What can we change in a single generation?

Alumnus of the Year Paul Jacobs

Graduate fellowships seed careers in service
A highly regarded administrator, scholar, and champion of women’s issues and diversity, Carol Tecla Christ was confirmed in March as the campus’s 11th chancellor. Starting July 1, she will be the first female chancellor in Berkeley’s 149-year history.

“Berkeley changed my life. It changed my sense of the world,” Christ said following her unanimous confirmation by the UC Board of Regents. Reflecting on the university’s transformational nature, she said there are few places in the United States where you feel that history is being made around you, and that “there’s no subject on the face of the earth that someone at Berkeley doesn’t know about and is not pushing the boundaries of our understanding even further.”
Recognizing that this may be the most challenging time at Berkeley since the 1960s, Christ told reporters that the campus must change its financial model without compromising its public mission. **She cited undergraduate education as her top priority** — “how you devote the right kinds of attention, care, teaching, and safety nets so that every student has the best chance not to survive, but to thrive.” She also wants to enhance faculty excellence. “The quality of our faculty is the quality of our university,” she said.

Christ (rhymes with “list”) joined the UC Berkeley faculty in 1970 as an assistant professor of Victorian literature. Serving in a range of leadership roles over three decades, she rose from English department chair to executive vice chancellor and provost, the campus’s top academic officer. From 2002 to 2013 she was president of Smith College, where she supervised the development of the nation’s only accredited engineering program at a women’s college and expanded the college’s global reach. She returned to Berkeley in 2015 to direct the Center for Studies in Higher Education, then resumed her former role as second-in-command last May.

**The university acknowledges the leadership of Nicholas Dirks, the 10th chancellor, who will return to teaching and research at Berkeley this summer.** His legacy includes enhancing the undergraduate experience and launching initiatives in data science and arts and design. He has also worked to boost Berkeley’s global influence, increase support for cross-disciplinary research, and put the campus on a path toward greater financial sustainability.

Visit [news.berkeley.edu/chancellor-christ](http://news.berkeley.edu/chancellor-christ) for more on Berkeley’s new chancellor.
What can we change in a single generation?
Imagine it is 1987. The internet and MRIs are not yet ubiquitous. There are no smartphones or GPS devices. No photovoltaic solar energy or electric cars. No map of the human genome. If life has changed that dramatically in the last 30 years, what lies ahead in the next 30?

Humanity faces unprecedented challenges, and the world needs new solutions. At Berkeley, we’re asking ourselves a simple question: What can we change in a single generation?

Can we provide clean water and healthy food to everyone? Can we stop cancer and Alzheimer’s from cutting so many lives short? Can we eliminate the income gap?

Following are nine stories about Berkeley research related to the body, earth, and society that may radically improve life for all #InThisGen.

Share your story

If you could change one thing for the future, what would it be? Share your stories, images, and videos on social media using #InThisGen. You can also visit berkeley.edu/inthisgen to find out more.
The Promise of Berkeley
Can a simple blood draw yield clues to cancer?

A new study has taken an important step toward helping patients monitor their response to cancer therapy just by having their blood drawn.

Berkeley researchers isolated rare tumor cells from the blood of breast cancer patients, then designed a device that can identify eight cancer protein biomarkers. This technology could eventually allow pathologists to pinpoint cancer cells more precisely than is currently possible.

Liquid biopsies have led to tremendous advances in analyzing the genetic blueprint and functions of cells. “We extend those advances to highly selective measurement of proteins — the ‘molecular machines’ of the cell,” says bioengineering professor Amy Herr and leader of the team, composed of researchers, physician-scientists, and industry engineers.

Circulating tumor cells are thought to break off from the original tumor and may indicate an aggressive tumor. But they are rare and difficult to study. To unlock their secrets, Herr’s team developed a microfluidics system in which each cell is isolated, burst open, and its proteins separated according to size or mass. Fluorescent probes then lit up specific protein targets. This enhanced selectivity will be crucial to detecting biomarker modifications that can be hard to measure, Herr says.

The microfluidic design “allowed us to do every single measurement step very, very quickly,” she says, before the cell’s proteins dissipated and became undetectable.
Until recently, doctors typically relied on a range of tools, including cognitive tests to monitor everyday activities and family interviews, to diagnose Alzheimer’s disease. But the only way to confirm it was via an autopsy, when the spread of two proteins, $\beta$-amyloid and tau, could be observed in the brain.

