth and the planets.

Returning outside, cross California Boulevard and you'll see the **Keith Spalding Building**. This structure houses the Spitzer Science Center, which supports science operations for the Spitzer Space Telescope, launched in August 2003.

Leaping off into the unknown is an integral part of the educational process here.



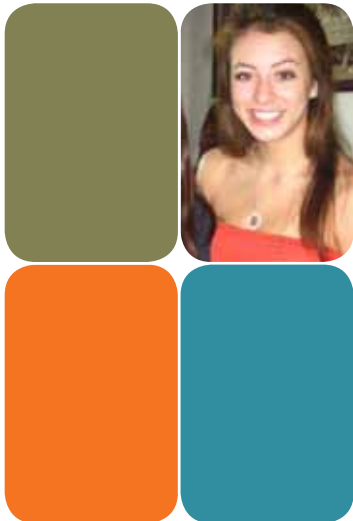
16

Next to Spaulding, further east is the **Cahill Center for Astronomy and Astrophysics**. With prominent “green” aspects that include energy and water conservation and recycling, the center was the first Caltech facility to receive LEED (Leadership in Energy and Environment Design) certification from the U.S. Green Building Council. Construction projects can receive certified, silver, gold, or platinum ratings, based on the number of earth-friendly features, and all of the Institute’s new buildings will attain a minimum silver rating. (The center opened in 2008.)

The terra cotta color was selected to connect the new building with Caltech’s historic campus. The main staircase, with its strange shapes and angles lit by the rooftop skylight, is meant to represent astronomers looking through telescopes at the unknown. The basement features laboratory spaces that are lit by daylight from a light well. The murals on the angled walls near the entrance display images of scientific work being done.

Between 200 and 300 researchers occupy this new building, where they work to unravel some of the most profound scientific mysteries of our age, probing such questions as the origin and ultimate fate of the universe; the forces that have shaped the formation and evolution of galaxies, stars, and planetary systems; the nature of the dark matter and dark energy that seem to permeate the cosmos; the behavior of spacetime and matter and energy under extreme conditions, such as those involving black holes; and of course, the perennially fascinating question of whether life exists elsewhere in the universe.

Beyond Spaulding and Cahill are **Braun Athletic Center** and **Brown Gymnasium**, facilities that include two swimming pools, a weight room, six tennis courts, two basketball courts, an aerobics room, six racquetball/handball/wallyball courts, a climbing wall, and an all-weather track. Caltech features 17 varsity athletics teams, including baseball, basketball, fencing, soccer, swimming & diving, tennis, track & field/cross country, volleyball and water polo. Brown Gymnasium sits on the site of the original Rose Bowl, and was Caltech’s first modern athletic facility. The Braun Athletic Center was completed in 1992, and serves as the headquarters for the division of athletics, physical education and recreation.



“One of my favorite things about Cahill is that every morning at 10:00am, we have informal discussions about current astrophysical research over coffee! There is nothing like a combination of caffeine and galaxies to kick off your day!”

Lori Dajose '15 (Riverside, CA)
OPTION: Planetary Science HOUSE: Ruddock



17

Retrace your steps and head north on Wilson Avenue. At the entrance to Bechtel Mall, North Mudd is on your right and the **Kerckhoff Laboratories of the Biological Sciences** is on your left. Kerckhoff was completed in 1928 in order to establish Caltech's biology division under Thomas Hunt Morgan (who later won a Nobel prize for his work in genetics). Kerckhoff currently hoses one of two *Drosophila* (fruit fly) repositories in the United States. The late biologist Ed Lewis, who won a 1995 Nobel Prize for his research on *Drosophila* genetics, had his lab here.



18

Proceed along Wilson Avenue, past Kerckhoff to the **Alles Laboratory for Molecular Biology**. Scientists in Alles study developmental biology—how the single cell of a fertilized egg becomes the specialized cells of an adult organism according to instructions carried in the DNA.



19

As you turn the corner to reenter the campus, you will find the **Norman W. Church Laboratory for Chemical Biology** on your right. It is a building with an unusual history. In the 1930s, when a horse named Proclivity—owned by Norman Church—won an important race at Santa Anita Race Track, it was claimed that Proclivity had been doped. To clear his name and that of his horse, Church called on Caltech's Arnold Beckman, then an assistant professor of chemistry, who found no evidence of such doping. Later, after reading about Caltech's work in chemical biology, Norman Church donated the funds for this building. It was in this lab that the late Nobel Laureate Roger Sperry discovered that the left and right hemispheres of our brains each have unique capabilities.

