



2020 Endowment Report

October 1, 2019, through September 30, 2020

Caltech

SUSTAINED GROWTH DURING A WILD RIDE



I am very pleased to report that the Caltech endowment investment pool grew by nearly \$107 million to \$3.08 billion during fiscal year 2020.* Contributing to this growth were gifts to endowment and other additions of \$77 million plus an investment return of \$217 million, offset by total withdrawals of \$188 million in support of Institute activities.

Years like 2020 serve to remind us of the disruptive nature of uncertainty. Conversely, they reinforce the enormous value of stable, consistently growing endowment payout to support the Institute during challenging times. Despite little else being normal during the year, the endowment payout to the Institute rose nearly 5 percent, from \$150 million in fiscal year 2019 to \$157 million in fiscal year 2020.

During the fiscal year, the markets took us for a wild ride that no one could have predicted. Recognizing the uncertain impact the global pandemic would have on the economy, investors drove down the S&P 500 nearly 34 percent between mid-February and mid-March 2020. Perhaps even more dramatically, between the March low and September 30, the S&P 500 rose over 50 percent. Ultimately, the S&P 500 generated a 15 percent gain during our fiscal year. However, as is often the case, a single market index, viewed over a relatively short period of time, does not tell the entire story. While companies associated with information technology, including “tech-enabled” companies, rose dramatically for the most part, benefiting from the changes in business and consumer behaviors imposed by the pandemic, other areas, including utilities, financials, real estate, and energy, actually ended the fiscal year in the red. Similarly, while certain sectors of the U.S. markets rallied, other developed markets around the world (Europe, Australia, Japan, Canada) ended the fiscal year virtually flat. As a result, a global, highly diversified portfolio such as that found in Caltech’s endowment investment pool enjoyed more modest gains.

With the foregoing in mind, during the periods ended September 30, 2020, the endowment investment pool generated annualized investment gains of 7.8 percent, 7.7 percent, 9.3 percent, and 8.0 percent

for the one-, three-, five-, and 10-year periods, respectively. These figures exceeded our internal investment policy benchmark returns by 0.6 percent, 2.1 percent, 2.1 percent, and 1.6 percent, respectively.

With such performance dispersion among geographies, sectors, industries, and sizes, performance within the endowment investment pool was similarly mixed. On the positive side, our private equity portfolio continued to perform admirably, generating a 22.3 percent return during the fiscal year and exceeding its benchmark by 3.4 percent. While venture capital seemed to get the headlines, in our portfolio it was our buyout managers who excelled, generating an index-beating 24.0 percent return, versus our venture capital managers, who generated 17.6 percent. Our public equity managers realized more modest gains, delivering a 11.6 percent fiscal-year return and outperforming our global public equity benchmark by 1.0 percent. The spread between the best and worst performers was the widest I can recall—we had several public equity managers with returns in the 40 to 60 percent range, several in the 10 to 20 percent range, and several in modestly negative territory.

In addition, our decision 10 years ago to emphasize multi-family real estate, rather than office, retail, or hospitality, continued to pay dividends. During the fiscal year, our real estate portfolio appreciated 10.8 percent, besting its benchmark (which includes other forms of commercial real estate) by 11.1 percent.

On the negative front, our alternative securities portfolio ended just slightly negative for the fiscal year, at -0.7 percent. However, it underperformed its benchmark by 6 percent—an extremely disappointing outcome, given that this portfolio historically has outperformed its benchmark by a wide margin. Yet, even with this year’s performance, the alternative securities portfolio still has beaten its benchmark by 2 percentage points on average per annum over the last five- and 10-year periods. In addition, I am happy to report that since the end of fiscal year 2020, the alternative securities portfolio has more than recouped its losses and is performing well. Finally, our private



The Perseverance rover lifted off from Cape Canaveral on July 30, 2020. “It was an incredible relief to see the rocket engines start to fire,” said Ken Farley, W. M. Keck Foundation Professor of Geochemistry and Mars 2020 project scientist. “Getting the spacecraft over the finish line in the time of COVID has been a challenge.”
Credit: NASA/KSC

energy portfolio, which at fiscal year-end represented just over 4 percent of the endowment investment pool, continued its virtual free fall as oil prices fell due to pandemic-related demand destruction as well as undisciplined oversupply from OPEC and Russia. This portfolio lost 25 percent during the fiscal year but has shown some glimmers of modest recovery as the supply-demand imbalance corrects and oil prices start a slow recovery. We also have begun to diversify this portfolio by adding some renewable-energy investments.