For the first time, research published last year shows that brain scans can track the progression of Alzheimer’s in patients who are not only alive, but who have no signs of cognitive impairment. “This opens the door to using PET scans to select people for therapeutic trials at very early stages of asymptomatic disease,” says Dr. William Jagust, a professor of public health and neuroscience and principal investigator of the study.

The accumulation of $\beta$-amyloid plaques was long considered the primary culprit of the memory-robbing disease. We now know that as $\beta$-amyloid builds up in the brain, so does tau. This is further related to the disruption of brain function and cognitive decline. The PET scans revealed that tau advanced even in cognitively normal older people with widespread $\beta$-amyloid deposits.

One big question to untangle is how these two proteins work together to push the start button on Alzheimer’s symptoms.
In his enduring hit “Man in the Mirror,” Michael Jackson gently pleaded: “If you wanna make the world a better place, take a look at yourself and then make a change.”

For the 450,000 people from over 200 countries who have taken “The Science of Happiness,” a free online course created by Berkeley’s Greater Good Science Center (GGSC), practicing gratitude, forgiveness, mindfulness, and other skills is helping them make that change. The intellectually and emotionally rich course combines psychology, neuroscience, evolutionary biology, and weekly happiness practices.

While there is no perfect definition of happiness, and no singular way to find it, research suggests that it hinges on a person’s connections, kindness, and contributions to community. Not only is the course succeeding in giving people new tools to handle life’s difficulties, Berkeley scientists are gathering survey data to gauge its impact.

“For every measure we took, the good things, like thriving and compassion, went up, and the bad things, like stress and loneliness, went down,” says Emiliana Simon-Thomas, GGSC’s science director and co-teacher of the course.

While earlier generations may value materialism and power, this class offers a new approach. “But first, you have to actually try the practices,” says Simon-Thomas. Visit greatergood.berkeley.edu to enroll in the next round, starting Sept. 5.
#InThisGen
Earth

The Promise of Berkeley
Can bees strengthen the link from farm to fork?

Many foods we enjoy — including fruits, nuts, and chocolate — wouldn’t exist without insects, especially bees. In California, about 10 percent of the 1,500 native bee species pollinate crops. But the state’s farmers rely almost entirely on one pollinator, the non-native European honeybee.

That’s because California’s farms tend to be monocultures, vast plantings of the same crop. Monocultures require many pollinators for their brief burst of blooming, forcing farmers to truck hordes of honeybees from far away. They also need more chemicals to fend off pests and disease. All these factors may contribute to colony collapse disorder, which causes worker bees to abandon hives and leads to the death of a colony.

“Relying on honeybees alone creates a brittle system. We have a weak link in the chain from farm to fork,” says Berkeley conservation biologist Claire Kremen.

Native bees could help farmers’ productivity. Studies show that increased visits by such wild pollinators prompt plants to bear more fruit. And simply having them nearby helps honeybees more effectively pollinate California’s almond crop — four-fifths of the world’s supply.

Kremen concludes that farmers could attract more wild pollinators in three ways:

- Combine row crops with fruit/nut orchards and flower gardens
- Plant crops close to natural habitat
- Reduce pesticide use
No one knows how much life exists on Earth. This fact was underscored recently when Berkeley geomicrobiologist Jillian Banfield doubled the extent of the tree of life by analyzing samples from mines, aquifers, and other places to prospect for microbial genomes. Though it’s clear that the vast majority of living things are microbes, we’re just beginning to discover what they are and what they can do.

“We’re basically sequencing [genomes from] the world’s environments and discovering forms of life that we didn’t even know existed,” says Banfield. “These organisms exist everywhere. They’re all around us.”

Unlikely to be grown or isolated in labs, this microscopic majority is tough to study. Banfield’s technique, called shotgun metagenomics, sequences DNA from all the organisms in a sample. Advanced bioinformatics methods then permit reconstructing much or all of the genomes for these unknown microbes — a start toward predicting what they do in their environment.

Next Banfield wants to study how microbes’ biology might benefit us. What role do they play in maintaining soil or groundwater? Could some provide new antibiotics to combat drug resistance? Or mitigate emissions of methane, a potent greenhouse gas? There’s a lot to learn.
California’s drought is over ... for now. But to avoid running dry from future droughts or from rising demand for this limited resource, cities must rethink their water supply. The Golden State built an impressive system to move snowmelt to cities and farms — but the time has come to seek and secure new sources.