Across the path to your left are the **Braun Laboratories**. The design is a more modern interpretation of the Mediterranean style, as seen in the use of terra cotta, red-tiled roofs and grillwork over the windows. Scientists here work in the fields of molecular biology, immunology, and cell-surface chemistry. They are using techniques of genetic engineering to understand how genes and proteins work, and to attack such major diseases as hepatitis and multiple sclerosis. Mead Lab, to the northeast of Braun, houses student chemistry laboratories.



"When I got to Caltech, I was pretty much set for four years of isolation while I worked extremely hard. What I actually found was a welcoming community that was more than happy to help me relax and truly enjoy my time here."

Stan Schor '14 (Rochester, NY)
OPTION: Biology HOUSE: Ricketts





20

The next building on your left is the **Noyes Laboratory of Chemical Physics**, named for Arthur Amos Noyes, Caltech's first director of chemical research. Some of the scientists in this building take "snapshots" of the birth of molecules while the chemical reaction is still occurring; others are studying catalysis, or working to develop and electronic "nose" that can identify chemical constituents in a vapor.

Next, on your right, between the Church and Crellin laboratories, you will see an archway decorated with the reliefs that Alexander Stirling Calder (father of the Alexander Calder of mobile fame) designed in 1910 for the façade of Throop Hall. They were put in storage after Throop's demolition in 1972 and reinstalled here in early 1986. The six figures on the arches represent, from the left, Nature (Pan with his pipes), Art (a poet with stylus and tablet), Energy (bearing an inert human form on his back), Science (lighting the torch in his right hand from the sun that forms the central cartouche over the archway), winged Imagination (exulting in yet-unexplored possibilities), and helmeted Law (bearing tablets).

Behind the arches is the **Beckman Laboratory of Chemical Synthesis**, which encompasses portions of the Church and Crellin labs. Chemists in this building are synthesizing a variety of materials, from molecules that read and recognize specific bits of DNA to plastics that conduct energy or might act as magnets.

On your left is the new **Warren and Katharine Schlinger Laboratory for Chemistry and Chemical Engineering**, completed in 2010.

While most post-World War II Caltech buildings are oriented north-south (to align with now-closed streets), this brand-new, 60,000 square foot facility is oriented east-west. This state-of-the-art, sustainable laboratory brings together chemists and chemical engineers under one roof for new discovery and innovation. The laboratory houses research groups in synthetic chemistry and chemical engineering, enabling new research in catalysis, materials, and the atmosphere.

As you continue east on San Pasqual Walk, to your right is the **Gates Chemistry Library**, whose stone columns are decorated with Mayan motifs. To the left of the library is the **Parsons-Gates Hall of Administration**, the oldest building on campus (though it was the second one built). Built in 1917 as a chemistry lab to bring Arthur Amos Noyes from MIT to lead the chemistry division, it has housed the offices of the president and other senior administrators since 1983. The building was damaged in the 1971 Sylmar earthquake, but while a 1983 renovation gutted the interior, the exterior remained the same.

21



"Caltech has some amazing research opportunities. I've been able to help build underdominance constructs in *Drosophila* and phenotype maternal *Drosophila* promoters for use in *Aedes* (a type of mosquito). I've been given full reign to design and complete my own set of experiments. I'm glad I got the chance to be doing the work I am today."

Mario Zubia '13 (Guadalupe, CA)
 OPTION: Biology HOUSE: Lloyd House



22

Dabney Hall of the Humanities, directly across the lawn from Parsons-Gates, houses Caltech's literature, foreign language, and philosophy faculty. It was built in 1929 by Goodhue Associates in honor of Bertram Grosvenor Goodhue, who designed many of Caltech's buildings before passing away suddenly in 1924. Behind Dabney Hall is the Garden of Associates, the site of many campus gatherings. Enter the gardens through the small wrought-iron gate. On the far side, under the trees, stands a life-size bronze statue of Tenjin, the legendary Japanese patron of scholars and writers.



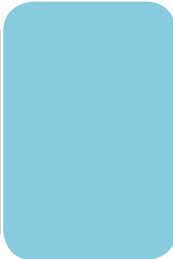
Behind the statue of Tenjin and beyond the wall rises the **Sherman Fairchild Library of Engineering and Applied Science**, which took the pace of the original Goodhue Associates-designed steam plant when it opened in 1996. Dabney Lounge, behind the three large doors at the south end of the gardens, is used for chamber concerts, dance classes, plays, and other events. Exit the garden through the same gate you entered.