In relation to our college and university peers, Caltech’s performance continues to be strong. Compared with the approximately 132 institutions of higher education that submitted data to Cambridge Associates for the periods ended September 30, 2020, Caltech’s endowment investment pool performance placed it in the top quartile for the three-, five-, and 10-year periods, while for the one-year period we remain in the top half. We are optimistic that our one-year performance will improve and that

we will have better performance from our alternative securities and energy portfolios. With that noted, for risk and liquidity management reasons, we generally have less private equity and venture capital exposure than many of the country’s largest endowments. As long as those sectors remain particularly ebullient, we may struggle to keep up. However, over the longer run, we remain confident in our ability to identify positive alpha-generating investment managers and opportunities that will allow the endowment to continue to fulfill its intergenerational mission of providing financial support to Caltech’s students, faculty, research, and operations.

Thank you, as always, for your continued support of Caltech and its endowment.

Scott H. Richland
Chief Investment Officer
March 2021

** October 1, 2019, through September 30, 2020*



Christopher Barnes, a postdoctoral scholar in the laboratory of Pamela Bjorkman, the David Baltimore Professor of Biology and Bioengineering, has led the lab's COVID-19 research team. The team captured the first-ever images of antibodies as they neutralize the COVID-19 virus. Credit: Caltech

ENDOWMENT: GIFTS THAT SPARK INNOVATION OVER THE LONG RUN

Caltech's endowment accelerates solutions to society's greatest challenges. Because it is designed to generate a permanent, steady income stream, endowment ensures that Caltech's extraordinary scientists and engineers can pursue their best ideas even when economic fluctuations may limit the availability of other resources. Visionary

donors have created endowments to support people, programs, and facilities across campus. These funds heighten Caltech's ability to foster a culture of unfettered thinking and collaboration, where the world's brightest minds and most advanced technologies drive breakthroughs in areas spanning such fields as neuroscience, quantum computing, sustainability, and space and planetary studies.

The bulk of Caltech's endowment investment pool comprises more than 1,500 privately donated and Institute-allocated sub-funds. The Institute deposits the monies from each new endowment gift into the pool and invests strategically in order to preserve the inflation-adjusted purchasing power of the original gift amount and generate returns that support annual payouts. To honor

each donor's wishes for generations to come, Caltech manages its endowment with a focus on stable, long-term returns, as well as on enabling a nimble response to time-sensitive investment opportunities.

FY20: CAMPAIGN CASH
ADDITIONS TO ENDOWMENT

\$77M

Endowment and *Break Through*: The Caltech Campaign

Caltech's small but formidable community of scholars has driven progress in science, technology, and society for more than 100 years. This legacy of achievement derives from an uncompromising commitment to excellence, the relentless pursuit of knowledge, and the imagination and ambition to pioneer new fields, invent new technologies, and expand our understanding of the universe and ourselves.

Philanthropy powers this legacy. And endowment, in particular, sharpens Caltech's edge because it provides a permanent source of funds to push the boundaries of innovation and discovery. That is why raising funds for endowment is a top priority for the *Break Through* campaign.

Named professorships enhance Caltech's competitive advantage in recruiting and retaining faculty who create new knowledge, invent new technologies, and sometimes launch entirely new disciplines. Endowed fellowships attract outstanding graduate students and postdoctoral scholars who quicken the pace of research and invigorate the campus with novel ideas and fresh perspectives. And endowed scholarships help make an Institute education affordable, so that talented undergraduates from every background can fulfill their academic dreams at Caltech.

Flexible endowment accounts are even more powerful. They complement other endowment accounts and essential but restricted government grants with funds that Institute leaders can direct wherever they will have the greatest impact. Caltech's distinctive leadership chairs, for example, give the president, provost, division chairs, and program directors freedom to leverage time-sensitive opportunities and enable visionary researchers to move quickly from bold ideas to breakthroughs.

The *Break Through* campaign will conclude on September 30, 2021. As of September 30, 2020, campaign donors had committed more than \$3.1 billion to Caltech, including almost \$1.7 billion—57 percent of total gifts and pledges—designated for endowment.



