“Harnessing the fearlessness, inventiveness, and curiosity of Caltech, we can create knowledge for the ages and solve some of the most pressing problems in society.”

—Caltech president Thomas F. Rosenbaum
<table>
<thead>
<tr>
<th><strong>34</strong> faculty and alumni have won <strong>35</strong> Nobel Prizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The <strong>Richter Scale</strong> was developed</td>
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<tr>
<td>The <strong>Jet Propulsion Laboratory</strong> was born</td>
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<tr>
<td>Richard Feynman wrote the book on physics</td>
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<td><strong>Pluto</strong> was demoted</td>
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<tr>
<td><strong>LIGO</strong> was invented</td>
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<tr>
<td><strong>Einstein</strong> was a visiting professor for three years, and today we curate his papers</td>
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<tr>
<td>The <strong>Clean Air Act</strong> had its start</td>
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<tr>
<td>The <strong>Keeling Curve</strong> originated</td>
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<tr>
<td><strong>Linus Pauling</strong> identified the nature of the chemical bond</td>
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</table>
These are our students.
Caltech’s students excel in one of the world’s most rigorous academic environments. They come to Caltech from all over the United States—and across the globe—bringing with them diverse experiences, perspectives, and passions. What they share is an unbridled sense of curiosity and an extraordinary aptitude for and interest in science, engineering, and technology.

“Wealth is not the true measure of a man. His worth must be calculated by the degree of self-sacrifice for others he is willing to make.”

—Caltech’s motto

**STUDENT PROFILE**

Jake Mattinson (BS ’19)

**HOMETOWN:** Northridge, Calif.

**ACADEMIC FOCUS:** Physics, with a minor in computer science.

**PROFESSORS:** “Most of my professors are pretty interesting. Many are definitely characters who make my experiences unique, and I have some really great relationships with them.”

**HOUSE LIFE:** “My favorite part of Ricketts House is the attitude derived from our official motto: ‘Prend moi tel que je suis,’ which is French for ‘Take me as I am.’ It’s rare to find an environment this supportive of differences.”

**OUTSIDE OF CLASS:** “I played Scotty in Boldly Go! and Claudio in Much Ado About Nothing, both Caltech productions.”

**POST CALTECH:** “I hope to go on to get a PhD. I really enjoy teaching and would like to work in physics education policy.”

Caltech’s mascot is the beaver—an homage to nature’s engineer.
HOMETOWN: Kolkata, India

WHY CALTECH? “The work I do here, the things I learn, they matter immensely to both the scientific community and the industry I will work in.”

ACADEMIC FOCUS: Double major in mechanical engineering and business, economics, and management.

PROFESSORS: “They are some of the most brilliant people in the scientific community, and they all seem very willing to work with students and encourage open discussion.”

AS AN INTERNATIONAL STUDENT: “Sunshine and American cheer—these are the new constants of my life.”

OUTSIDE OF CLASS: “I head business and outreach for Caltech’s Formula SAE racing club, as well as the Robotics Team. Apart from that, I’m part of Caltech’s Dhamaka dance troupe.”

WOMEN MENTORING WOMEN

The program began as a way to connect female postdocs and graduate students. It has since grown to include staff members and undergraduates. Today, the program has 89 mentor–mentee pairs.

CALTECH STUDENT BUCKET LIST

Visit The Huntington Library, Art Collections, and Botanical Gardens

Eat at Tommy’s

Build something in the machine shop

Have dinner at the Athenaeum

See the LA Basin from Mount Wilson

Get lunch at Ernie’s food truck
Fourth-year graduate student in geological and planetary sciences

HOMETOWN: Anoka, Minn.

RESEARCH FOCUS: Using measurements from autonomous underwater vehicles to characterize phytoplankton blooms throughout the world’s oceans and estimate the amount of carbon-containing biomass they export into the ocean depths.

WHY CALTECH? “I wanted a place with scientific rigor but also a strong graduate student community.”