“The current system that we rely upon ... is not up to the challenges of the 21st century. It’s up to us to create the next-generation water system,” says David Sedlak, Plato Malozemoff Professor of Engineering and co-director of the Berkeley Water Center.

He believes that rather than transport water from afar, cities should shift toward local options. Recalling an old environmental maxim — Reduce. Reuse. Recycle. — Sedlak’s strategy for meeting the urban water challenge spans from simple to complex:

- Reduce water use indoors (by repairing leaks, replacing wasteful appliances) and outdoors (with smarter landscaping and irrigation)
- Catch more rainfall and let it percolate into aquifers instead of storm drains
- Convert treated sewage effluent into drinking water with advanced technologies
- Tap into seawater, as a last resort, with state-of-the-art desalination plants.
Can technology curb traffic?

It’s Monday morning rush hour in California. En route to your destination, you make all the lights, merge without bottlenecks, and accelerate onto the interstate — at the full speed limit.

This fantasy scenario may soon be a reality throughout some of the state’s most congested traffic corridors, starting with Interstate 210 in Los Angeles.

How? By managing corridors as an integrated system using cloud-based technology, data science, and old-fashioned collaboration. Short of any roadblocks, the drivers behind the initiative, called Connected Corridors, hope to expand this pilot project throughout California over the next 10 years, including San Francisco.

“The traffic model we’re developing is the most expansive in the U.S. today,” says Alexandre Bayen, Liao-Cho Professor of Engineering and director of the Institute of Transportation Studies. “We’re looking at integrating the entire transportation system — including freeways, arterial streets, transit routes, parking, signal lights, and travel demand — to ensure the greatest potential gains in operational performance, reducing travel time, accidents, and congestion.”

Working with the California Department of Transportation (Caltrans) and local agencies, Bayen and fellow collaborators from UC Berkeley’s Partners for Advanced Transportation Technology hope to put the brakes on chronic gridlock starting in 2018.
Imagine supporting a family on $2.13 an hour. This is the reality for many of the 12 million people working in America’s restaurant industry.

Under pressure from the National Restaurant Association, Congress passed a law in 1991 that locked anyone considered a “tipped worker” into this poverty-level wage. The rationale? That tips make up the difference. The reality? They don’t.

“Tipped workers, who are 70 percent women, have a poverty rate three times the rest of the workforce,” says Saru Jayaraman, director of UC Berkeley’s Food Labor Research Center and co-founder of the Restaurant Opportunities Centers United. “This must change.”

In 2013, Jayaraman launched the One Fair Wage campaign to raise tipped worker’s hourly pay. Eight states have since eliminated the tipped-wage system, including California, which alone employs over one million affected workers — and business is thriving.

“Restaurants in states with the highest wages are actually faring better than those in low-wage states,” says Jayaraman, whose 2016 book, Forked: A New Standard for American Dining, documents this growing reform.

“In the early days, if I heard Jayaraman was coming, I ran the other direction,” says Danny Meyer, a prominent New York restauranteur who supports One Fair Wage. “You cannot be in the restaurant industry and not have Jayaraman on your radar.”
During World War II, urban residents across America transformed neighborhoods into shared “victory gardens” to help fight food shortages. An ambitious new pilot program in Oakland hopes to tap that same community spirit to help combat climate change.

Led by Berkeley professors Daniel Kammen and Harrison Fraker, the Oakland EcoBlock project brings together partners from multiple sectors to revolutionize how we rebuild cities for a cleaner future.

During the pilot phase, they’ll convert a block of 28 low-income homes into a model of urban sustainability, with the goal of reaching net zero carbon emissions. Applying a block-scale approach to retrofitting homes for maximal water and energy conservation, they hope to build an affordable blueprint that can be replicated across California and help reduce greenhouse gases that contribute to global warming. Residents, for their part, will enjoy dramatically reduced energy bills.

“Citizen, community, and business engagement — indeed excitement over the steps and objectives — is vital to the sustainable energy and sustainable society process,” says Kammen, Class of 1935 Distinguished Chair in Energy.

In addition to standard energy upgrades, homes will share an integrated system that includes a solar-power microgrid with energy storage, charging stations for electric cars, grey-water recycling and rainwater capture, new trees to improve the microclimate, and — like their 1930s counterparts — shared organic gardens.