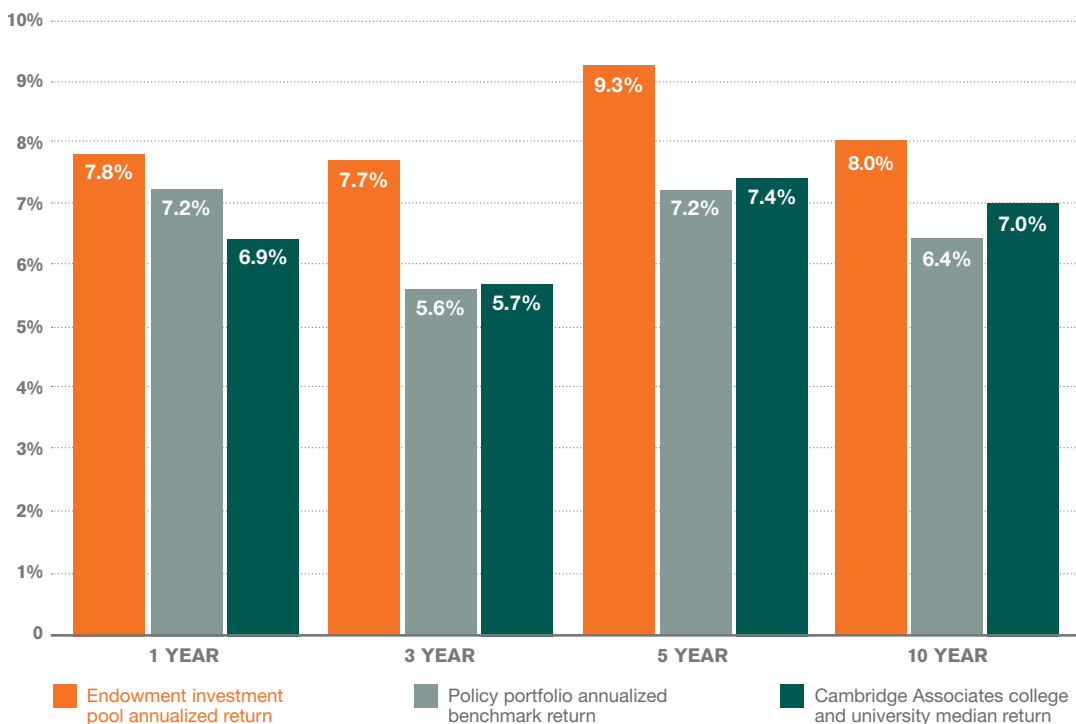
A team of Caltech students led by Yaser Abu-Mostafa (PhD '83, top row center), professor of electrical engineering and computer science, developed an AI-driven tool that dramatically outperforms other models in predicting the spread of COVID-19. The project, which began as an assignment for Abu-Mostafa's computer science class, was supported by Caltech senior trustee Charles Trimble (BS '63, MS '64) and the Gary Clinard Innovation Fund, which was established by Gary Clinard (BS '65, MS '66). Credit: Michael Zhang/Caltech

ENDOWMENT PERFORMANCE, FISCAL YEAR 2020

Endowment Investment Pool Return

As illustrated in the figure below, Caltech's endowment investment pool generated a 7.8 percent return for fiscal year 2020, exceeding its benchmark policy portfolio by 0.6 percentage points. For the three-, five-, and 10-year periods

ended September 30, 2020, investment pool returns beat their benchmarks by 2.1, 2.1, and 1.6 percentage points, respectively. Over the last five years, the added value generated by this outperformance of the portfolio was nearly \$219 million.