EXTRACURRICULAR ACTIVITIES: President of the student club Science & Engineering Policy at Caltech; cofounder of the Caltech Bikeshare program; participant in the Caltech chamber music program.

WAY OFF CAMPUS: Research trips to Antarctica, where he’s caught sight of penguins and whales and “towering chunks of ice surrounded by the clearest water you’ve ever seen.”

In 2016–2017, 48 percent of the graduate population are foreign students. The top five countries from which students hail are China, Canada, South Korea, India, and Taiwan.
THESE ARE OUR VALUES
Excellence
Ambition
Perspective
Three values that define and drive Caltech

An ambitious faculty and student body conduct their research and studies as members of a community committed to an uncompromising standard of excellence.

Caltech’s scholars venture into uncharted territory, taking ambitious intellectual risks to revolutionize our understanding of the world around us.

Being able to view a problem from new perspectives, understanding art and history, society and culture, is vital to ensuring that our scientific and technological discoveries achieve the most profound impact.

DIVERSITY

“Caltech can only sustain its excellence and remain a destination of choice by continuing to welcome and support individuals from a wide variety of backgrounds.”
— CALTECH PRESIDENT THOMAS F. ROSENBAUM

SUSTAINABILITY

Since creating the Office of Sustainability in 2008, the campus has:
- reduced water consumption by 40%
- reduced direct greenhouse gas emissions by 25%
- reduced waste generated by 35%
- reduced energy use intensity (kbtu/sq. ft.) by 2%

THE CALTECH HONOR CODE

No member of the Caltech community shall take unfair advantage of any other member of the Caltech community.

Caltech has almost 5,000 solar panels on 11 structures across campus.

The campus generates about 80% of its power on-site.
Caltech students may hone their writing skills at the Hixon Writing Center through collaborative, interactive one-on-one tutoring.

Students may choose from 26 options (majors) in 6 academic divisions:
- Biology and Biological Engineering
- Chemistry and Chemical Engineering
- Engineering and Applied Science
- Geological and Planetary Sciences
- Humanities and Social Sciences
- Physics, Mathematics and Astronomy

A Caltech education is notable for its challenging curriculum, close collaborations with faculty, and small class size. Our students work toward undergraduate and graduate degrees alongside their intellectual equals in an atmosphere of close collaboration and mutual support.

Premed Program
Joint programs with area medical centers provide Caltech students with clinical research experience in preparation for applying to medical schools.

Founded in 1891 as Throop University, Caltech has been on its present campus since 1910 and became the California Institute of Technology in 1920. Though the Institute has grown over the decades, it remains a small campus with an intimate learning environment.

Center for Teaching, Learning, and Outreach
This campus center supports course and curriculum development, tutoring programs, and partnerships with local schools.

3:1 student/faculty ratio

95% of undergraduates participate in research

Caltech students may hone their writing skills at the Hixon Writing Center through collaborative, interactive one-on-one tutoring.
With **20 DIVISION III VARSITY TEAMS**, Caltech competes primarily in the Southern California Intercollegiate Athletic Conference (SCIAC).

80% OF STUDENTS participate in intercollegiate, club, intramural, or informal recreational activities.

2 OUT OF 3 Caltech undergrads **play at least one musical instrument or sing in the Caltech Glee Club and Chamber Singers.** The Caltech Symphony performs **3 to 4 major concerts** a year. Caltech musicians also play with the Concert Band, the Caltech Jazz Band, or chamber music groups.

**Theater Arts Caltech** produces and performs **2 or more plays** each academic year.

There are more than **100 student clubs** and sports organizations on campus, ranging from **juggling** and **alpine climbing** to **entrepreneurship** and **robotics**.

The **Caltech Y** offers hundreds of opportunities to get involved in educational programs, **outdoor** adventures, **community** service, **social** activities, and **cultural** events.