"I got to see James Cameron at Beckman Auditorium. He was discussing the science behind the movie Avatar, and he had an entire panel of Caltech professors with him. They talked about everything from Pandora's gravity to the bio-luminescence of the creatures on this planet. This guy really looked into his facts!"

Vivian Zhang '13 (Tucson, AZ)

OPTION: Mechanical Engineering/Bioengineering

HOUSE: Lloyd



To the north is a large lawn, known as Beckman Mall, where commencement is held every year. Two buildings flank the lawn. On the left is the **Beckman Laboratories of Behavioral Biology**, where researchers investigate how the brain processes sensory information. On the right is Baxter Hall of the Humanities and Social Sciences. This building houses historians, economists, and political and social scientists, many of whom have pioneered the application of experimental methods in their fields of study. Baxter hall contains the 400-seat Ramo Auditorium and a large lecture hall.

23



Proceed down the mall to the white circular building, **Beckman Auditorium**, also known as "the wedding cake" (for obvious reasons). To make Caltech more accessible to the general public, the auditorium was built in a key location in 1964. Architect Edward Durell Stone was asked to design a rectangular building, but his passion for circular structures and conical roofs won out in the end. Stone's building is an example of new formalism, a temple-like structure with 32-tapered, diamond-shaped columns. Each year, the auditorium's diverse schedule of lectures, concerts, dance recitals, and theatrical programs attracts audiences from the greater Los Angeles area. Designed by noted architect Edward Durrell Stone, Beckman Auditorium is the most unusual building on campus. (Yes, the outdoor light fixtures are supposed to suggest atoms.) Go up the stairs to the auditorium and walk clockwise around it.

24





25

At the end of the rectangular reflecting pool to your left (whose floor, tiled in a double-helical pattern, caused it to be nicknamed “the gene pool”), is **Beckman Institute**. The largest building on campus, Beckman Institute brings together scientists from a variety of disciplines who have similar research interests. Here theorists interact with experimentalists, biologists with chemists and physicists. It also houses the Institute Archives and the Beckman Room, which contains exhibits about the history of chemistry and the scientific contributions of Caltech alumnus Arnold Beckman.

The blue-lined reflecting pool united Arnold Beckman’s two greatest gifts to Caltech, Beckman Auditorium and Beckman Institute. Modeled after fountains outside the Alhambra in Spain, the pool has been dubbed “the Gene Pool” because of its distinctive double-helix tile design.



26

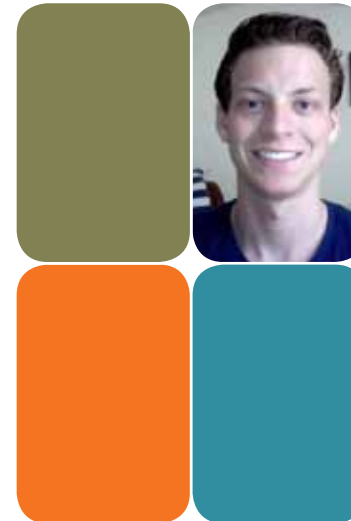
Walking through the courtyard of Beckman Institute toward Wilson Avenue, just to the northwest is the **Broad Center for the Biological Sciences**, the cornerstone of a \$100 million initiative to strengthen Caltech’s research efforts in those fields. The first building located on Caltech’s northwest quadrant, the Broad Center houses three major new research facilities: a magnetic resonance imaging center, a biomolecular structures laboratory, and a genetic resources laboratory.

27



Walk back beyond the back side of Beckman Auditorium toward Moore Walk and you will see the **Gordon and Betty Moore Laboratory of Engineering**, in front of you, in which Caltech faculty conduct research in wireless communication, networking, distributed computing, and the other emerging fields of engineering and applied science. This building is also home to the computation and neural systems program—the first of its kind in the world—in which biologists, computer scientists, chemistry, physicists, and other collaborate to apply the lessons of biology to computer design, and to use computer simulations to study the brain.

Moore Lab also houses the National Science Foundation’s **Center for Neuromorphic Systems Engineering**, where scientists and engineers hope to design machines with human-like senses that could, for instance, “listen” to audio equipment, “feel” fabrics, and sort machine parts by “sight.”



“I have researched genetics with Dr. Elliot Meyerowitz and computational protein design with Dr. Steve Mayo. I have also researched signal transduction pathways at the University of Pennsylvania during my time at Caltech.”