Can we rethink cities for a cleaner environment?

Photo: Markus Spiske
As the Iraq War was unfolding, Kyle Ludowitz M.J. ’17 became interested in understanding what drives people to violence and war. In 2009, urged on by a photojournalist and a curiosity to experience conflict firsthand, he bought a camera and a ticket to Palestine and has never looked back. Since then, he has traveled to Egypt, Syria, India, Thailand, and other regions to document critical situations.

As a student in the Graduate School of Journalism, Ludowitz won this year’s esteemed Dorothea Lange Fellowship, named after the photographer best known for her searing
Depression-era portraits of the nation’s poorest peoples. Ludowitz will use the fellowship to photograph both sides of the U.S.–Mexico border and chronicle the stories of Mexican activists, newly deported immigrants, and those who are doing the work of preventing immigrants from entering.

“I want to tell stories that humanize groups of people who think and act in a more extreme fashion than most, as well as law enforcement agents who think they’re doing the best job they can for their country,” says Ludowitz.
Those early predilections took Jacobs down a path that, among numerous achievements, garnered him Berkeley’s 2017 Alumnus of the Year Award. The executive chairman and board chairman of Qualcomm Incorporated, Jacobs spearheaded the company’s efforts to develop and commercialize mobile technology breakthroughs, including the first smartphone based on Palm OS®, inclusion of GPS capabilities in mobile phones; and the system that enables over-the-air downloading of apps. There’s no doubt that his innovative thinking — especially regarding the holistic intersection of design and technology — began to crystallize at Cal.

From skateboards to smartphones: Alumnus of the Year Paul Jacobs

Paul Jacobs ’84, M.S. ’86, Ph.D. ’89 was a techie as a toddler. “His grandfather came out to visit and wanted to watch the television,” recalls Jacobs’s father, Irwin, “but we had unplugged the TV to discourage that. So Paul crawled under the TV and re-plugged it in.” An entrepreneurial design geek as a teen, Jacobs and a friend set up an assembly operation to create skateboards, then sold them to local kids.
“Paul’s always thinking about stretching the boundary of the things that we can do and building on ideas,” says William Bell '84, M.S. ’86. Jacobs’s friend since freshman year and now a principal engineer at Qualcomm. The two took engineering classes together and traveled to Europe, including an inspiring and enlightening trip to the British Museum. “To this day, he has a very strong appreciation for art and even architectural design,” says Bell. “Paul demonstrates how creativity can be a significant part of engineering.”

Dean S. Shankar Sastry M.S. ’79, M.A. ’80, Ph.D. ’81 met Jacobs when he and a fellow undergraduate helped Sastry — then an engineering professor — start his robotics lab. Several years later, when Jacobs gave a keynote speech as the College of Engineering’s alumnus of the year, Sastry saw further evidence of his unique, hands-on commitment to design innovation. Jacobs didn’t just come prepared with slides; he brought six different phone prototypes made by Qualcomm engineers to show the graduating students.

“From a very early time,” says Sastry, “he has exemplified some of the most amazing values that we believe in our Golden Bears. Even as he set up a robotics lab as an undergraduate — he set it up in the public interest. He has always been interested in giving back to the institution that gave him his education.”

In fact, Jacobs provided significant funding for Jacobs Hall, a new home for the Jacobs Institute for Design Innovation. This state-of-the-art maker space enables students to turn their creative ideas into real-world solutions for health, energy, and communications needs.

“I think the ultimate compliment,” says Sastry, “is that the students really feel that Jacobs Hall belongs to them.”

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Other leading lights

Co-sponsored by the UC Berkeley Foundation and the Cal Alumni Association, the 2017 Achievement Awards celebrate forward-thinking business leaders, gifted faculty, and dedicated and promising alumni. For information, visit awards.berkeley.edu.

Berkeley Founders Award
Ira Hirschfield

Campanile Excellence in Achievement Award
Vanessa Morrison ’90
Margaret Murnane Ph.D. ’89
James Schamus ’82, M.A. ’87, Ph.D. ’03

Fiat Lux Faculty Award
Edward E. Penhoet

Mark Bingham Award for Excellence in Achievement by Young Alumni
Michael Gilroy ’09
Jonathan Stein M.P.P./J.D. ’13
Born into a middle-class Polish Jewish family in 1894, Arthur Szyk lived a life framed by two world wars, the rise of totalitarianism in Europe, and the birth of the State of Israel, before his death in 1951. His work as an artist and illustrator centered around these profound events. Now, thanks to a $10.1 million gift from Taube Philanthropies to The Magnes Collection of Jewish Art and Life, the voluminous Szyk collection will be available to students, scholars, and the public for the first time.