---

**Athletics facilities**
- Two gymnasiums
- One 3,500-square-foot weight room
- Two 25-yard pools
- Four racquetball courts
- Eight tennis courts

**Popular physical education courses include:**
- Hiking
- Flying saucers
- Half-marathon training
- Rock climbing
SURF (Summer Undergraduate Research Fellowships)

Every summer, Caltech students can do research with experienced mentors working at the frontier of their fields. From writing proposals to presenting results, students experience the process of research as a creative intellectual activity.

80% of all undergrads participate in Caltech’s SURF

10 weeks of research

$6,000 stipend
**HOUSING**

85% of undergraduate students live in Caltech housing. They choose among 8 on-campus houses where they study, socialize, and dine together. Students remain part of the same close-knit community all 4 years.

450 graduate students live in campus apartments.

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**STUDY ABROAD**

Caltech students study around the globe in cities including Cambridge, London, Copenhagen, Edinburgh, Paris, and Melbourne.

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**TRADITIONS AND PRANKS**

Traditions are very much a part of Caltech campus life. Caltech students also have a history of creating elaborate pranks to celebrate their school pride.

At the Rose Bowl in 1961, students tricked a stadium full of dedicated Washington Huskies fans into holding up flip cards that spelled out Caltech.

Every Halloween night, students dunk pumpkins in liquid nitrogen and drop them from Caltech’s tallest building—Millikan Library—to see if they give off a brief glow as they hit the ground and shatter.

“Caltech is a really small, tight-knit community, and that’s something I have come to cherish.”

JENNY HE (BS '17)
Caltech has one of the nation’s lowest student-to-faculty ratios, with 300 professorial faculty members offering a rigorous curriculum and access to hands-on research to approximately 1,000 undergraduates and 1,260 graduate students. The Institute’s faculty members direct discipline-defining research in science and engineering while providing their students with the tools to pursue their own investigations.

Caltech faculty and graduate student teaching assistants find the support they need to be excellent educators through seminars, practical training, and teaching resources offered by the Caltech Project for Effective Teaching.

### Caltech faculty, alumni, and trustee honors:

<table>
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<tr>
<th>Honor</th>
<th>Number</th>
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<tbody>
<tr>
<td>National Medal of Science</td>
<td>58</td>
</tr>
<tr>
<td>National Medal of Technology and Innovation</td>
<td>13</td>
</tr>
<tr>
<td>National Academy of Sciences</td>
<td>72</td>
</tr>
<tr>
<td>National Academy of Engineering</td>
<td>42</td>
</tr>
<tr>
<td>American Academy of Arts and Sciences</td>
<td>102</td>
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</tbody>
</table>

Assistant Professor of Planetary Science

**Research Focus:** Studying the temperature, compositions, and atmospheric circulation patterns of planets orbiting other stars (also known as “exoplanets”).

**Why Caltech?** “The great thing about being here is that there are not only top-notch telescopes that you can get time on, but there are actually telescopes that you can drive to.”
RESEARCH FOCUS: Studying how the current era of data acquisition interacts with centuries of human intellectual development of mathematical models that describe the world around us.

WHY CALTECH? “What has always driven my interest in mathematics is the potential for diverse applications and the role of mathematics in unifying these different fields. Caltech provides enormous potential for collaboration.”

“Our goal at Caltech is to discover things that can transform our world. This objective also means that we take responsibility for ensuring that people everywhere have a reasonable chance of learning about our work.”

— MORTEZA GHARIB, HANS W. LIEPMANN
PROFESSOR OF AERONAUTICS
AND BIOINSPIRED ENGINEERING
Albert Billings Ruddock Professor of Biology  
Recipient of the 2016 Richard P. Feynman Prize for Excellence in Teaching

**RESEARCH FOCUS:** Investigating the mechanisms that control blood stem cell differentiation and the development of T lymphocytes—white blood cells that play an important role in immunity.

**FIRSTS:** Defined the gene regulatory network and component molecular mechanisms through which blood stem cells are transformed into committed T cells.