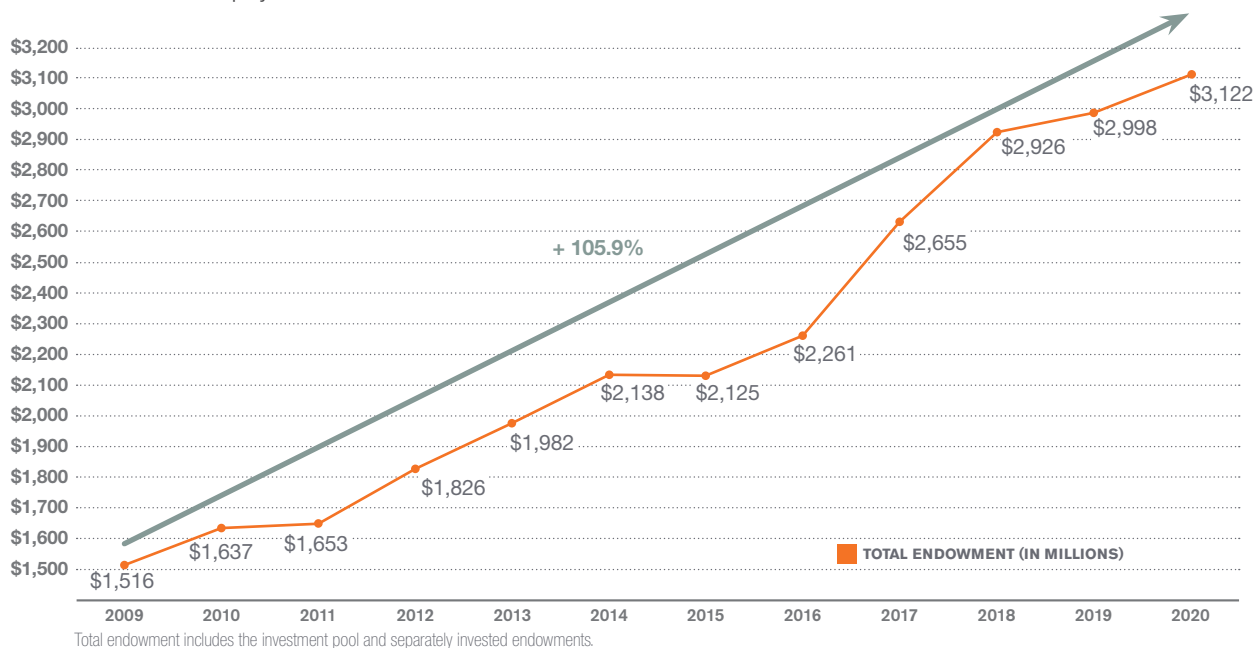


LAST FIVE YEARS:
\$162M
 in financial aid
 from endowment

Growth of the Total Endowment

The market value of Caltech’s total endowment investment portfolio increased to \$3.1 billion as of the close of fiscal year 2020. This increase was made possible by generous giving to endowment and strong performance from our real estate, private equity, and public equities asset classes. New gifts and investment gains were partially offset by endowment distributions. Since the end of fiscal year 2009, the beginning of the recovery from the 2008 financial crisis, Caltech’s total endowment value (net of outflows) has grown at a compound annual rate of 6.8 percent and has supported Caltech’s research programs and people with almost \$1.3 billion in payout.

FY20:
\$124M
 increase in total endowment



Asset Class Allocation and Performance

Caltech’s private equity portfolio (which includes both buyout and venture capital funds) performed well during fiscal year 2020, delivering a 22.3 percent return and beating its benchmark by 3.4 percentage points. With respect to real assets, our real estate portfolio provided strong performance, up 10.8 percent and beating its benchmark by 11.1 percentage points; however, this performance was more than offset by private energy

and infrastructure losses caused by the rapid decline in oil prices as well as the rapid spread of the COVID-19 virus. Our alternative securities portfolio struggled during the fiscal year with a negative return of -0.7 percent, well under the benchmark of 5.3 percent. Despite an unusually difficult year, this portfolio has outperformed its benchmark by approximately 2.0 percentage points per annum on average over the last five- and 10-year periods.

	Allocation (as of September 30, 2020)	FY 2020 Asset Class Returns	FY 2020 Benchmark Returns
Global developed markets equities	27%	11.6%	10.4%
Emerging markets equities	10%	11.6%	10.5%
Alternative securities	27%	-0.7%	5.3%
Private equity and venture capital	20%	22.3%	18.9%
Real assets*	10%	-6.8%	-9.2%
Global fixed income	1%	-0.5%	6.9%
Cash and other	5%	0.8%	1.1%

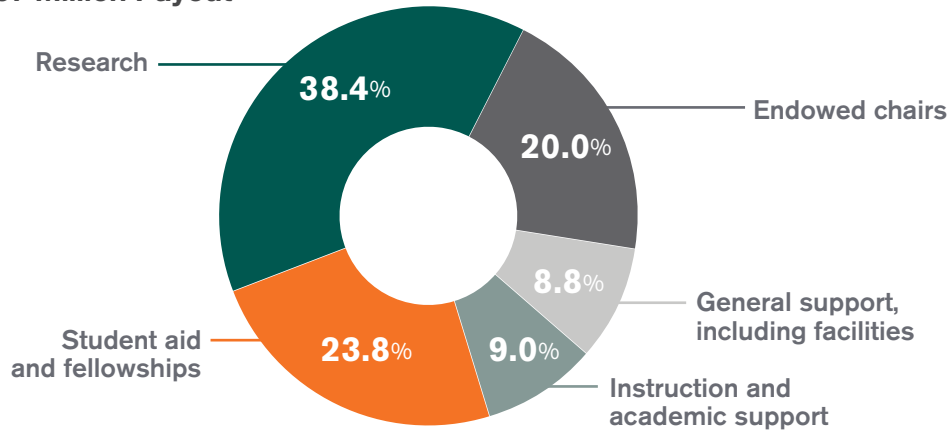
* Primarily real estate, energy, and commodities