Christian Rivas '13 (Claremont, CA)
OPTION: Biology/Business Economics and Management
HOUSE: Ruddock



28

Continue down Moore Walk. On the right you will see the **Annenberg Center for Information Science and Technology**, a three-story 50,000-square-foot facility that serves as a base for the multidisciplinary research. Frederick Fisher Architects created an informal interior with offices placed around open lounges, thereby maximizing the amount of interaction between different divisions. It is the first program in the country to combine research and teaching ranging from the fundamental theoretical understanding of information to the sciences and engineering of novel information substrates, biological circuits, and complex social systems.

Walk north (towards the mountains); the first building to your left will be **Avery House**, a residence for undergraduates, graduate students, faculty, and occasional visiting scholars. The complex also includes a dining hall, library, meeting rooms and a courtyard for informal gatherings.



29

Next, take the walkway between Annenberg and Moore Lab and you will see the **Thomas J. Watson, Sr. Laboratories of Applied Physics**. Watson houses research in solid-state electronics and plasma physics. Scientists here are developing lasers and other electronic devices that will be used in light-wave communications systems in the future. Go down the stairs and take the walkway that goes off diagonally to the right.

On your right are the **Keck Engineering Laboratories**, which contain facilities for studying environmental engineering, materials science, and bioengineering. Acid rain and acid fog are also a focus of research here. Across the walkway from Keck are two buildings, the Steele Laboratory of Electrical Sciences and the Powell-Booth Computing Center.

Researchers in **Steele Lab** are working in such areas as signal—and information—processing theory (many of their techniques have been used by spacecraft to send pictures of distant worlds back to Earth), and are developing optical computers that “think” with photons of light instead of electrons.

30



“Living very far away, the resources available to me to learn more about Caltech were limited. The interaction with the current students in the Facebook group was definitely a very good source of information. Learning about the housing system and the collaborative environment were among the main things that convinced me to enroll here.”
Aleksander Bello '15 (Tirana, Albania)
OPTION: Computer Science HOUSE: Ricketts

Also located in Steele Lab is the **Kavli Nanoscience Institute** which emphasizes research in nanobiotechnology, nanophotonics, and large-scale integration of nanosystems. Pushing the state-of-the-art beyond current capabilities in nanofabrication, KNI has pursued aggressive acquisition of strategic instrumentation for advance nanofabrication capabilities. Its multi-user laboratories and cleanrooms for nanostructure synthesis, fabrication, and characterization are available to users from both academia and industry.

In **Powell-Booth**, computer scientists are developing supercomputers designed to far outperform even the most powerful computers in use today. Such supercomputers will enable scientists and engineers to better forecast weather, design aircraft, search for oil, engineer proteins, and understand the fine structure of the atom.

Straight ahead is the **Spalding Laboratory of Engineering**, where work is being carried out in various branches of chemical engineering.

On your left is the recently renovated LEED Gold Certified **Jorgensen Laboratory of Information Science**, which is home to Caltech's computer science program. Located within Jorgensen is the Resnick Institute, which is committed to identifying and addressing the most important challenges in generating, sorting, transmitting and conserving energy. The Resnick Institute fosters advances in energy science and technology through research, education and communication.

At the end of Holliston, look to your left across the mall at Caltech's lunchtime hub, **Chandler Dining Hall**, and behind it the Convenience Store.

31



Take a left on Holliston Circle. As you walk up the street, you'll see the **Center for Student Services**, which houses the offices of the graduate and undergraduate deans, Registrar, Career Development Center, Fellowships Advising and Study Abroad, International Student Programs, Caltech Center for Diversity, and Institute Housing. Further up the street is the Caltech Engineering Services building, where the offices of Technology Transfer and Intellectual Property are located.

32



At Caltech, there's definitely a culture that breeds and facilitates curiosity, the pleasure of discovering new things.

"At Caltech, I was able to make immediate connections with people in a way that I never had before, and I knew that I didn't just belong here, but that I needed to be here."

Katie Fisher '15 (Chapel Hill, NC)
OPTION: Chemistry
HOUSE: Ruddock)



To return to the Admission Office, go back to San Pasqual and turn left on Hill Avenue and soon you will be back to where your tour began. Our next door neighbors on Hill Avenue house Caltech's Alumni Association and the Einstein Papers Project. Tip your hat to Alfred as you pass!

This concludes your walking tour. We hope that you enjoyed exploring our campus! For more information about Caltech, please visit our website at admissions.caltech.edu. The website features blogs written by current students, plus information about upcoming events and our application process.

If you have any questions, please contact us at (626) 395-6341 or via e-mail at ugadmissions@caltech.edu.