**STUDENTS SAY:** “She constantly returns to the idea of what will help students learn best and what will train them effectively.” … She showed us that biology was not simply a ‘memorization game,’ but rather a logic puzzle.”

**ROTHENBERG ON TEACHING:** “That incredible connection between the way you appreciate the complexity of the world and the way you can give students the tools to see things that you never saw before—it’s really beautiful.”

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**Tech transfer**

Caltech’s Office of Technology Transfer and Corporate Partnerships helps scientists and engineers at Caltech and JPL transfer the fruits of their research to the commercial sector.

**IN 2016:**

- 196 U.S. patents issued
- 1,922 U.S. patents active
- 229 invention disclosures submitted for Caltech
- 9 startup companies launched
The work that takes place at Caltech will help cure diseases, augment environmental resources, and lessen the impact of natural disasters in the future.
<table>
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<tr>
<th>Detected <strong>gravitational waves</strong> 100 years after Einstein’s prediction, opening an unprecedented new window onto the cosmos.</th>
<th>Taken a vital next step in <strong>ultrasound design</strong>, imaging not just anatomy but specific cells and molecules deeper in the body.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed a design for a <strong>giant space telescope</strong> that would be assembled—in space—by six-armed robots.</td>
<td>Found evidence for a <strong>ninth planet</strong> that has a mass about 10 times that of Earth and would take between 10,000 and 20,000 years to make 1 full orbit around the sun.</td>
</tr>
<tr>
<td>Discovered a <strong>link between intestinal bacteria and Parkinson's disease</strong>, showing that changes in gut bacteria contribute to the deterioration of motor skills that is the hallmark of this disease.</td>
<td>Discovered that a <strong>social-affiliation hormone promotes cooperation in risky situations</strong>, which could have practical applications where mutual trust and cooperation are important for success.</td>
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</table>
Managed by Caltech for NASA, the Jet Propulsion Laboratory is the leading U.S. center for the robotic exploration of the solar system. Scientists based on campus and at JPL work together on NASA missions that focus on planetary exploration, Earth science, and space-based astronomy.
RECENTLY AT JPL

Dawn completes its primary mission

The Dawn spacecraft explored protoplanet Vesta and dwarf planet Ceres. This was the first mission to orbit two extraterrestrial solar system targets and the first to orbit any object in the main asteroid belt, between Mars and Jupiter.

Kepler mission announces largest-ever batch of planets

The Kepler mission verified 1,284 new planets—the single largest finding of planets to date. Among those are nearly 550 that, based on their size, could be rocky planets like Earth.

Curiosity climbs the basal layer of Mt. Sharp

The Curiosity Mars rover continued its exploration of the planet, sending back stunning images of the “Murray Buttes” region of lower Mount Sharp.

Juno arrives at Jupiter

After an almost five-year journey to the solar system’s largest planet, the Juno spacecraft successfully entered Jupiter’s orbit during a 35-minute engine burn.
Caltech’s unique laboratories, observatories, institutes, research centers, and interdisciplinary collaborations are what allow the Institute’s researchers to shift paradigms, create technologies, expand our knowledge base, and benefit society.
Caltech’s newest institute is the Tianqiao and Chrissy Chen Institute for Neuroscience at Caltech, established in December of 2016. The institute brings together scientists and engineers from all six divisions to deepen our understanding of the brain.

The Caltech-Huntington Humanities Collaborations, launched in the fall of 2016, is currently bringing scholars together across disciplines to explore “Violence and Order Past and Present.”

The Caltech Seismological Laboratory is the Institute’s center for seismic studies and the preeminent source for earthquake information in Southern California and around the world.

In just one decade, the Kavli Nanoscience Institute has realized breakthroughs in areas ranging from nanoscale photonics to materials science to biotechnology.