ENDOWMENT PAYOUT, FISCAL YEAR 2020

In fiscal year 2020, \$157 million in endowment payout contributed over 21 percent of Caltech's operating budget to support research and education in many valuable ways. Endowed fellowships, for example, afforded graduate students the freedom to pursue

their passions without being unduly constrained by a lack of funding. And endowed undergraduate scholarships helped Caltech maintain its place among a select group of competitive four-year colleges nationwide that admit students on a need-blind basis.

Allocation of \$157 Million Payout



Enduring Support for Life-Altering Opportunities

Scholarships enable Caltech undergraduates to focus on coursework and other enriching activities without worrying about tuition and other expenses. Endowments ensure that these resources are available for students who need them, year after year.

For sophomore and Wasserman Scholar Mahider Gessesse, financial aid made early research experiences possible. The computation and neural systems

major has worked in the lab of Sarah Reisman, the Bren Professor of Chemistry and a Heritage Medical Research Institute Investigator, and now works with the Ueli Rutishauser lab at Cedars-Sinai Medical Center. Next, she plans to pursue an MD/PhD.

"I worked so hard in high school, and I wouldn't have been able to come to Caltech without the financial

support," she says. "All the opportunities I've had are due to support such as the Wasserman Scholarship."

Similarly, a Tracy Fu and Sharon Wee Scholarship has ensured that junior Noah Yared can take advantage of the diverse programs Caltech offers to enrich academics and student life. Yared majors in mechanical engineering and minors in computer science and aerospace engineering. Beyond the classroom and laboratory, he revived Caltech's National Society for Black Engineers chapter, served as vice president of Ricketts House, and interned with LIGO and JPL.

"When I was growing up, my community didn't have many people in STEM whom I could look up to," Yared says. "As a Fu-Wee Scholar, I am able to be that for my community. I'm eternally grateful."

To help others benefit from the opportunities they have enjoyed, both Gessesse and Yared tutor local middle- and high schoolers through the Caltech Y's Rise Program.



Terence, Melza,
and Ted Barr

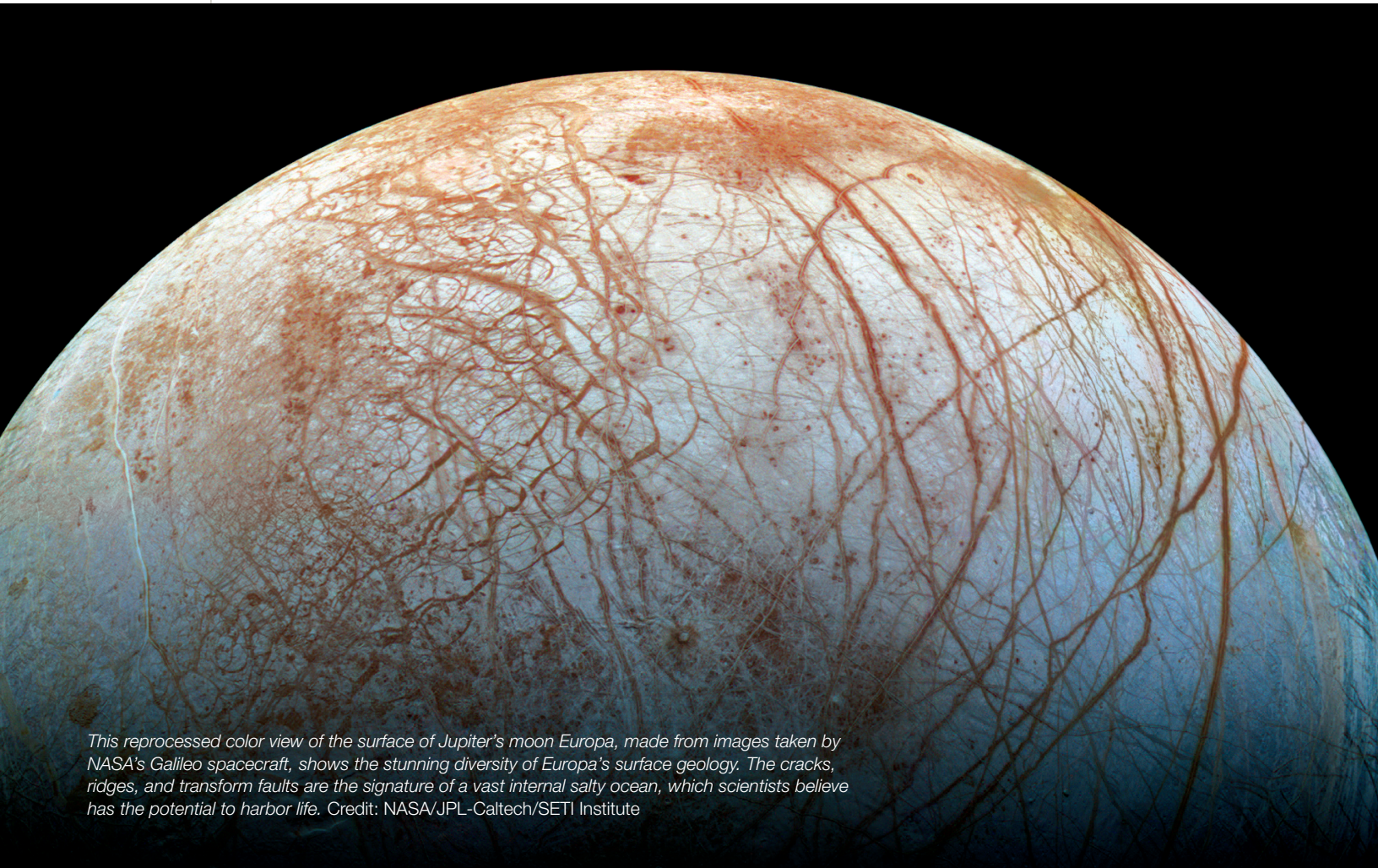
Endowed Leadership Chair Helps Propel Center for Comparative Planetary Evolution