The largest single contribution to acquire art in Berkeley’s history, the gift is certain to inspire renewed interest in Szyk’s work.

Renamed the Taube Family Arthur Szyk Collection, the artworks pair intricate craftsmanship recalling medieval and Renaissance traditions with insightful commentary on Judaism, World War II, the Holocaust, and other subjects.

Szyk lived and worked in Poland, France, the United Kingdom, and Canada before moving to New York in 1940, where he met the parents of Tad Taube.

“Arthur Szyk’s unique contributions to contemporary art and political illustration have not yet been recognized to the extent his work deserves,” says Taube, chairman of Taube Philanthropies.
The Silk Road — an ancient trade route connecting people and goods from the East and West — may conjure up images of camel caravans and bustling bazaars. But this romantic picture is only a sliver of what life might have been like.

Berkeley is opening the P.Y. and Kinmay W. Tang Center for Silk Road Studies, the first U.S. university center dedicated to the diverse cultures that flourished along the networks, thanks to a $5 million gift from Oscar Tang and his wife, Dr. Agnes Hsu-Tang, Nadine Tang M.S.W. ’75, Leslie Tang Schilling ’76, and Martin Tang.

Oscar Tang says understanding China’s past is key to understanding its growing global importance today. “This small investment … encourages the study of Chinese humanities and how China related to the rest of the world, at a time when significant archaeological discoveries are revealing new information,” he says.

Home to leading specialists in the region’s ancient languages, history, religions, and intellectual and artistic traditions, Berkeley is a natural site for the specialized center.

“It’s about coming together and poring over material from different sides,” says Sanjyot Mehendale, the center’s inaugural chair. “You can’t just sit in your corner of expertise. You have to look at the art, study the texts, and examine the archaeological remains to build a bigger picture.”

Renowned cellist Yo-Yo Ma, an honorary advisor, wrote, “Emily Dickinson said, ‘Forever is composed of nows,’ and George Santayana said, ‘Those who cannot remember the past are condemned to repeat it.’ … You are truly joining the past, present, and the future.” ■

First U.S. center for Silk Road studies opens at Berkeley

Many students are drawn to Berkeley’s top-ranked graduate programs, but few are chosen. In 2016, only 21 percent of master’s applicants and 11 percent of doctoral applicants were accepted. And for the talented students who beat the odds, financing their education can feel like an insurmountable hurdle; the financial aid available doesn’t adequately address their needs.

That’s where graduate fellowships come in. Every year, about 2,000 graduate students are supported by about $16 million in private funds, enabling them to pursue their dreams and lay the groundwork for a career.

The following students are making the most of the opportunity made possible by fellowship donors. While pursuing distinctive goals, their work expresses a common desire — to help others lead healthier, safer, and more enjoyable lives.

For Kaveh Danesh Ph.D. ’23, economics is not just about numbers — it’s about human life, and creating systems that meet people’s needs. With the support of the Berkeley Fellowship and the Audrey and Charles Kelly Aikin Scholarship, Danesh is viewing his Ph.D. in economics through an interdisciplinary lens. A public health course led him to become involved in improving access to education for the children of agricultural workers, and a journalism course honed his storytelling skills to help connect policy-relevant research to individual narratives.

This bedrock of financial support is enabling Danesh to pursue a new road to public service: a medical degree.

“[What I love about Berkeley is] its strength across disciplines, and its commitment to asking the right questions and making the right changes for society.”
For Nailah Morgan M.J. ’17, philanthropic support opened a career path that aligns with her heart and mind. The Marlon T. Riggs Fellowship — named in honor of the pioneering African American filmmaker who helped found the celebrated documentary program in the Graduate School of Journalism — made Morgan’s graduate work possible.

Revealing the richness and complexity of human experience, Morgan recently produced a 25-minute documentary about Haitian immigrants living in Tijuana. She has also covered a Danish all-girls skateboarding team and a high school program for African American males.

Morgan’s work has already appeared on KQED, a local public television station.