John Henning
Senior Research Engineer, Palomar Observatory
Thomas W. Schmitt Annual Staff Prize winner 2016

JOINED CALTECH: 1984

ON THE JOB: Henning designs and maintains control systems to guide and safeguard Palomar’s three telescopes. Because he is so familiar with telescopes’ inner workings, he is often involved in troubleshooting and improvements at the observatory.

NICKNAME: “The Wizard,” because Henning has a solution to every challenge.

WHY HE LOVES HIS WORK: “I enjoy working with our dedicated, hardworking staff. And getting the telescopes to perform new tricks is a lot of fun; there is always an opportunity to be creative.”
THIS IS LIFE AFTER CALTECH
Caltech’s more than 23,000 living alumni include Nobel Prize–winning scientists (20, to be exact), Academy Award–winning artists, trailblazing corporate executives, successful entrepreneurs, academic leaders, medical pioneers, and technological innovators.

Nicole Peill-Moelter  
(PhD ’97)

Profile

Senior Director of Environmental Sustainability, Akamai Technologies

In 2009, at the behest of then-CEO Paul Sagan, Peill-Moelter established Akamai’s corporate environmental sustainability program. Responsible for global strategy and execution, she is helping to accelerate private-sector decarbonization of operations by developing innovative models for corporate renewable energy procurement.

David Ho  
(BS ’74)

Profile

Director and Chief Executive Officer, Aaron Diamond AIDS Research Center

Ho’s discovery in the mid-1990s that HIV is never dormant, but is constantly mutating and continuing its assault on the immune system, directly led to the antiretroviral therapies that have dramatically increased lifespans for those affected by the disease.
Michaeleen Doucleff
(BS ‘98)

Reporter, NPR Science Desk

Doucleff, who reports for NPR on everything from vaccinations to the microbiome, was on the team that won a George Foster Peabody Award in 2014 for its in-depth coverage of the Ebola outbreak in West Africa.

Ian Agol
(BS ’92)

Associate Professor, Department of Mathematics, UC Berkeley

Agol was awarded the 2016 Breakthrough Prize in Mathematics for his work on the topology and geometry of three-dimensional spaces, such as our universe. He is also acclaimed for solving five major conjectures posed by math giant William Thurston.
Joe Zadeh  
(PhD ’10)

**Vice President of Product, Airbnb**

Zadeh was the third engineer hired by Airbnb, which now has more than 3 million listings in over 190 countries worldwide; his oversight of Airbnb’s mobile apps and website landed him on *Fortune* magazine’s “40 Under 40” list in 2016.

Adam Steltzner  
(MS ’91)

**JPL Engineer**

Steltzner led the entry, descent, and landing team on the Mars Curiosity Rover project—which used an innovative sky-crane landing system that his team designed—and was named, in 2016, to the National Academy of Engineering. He is currently investigating how NASA’s next Mars rover might collect samples for possible return to Earth.
THIS IS A GROWING CAMPUS
Bechtel Residence
Named for Caltech Life Trustee Stephen D. Bechtel, Jr., the Bechtel Residence will provide undergraduate housing to 212 students, allowing 95 percent of undergrads to live on campus and fully participate in residential life. Students provided input from the outset of the design process, and the finished residence, at the northeast edge of campus, will feature a large interior courtyard and six interconnected structures to encourage interactions. The residence will open to students in September 2018.

North Athletic Field
The field has been upgraded by replacing the grass with high-quality artificial turf. The synthetic turf has a longer life span and also provides a more durable and uniform playing surface, allowing year-round use for a wide range of campus activities. This is also one of many steps taken by the Institute to save water.

Athenaeum kitchen addition
A new 1,900-square-foot kitchen addition, the Rath Al Fresco Pavilion, at the Athenaeum—the Institute’s faculty club—will offer members a variety of grab-and-go lunchtime options starting mid-April of 2017. The summer al fresco dinner from May through October will be located in a peaceful newly landscaped terrace setting under the deodar cedars.