For eons, people have wondered: “Where do we come from? How did Earth come to be the way it is? And are we alone?”

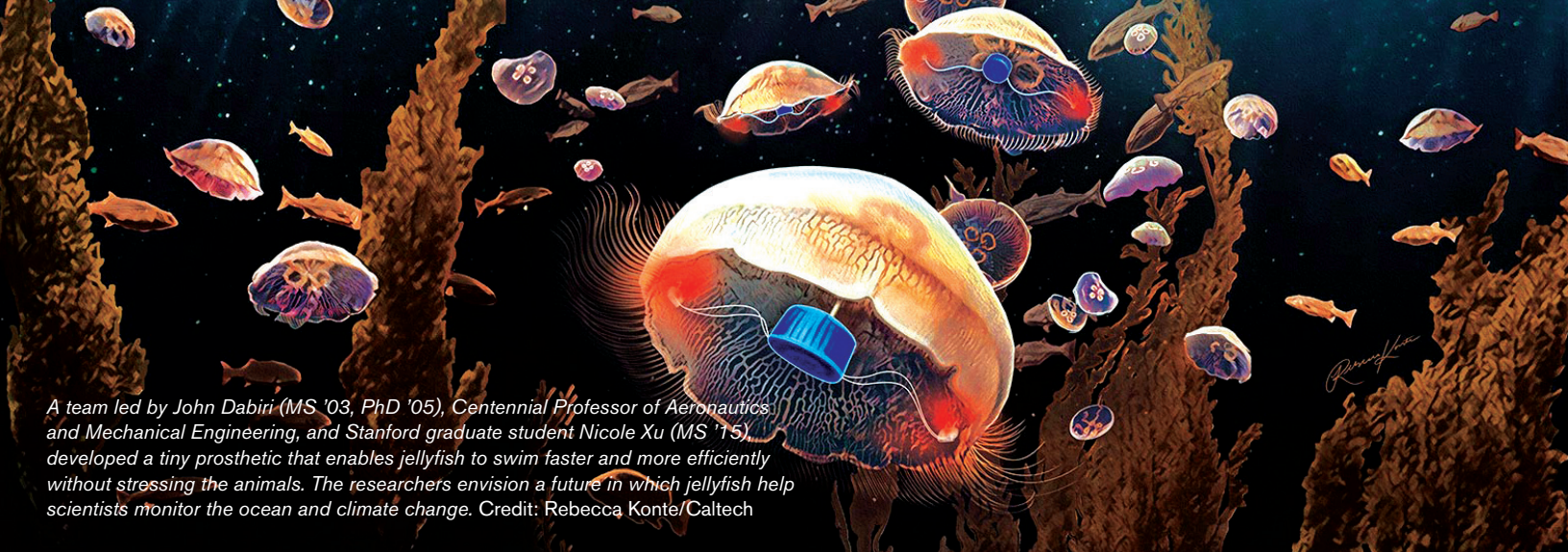
To answer such timeless questions, investigators across astronomy, geology, and biology aim to connect in new ways through the nascent Caltech Center for Comparative Planetary Evolution (3CPE). The fuel that helped get that initiative off the ground was a \$10 million gift from the Melza M. and Frank Theodore Barr Foundation to endow the Terence D. Barr Leadership Chair.