“We’ve created a really safe place here, to figure out who we are, not only professionally, but who we are as women, as men, as people of color.”

Hortencia Rodriguez M.P.P./M.A. ’17, who received a Charlie and Maria Dickson Graduate Fellowship, has used her resources to address poverty issues in her native Puerto Rico and across the United States. She came to the Goldman School of Public Policy to complement her ethnographic research experience with quantitative research skills in order to improve the deployment of critical social services for low-income single mothers, migrant children, and others in need.

“At Berkeley, I am exploring the intersections of new subjects, such as food justice and agriculture, to find fertile ground for coalitions and partnerships.”

She has also organized student-led symposiums that spotlight issues of ethnic and racial diversity in the analysis and practice of public policy. Citing humility as key to a career in service, Rodriguez will no doubt touch and enhance many lives, thanks in part to her fellowship support.
Preserving old recipes for new moms

When Khanh-Hoa Nguyen ’16 visited her home in Los Angeles, she discovered the unfamiliar aroma of papaya and pigs’ feet soup. Her mother was preparing — from memory — the nutritionally rich stew to help her sister recover from childbirth. Without a written recipe, Nguyen wondered, could this tradition vanish?

The next semester, Nguyen jumped at the chance to join Dr. Marilyn Wong, a retired physician, in researching postpartum traditions through the Asian American Pacific Islander Health Research Group. For two years, 15 students interviewed grandmothers, mothers, and other relatives to document recipes and traditions typically handed down orally. Ultimately, their work culminated in From Mothers to Mothers: A Collection of Traditional Asian Postpartum Recipes, a cookbook that includes recipes from six cultures printed in English and their native languages.

The next challenge was getting the recipes to new mothers in low-income, Asian American populations. The team partnered with Berkeley Crowdfunding, a university-sponsored platform to help turn great ideas into reality, and led Cal's highest performing crowdfunding project to date — raising nearly 250 percent of their initial goal in one month. More than 500 books were printed that will be distributed to health clinics and libraries for free.

“People were saying, 'I wish I had this when I was pregnant,' or ... they just recognize the importance of preserving the cultural information,” Kristine Nguyen ’11, another team member, shared with Nguoi Viet Daily News. “And who doesn’t like food?”

More than 70 projects, two-thirds of which have hit or exceeded their goals, have been featured on crowdfund.berkeley.edu since 2015.
Kevin Chou ’02 says “beyond yourself,” a defining principle of the Haas School of Business, resonates with him. The founding CEO of mobile gaming firm Kabam, Chou and his wife, Dr. Connie Chen (pictured), recently made a gift of up to $25 million that affirms their belief in taking the long view.

It is the largest personal gift to UC Berkeley by an alumnus under the age of 40. Berkeley-Haas will name its new state-of-the-art academic building, opening later this year, Connie & Kevin Chou Hall.

“I’m excited to be able to do this at this point in my career,” says Chou, 36, “because I get to spend time with students and with Haas professors and other administrators, collaborating and helping them think about the new student space and the program.”

The couple’s gift is also a testament to their support for Berkeley’s role in providing world-class public education to students of all backgrounds.

“Diversity is so important in terms of shaping future leaders,” says Chen, 29, a practicing physician and co-founder of Vida Health, which provides health coaching and programming. “We’re excited about bringing together students of all backgrounds — not just business students — to formulate ideas that will improve the world.”

The new $60 million building, funded entirely by private donations, comes at a critical time. Over the past 20 years, enrollment at Berkeley-Haas has nearly doubled to more than 2,200 undergraduate and graduate students in six degree programs.

Chou says Berkeley “instilled in me the tenacity that has sustained me through the highs and lows of my entrepreneurial career.”

"Haas alum stretches ‘beyond’ to support new building"
Betting on brilliance to halt illness

Thirteen Berkeley faculty — more than half of them women — along with 34 researchers from UCSF and Stanford have been chosen as the inaugural cohort of Chan Zuckerberg Investigators. Each receives up to $1.5 million for the next five years, with no strings attached, to conduct cutting-edge biomedical research. These awards to foster creative, unconventional exploration are the first individual grants by the Chan Zuckerberg Biohub, an independent research organization established last fall by Facebook founder and CEO Mark Zuckerberg and Dr. Priscilla Chan.