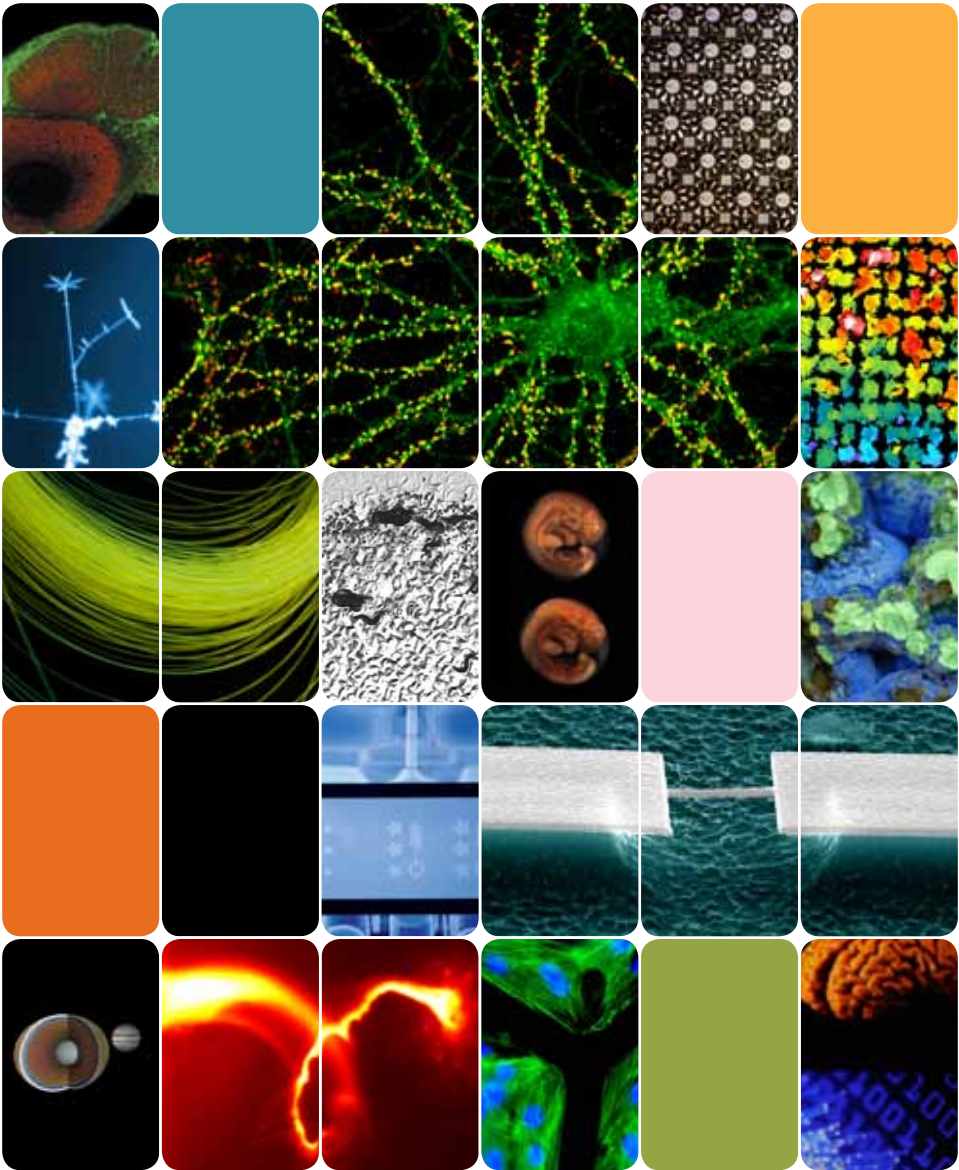
Write: Office of Undergraduate Admissions
Caltech, Mail Code 10-90
Pasadena, CA 91125
Visit: 383 S. Hill Avenue
Phone: 626.395.6341
Web: <http://www.admissions.caltech.edu/>



"I was most excited about the research opportunities and the small student to faculty ratio—I knew I wanted to be in a lab, and Caltech offered far more opportunities get involved in research than any other university. The location was also a big factor—I love the state of California and wanted to stay here for college."

Connor Rosen '15 (Hillsborough, CA)
OPTION: Chemistry
HOUSE: Ricketts

The mission of the California Institute of Technology is to expand human knowledge and benefit society through research integrated with education. We investigate the most challenging, fundamental problems in science and technology in a singularly collegial, interdisciplinary atmosphere, while educating outstanding students to become creative members of society.



California Institute of Technology
Office of Undergraduate Admissions
383 S. Hill Avenue
Pasadena, CA 91125