The chair is named for Terence Barr (BS '84), chair of the Division of Geological and Planetary Sciences Chair's Council, Caltech Associates member, and son of the foundation's namesakes. It will provide its inaugural holder, Mike Brown, the Richard and Barbara Rosenberg Professor of Planetary Astronomy, with flexible funding to pursue new opportunities and top priorities.

“I think 3CPE is a revolutionary idea, to bring together several different areas of expertise at Caltech and approach this pioneering field of science in a completely new way,” Terence Barr says. “All of us at the Barr Foundation are very excited to support this.”



This reprocessed color view of the surface of Jupiter's moon Europa, made from images taken by NASA's Galileo spacecraft, shows the stunning diversity of Europa's surface geology. The cracks, ridges, and transform faults are the signature of a vast internal salty ocean, which scientists believe has the potential to harbor life. Credit: NASA/JPL-Caltech/SETI Institute



A team led by John Dabiri (MS '03, PhD '05), Centennial Professor of Aeronautics and Mechanical Engineering, and Stanford graduate student Nicole Xu (MS '15), developed a tiny prosthetic that enables jellyfish to swim faster and more efficiently without stressing the animals. The researchers envision a future in which jellyfish help scientists monitor the ocean and climate change. Credit: Rebecca Konte/Caltech

INVESTMENT PRINCIPLES

Asset Allocation and Risk Management

The asset allocation policy for Caltech's endowment investment pool emphasizes diversification across asset classes, investment styles, and geographic locations as the Institute strives to achieve strong long-term investment performance while avoiding highly concentrated risks.

Portfolio risk management focuses on market correlations and sensitivity (beta), interest-rate risk, expected volatility, and liquidity. In addition, the portfolio is subjected to analysis that models how it is expected to act in situations comparable to the 2007–2008 financial crisis, the 2001 tech wreck, the September 11 tragedy, and other scenarios (which now include the COVID-19 pandemic). The portfolio responses to these scenarios are monitored over time, and adjustments may be made if the projected portfolio drawdown is larger than anticipated.

Strategic asset allocation ranges are established by Caltech's Investment Committee and are reviewed periodically. In addition, the Investment Committee and the Investment Office make tactical adjustments in response to current or anticipated shorter-term market conditions.

At the end of fiscal year 2020, the endowment investment portfolio was tactically underweight in traditional investment-grade fixed income and real assets, and was overweight in private equity relative to our strategic allocation guidelines. The underweight position in fixed income (which has been the case for nearly 10 years) continued due to low interest rates and the expectation that rates at some point will revert to more "normal" levels; the real assets' underweight position reflects continued weakness from low commodities prices.

Endowment Liquidity

Caltech's endowment investment pool is closely managed and monitored for liquidity. We define liquidity as the ability to realize and access cash from an investment in a timely manner. Liquidity is desirable for five primary reasons:

1. The portfolio has financial obligations, such as investment fund capital calls, which often must be satisfied with relatively short notice.
2. The ability to implement changes in tactical and/or policy allocations requires liquidity.
3. From time to time, unusual investment opportunities arise—driven by market or other forces—that cannot be seized without liquidity.
4. In periods of economic downturn, the endowment investment portfolio must be prepared for a potential reduction of cash inflows while maintaining its payout to the Institute, which is essential to achieving Caltech's mission.
5. Unrestricted endowment investment pool funds may need to be tapped to help maintain operating continuity in cases of emergency or financial disruption.

The Caltech endowment investment pool is quite liquid, with more than 20 percent of the assets currently convertible to cash within one to two weeks and 25 percent convertible to cash within a calendar quarter under normal circumstances. The Institute's additional sources of liquidity include substantial funds that have been raised from issuing bonds over the last six years as well as committed lines of credit provided by commercial banks.