At a ceremony announcing the CZ Biohub, Zuckerberg noted that technological innovation, such as the telescope, microscope, or DNA sequencing, has spurred scientific discovery and medical progress throughout history. The CZ Biohub encourages engineers, physicians, and scientists to collaborate on inventing new tools and accelerating the pace of discovery toward curing, preventing, or managing all disease.

The Promise of Berkeley highlights three of Berkeley’s extraordinary Chan Zuckerberg Investigators, who illustrate the potential for CZ Biohub to advance its goals through a union of science and engineering.

Markita Landry, assistant professor of chemical and biomolecular engineering, junior investigator:

Fascinated by how molecules perform precise, intricate tasks, and how physics and chemistry can illuminate biology, Landry draws from the natural world’s blueprints to design synthetic, nanoscale sensors. Mimicking proteins or antibodies, such sensors could observe a living brain releasing molecules, like the neurotransmitter dopamine, that regulate brain chemistry but get disrupted by psychiatric disorders. By understanding the brain’s chemical responses to social or environmental stimuli, more effective treatments could emerge.
Kim Seed, assistant professor of plant and microbial biology, junior investigator:

As if on microscopic safari, Seed studies the stealthy strategies of predator (a virus called phage) versus prey (the bacteria that cause cholera). The virus captures bits of a bacteria’s own defense system to increase its odds of breaching the cell. Successful phage infections keep bacterial numbers in check. Seed wants to know how *Vibrio cholerae* evades attack enough to trigger outbreaks or epidemics of cholera, as well as how space and microclimate influence the outcome of this molecular arms race.

Laura Waller, associate professor of electrical engineering and computer sciences, senior investigator:

A leader in computational imaging, the simultaneous, synergistic design of hardware and software to visualize objects, Waller pushes the limits of possibility. Combining simple, cheap optical equipment with sophisticated computation can solve such challenges as viewing the real-time division of cancer cells or seeing neurons activate across an entire animal brain. The sort of wide-field, high-resolution 3D images Waller reconstructs from raw data may revolutionize medical diagnostics.

In 2015, Priscilla Chan and Mark Zuckerberg publicly pledged to their newborn daughter to donate 99 percent of their Facebook shares to charitable causes. The new Biohub makes good on that promise.
1. Bettina Duval ’82, vice chair of the Goldman School of Public Policy’s advisory board, congratulates Cathy Unger ’69, C.Sing. ’70 at the announcement of Unger as the board’s new chair.

2. Former and current Haas School of Business students gather around David Aaker, E.T. Grether Professor Emeritus of Marketing and Public Policy, after his lecture on “Signature Stories” at the 15th annual Berkeley-Haas Celebration, held in San Francisco at Gap Inc. headquarters in March.

3. Lisa and Douglas ’74 Goldman greet Chancellor-designate Carol Christ at the gala dinner celebrating the College of Letters & Science, held at the St. Francis Yacht Club in April.

4. New graduate Christian Geering ’17 places his cap on a joyous Bill Wong ’70. In 1970, when Wong was due to graduate, Berkeley’s commencement ceremony was cancelled due to protests. This year, he finally got to experience being a part of the momentous day.

Making connections
5. Nearly 50 College of Environmental Design alums enjoyed a reception at the American Institute of Architects’ April conference in Orlando, Fla., including Sylvia Kwan ’76, M.Arch. ’78; Philip Bona ’75, M.Arch. ’77; Ronnette Riley ’76; and Denis Henmi ’74.

6. Susan Crater York ’81 (left) and Lisa Garratt Stuart ’82 (right) welcome Chancellor-designate Carol Christ to New York at a salon event hosted by Jeff ’81 and Ashley McDermott.

7. Nearly 100 alumni and friends attended the Berkeley Club of Taiwan’s Spring Soirée at the S Hotel in Taipei. At the event, club members thanked Constance Chiang ’86 and Antonio Lee ’98 for their dedicated volunteer service.

8. Walter Cheung ’93, Christopher Lee ’90, Dave Wong ’84, Darrell Chan ’98, M.Arch. ’04, and Peter Yu ’92 pose with Chancellor Nicholas Dirks (center) at a Berkeley Club of Hong Kong reception sponsored by former trustee Jeffrey Chan.
9. Coleman Fung ‘87, Han Jin M.Eng. ‘12, and Fung Institute faculty director Lee Fleming judged student projects in augmented reality and virtual reality at an April pitch competition at Skydeck. Jin is one of Inc. magazine’s 30 Under 30 entrepreneurs for 2017; he founded Lucid VR, maker of a smartphone-sized virtual-reality camera.