For more on the campus and its buildings, both past and present, visit our interactive history map at www.caltech.edu/historymap.
THIS IS
HOW WE ENGAGE
Caltech is an integral part of and partner with the city of Pasadena. Together with JPL, we are the city’s largest employer, and over the years our campus has become a cultural and intellectual magnet for visitors from the surrounding community.

Earnest C. Watson Lecture Series
Nine times a year, professors and researchers based on campus and at JPL present their work to the public. Topics in 2016 included Planet Nine, DNA origami, algorithmic magic, and extrasolar space weather.

Visiting Speakers
Notable speakers who visited Caltech in 2016 include entrepreneur and philanthropist Bill Gates (above); surgeon, writer, and public health researcher Atul Gawande (right); and actor, writer, and science communication advocate Alan Alda.

On Stage
Each season, Caltech welcomes the public to performing arts events ranging from theater and music to dance and comedy. In the last year we welcomed a jazz ensemble, Japanese drummers, a Mauritanian storyteller (Noura Mint Seymali, above, at left), and Irish folk musicians, among others.
ABCs of STEM
Caltech brings STEM to life for Pasadena-area students and teachers. In 2016 our school year programs directly reached over 3,300 students and teachers and another 12,000 students in participating teachers’ classes.
Our combined summer programs reached 930 young people, from 4-year-olds to high school researchers embedded in Caltech labs.

Caltech Associates
This vibrant philanthropic organization of approximately 2,000 community members, business leaders, entrepreneurs, and academics supports Caltech and takes part in a roster of scholarly and social events on and off campus.

On Location
Over the years, the Caltech campus has appeared in several well-known TV shows and movies.

Modern Family
The X-Files
The Big Bang Theory
Silicon Valley
Transparent
Mission: Impossible
Entourage
Legally Blonde
Numb3rs
The West Wing

Getting Social
We connect with students, alumni, and the wider world through Facebook, Twitter, YouTube, Instagram, and Snapchat.
THIS IS
OUR
CITY
The Caltech campus is located in Pasadena, California, a vibrant city 10 miles northeast of downtown Los Angeles and minutes from the San Gabriel Mountains.

PASADENA IS THE HOME OF:

- Tournament of Roses Parade
- Norton Simon Museum
- The Huntington Library, Art Collections, and Botanical Gardens
- Old Town Pasadena
- The Pasadena Playhouse

Average high temperature 77º

- Downtown Los Angeles is a few stops away on the Metro Gold Line
- Hollywood is 25 minutes from Pasadena
- The Rose Bowl Stadium is 10 minutes from Caltech’s campus
THIS IS OUR HOME

Malibu
Santa Monica
Hollywood
Downtown Los Angeles
LAX
Manhattan Beach
Long Beach
Pacific Ocean
Located in the heart of the city of Pasadena, at the foot of the San Gabriel Mountains, Caltech is minutes from downtown Los Angeles and less than two hours from beaches, mountains, deserts, and the best that Southern California has to offer.
**Campus Tours**

Prospective students are encouraged to visit campus and see life at Caltech firsthand. To find out more, visit admissions.caltech.edu.

Architectural tours offer visitors and residents a unique perspective on Caltech. For reservations and information, call 626-395-4656.
Photography/Illustration:
Seth Hanson: cover, 18; Mario de Lopez: 7, 12 (lower left); Herb Shoebridge: 8; Max S. Gerber: 10; Vasta Photography: 12 (upper right); Michael Wong: 12 (center);
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Courtesy of Nicola Peill-Moelter: 31; Courtesy of MacArthur Foundation: 31 (right); Courtesy of Michaelleen Douclef: 32; Courtesy of Ian Agol: 32; Courtesy of
Airbnb: 33 (left); Bill Ingalls/NASA: 33 (right); Courtesy of ZGF Architects: 34-35 (left); Courtesy of Caltech Athletics: 35 (center); Courtesy of Frederick Fisher and
Partner: 35 (right); Tim Llewellyn: 37 (bottom)
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