MANAGEMENT OF THE ENDOWMENT INVESTMENT PORTFOLIO

The Caltech Investment Office reports jointly to the Institute's president and the Board of Trustees' Investment Committee, which has primary responsibility for setting investment policy, overseeing policy implementation, and approving major investments. The committee meets at least quarterly to discuss and review asset allocation, investment policies, new investments, and portfolio performance. To discuss specific investments and other opportunities as they arise, the committee also interacts frequently between meetings. The members bring extraordinary expertise in both specific asset classes and the investment industry in general.

The Investment Office

The Investment Office develops recommendations on investment policies, strategies, and asset allocations for

review and approval by the Investment Committee. With the general guidelines in place, the Investment Office then identifies investments and what it considers to be best-in-class asset managers around the world who can effectively implement the adopted investment strategies. The office focuses primarily on medium- to long-term performance, identifying global trends and investment opportunities that may develop over many years. While quarter-to-quarter performance is closely monitored, and appropriate portfolio adjustments are made from time to time, the primary goal is to earn long-term rates of return that support the annual endowment payout and maintain the endowment's inflation-adjusted purchasing power, allowing it to support Caltech's activities for generations to come.

INVESTMENT COMMITTEE MEMBERS

Timothy J. Sloan, Chair

Senior Adviser and Partner, Fortress Investments, LLC

Dr. Ronald K. Linde (MS '62, PhD '64), Vice Chair

Vice Chair, Caltech Board of Trustees

Independent Investor

Chair, The Ronald and Maxine Linde Foundation

Founder and Former Chief Executive Officer, Envirodyne Industries, Inc.

Joshua S. Friedman, Member*

Co-Founder, Co-Chairman, and Co-Chief Executive Officer, Canyon Partners, LLC

B. Kipling Hagopian, Member

Managing Partner, Apple Oaks Partners, LLC

G. Bradford Jones, Member

Founding Partner, Redpoint Ventures

Dr. David L. Lee (PhD '74), Member

Chair, Caltech Board of Trustees

Managing General Partner, Clarity Partners, L.P.

A. Michael Lipper, Member

President and Chief Executive Officer, Lipper Advisory Services

Li Lu, Member

Founder and Chairman, Himalaya Capital Management, LLC

Dr. Thomas F. Rosenbaum, Member

President, Sonja and William Davidow Presidential Chair, and Professor of Physics, Caltech

Susan Schnabel, Advisory Participant

Co-Founder and Co-Managing Partner, aPriori Capital Partners

Robert V. Sinnott, Advisory Participant

Co-Chairman, Kayne Anderson Capital Advisors

Lance N. West (MS '83), Advisory Participant

Retired Chairman and Chief Executive Officer, Centerbridge Partners Europe, L.L.P.

INVESTMENT OFFICE STAFF

Scott H. Richland

Chief Investment Officer

scott.richland@caltech.edu

Pasy Wang

Senior Managing Director, Investments

pasy.wang@caltech.edu

Darren Artura

Managing Director, Real Estate and Insurance Operations

darren.artura@caltech.edu

Douglas MacBean

Managing Director, Public and Alternative Securities

doug.macbean@caltech.edu

Brian Chen

Director, Private and Alternative Securities

brian.chen@caltech.edu

Alistair Thistlethwaite

Director, Public Securities and Natural Resources

alistair.thistlethwaite@caltech.edu

Jayden Pantel

Investment Analyst

jpantel@caltech.edu

Kirk Kawasawa

Senior Managing Director, Investment Operations

kirk.kawasawa@caltech.edu

Gabriela Magana

Director, Investment Operations

gabriela.magana@caltech.edu

Aileen Liu

Senior Operations Associate, Portfolio Compliance

aileen.liu@caltech.edu

Brett Kiesel

Operations Associate, Portfolio Administration

brett.kiesel@caltech.edu

* Past Investment Committee Chair

Caltech

INVESTMENT OFFICE

California Institute of Technology
1200 E California Blvd
MC 2-42
Pasadena, CA 91125
(626) 395-4853



ABOVE:

A campus courtyard features Perception, a sculpture designed by Caltech trustee Ronald K. Linde (MS '62, PhD '64).
Credit: Caltech

COVER:

Jonas Peters, Bren Professor of Chemistry and director of the Resnick Sustainability Institute (second from left), has collaborated with Theodor Agapie (PhD '07), professor of chemistry (left), and researchers at the University of Toronto on a promising new technology that enables the production of chemicals from renewable resources. Peters and Agapie are pictured here with a group of postdoctoral scholars. Credit: Caltech

NOTE:

Most of the photographs in this report were taken before the novel coronavirus outbreak was declared a pandemic.