10. Chancellor-designate Carol Christ (center) greets fellowship recipients at the Celebration of Distinguished Fellows Reception, hosted by the Graduate Division.

11. College of Environmental Design Dean Jennifer Wolch (center) presented Distinguished Alumni Awards to (from left) Austin Allen B.L.A. ’82, Diane Jones Allen M.L.A. ’84, David Baker M.Arch. ’82, and Douglas Abbey M.C.P. ’79 at the college’s 7th Annual Soirée in March.

12. The first East African Berkeley alumni reunion was held on February 4 in Kampala, Uganda, co-hosted by Dr. Thelma Awori M.A. ’73 and Uganda’s Prime Minister Hon. Ruhakana Rugunda M.P.H. ’78. More than 35 Cal alumni from Uganda, Kenya, Tanzania, and Rwanda attended the event.

13. Former UC Berkeley Foundation trustee Andrea Roth (left) and her husband, Peter Roth, at February’s Brilliance of Berkeley event, which showcased the Berkeley Brain Initiative. The Roths were honorary co-chairs for the event.

14. Regents’ and Chancellor’s Scholars Ellen Kulinsky ’19, Kireet Agrawal ’19, Jared Brauner ’20, Chanan Walia ’20, Joanna Chen ’20, Olivia Lipari ’20, and Lindsay Yang ’20 pose with alumnus Jon Fan ’02 (center) at an alumni networking reception.

15. Marion Nestle ’59, Ph.D. ’68, M.P.H. ’86, professor of nutrition, food studies, and public health at NYU, presented this year’s Weinstock Lecture on “Food Politics and the Twenty-First Century Food Movement.”

More than 300 people gathered at Hearst North Field for Berkeley Charter Gala 2017, celebrating the recipients of the 2017 Achievement Awards and the chartering of UC in 1868.

16. Chancellor Nicholas Dirks, Jason Morimoto, outgoing CAA president, Chancellor-designate Carol Christ, and Richard L. Greene, outgoing chair of the UC Berkeley Foundation.

17. Vanessa Morrison ’90 (right), winner of the Campanile Excellence in Achievement Award, with her husband, John Murchison, and their son, Julian.
Standup comedian and actor Maz Jobrani ’93, whose family fled Iran in 1978 just before the revolution, spoke to more than 45,000 graduating seniors and their families at Berkeley’s May commencement. Recalling his journey, he proudly declared, “I am the American dream!” Currently starring in the CBS sitcom Superior Donuts, Jobrani offered both humor and seriousness in his wisdom. Visit youtube.com/mazjobrani for the full speech.

There’s only love for everyone here today

Open your hearts

Immigrants and refugees aren’t just numbers. They are people coming to America for a better life. If I can drive home one point, it would be to put yourself in the shoes of the less fortunate and have empathy.

You are blessed to be graduating from one of the top institutions in the world. Not everyone has the opportunities that you do, so when you come across others who are less fortunate, be open to them and try to understand their experiences. Try to help them if you can. I went to a protest against the travel ban at LAX, and one of the coolest things I saw was all of the lawyers who were ready to volunteer their services to those in need. Be that lawyer!

Defend free speech

As someone born in Iran, where people fight for free speech on a daily basis — even dying for it — I urge you not to take it for granted.

I have done standup comedy around the world, and the first time I went to the Middle East in 2007, the promoters told us we could talk about anything we wanted except for sex, religion, and politics. Well, then, “Hello and goodnight!”

What makes America such a great country is our freedom of speech. While those countries were so insecure in their government that they didn’t want comedians to make fun of their leaders, I would argue we are encouraged to make fun of our leaders. If we limit free speech from the right,
then we sound hypocritical when we criticize Trump for trying to delegitimize our free press. Let’s not be the ones attacking free speech, but the ones defending it.

**Rock the boat**

The travel ban reminded me that even though I’ve been here most of my life, my rights could be taken away at the drop of a hat, and it made me politically active.

Be politically active. Lord knows there are enough causes and protests to join. It would be easy to get into a 9 to 5, put your head down, and collect a check. The world needs you. You’ve got many battles to fight. Immigrant rights, women’s rights, Black Lives Matter, global warming, LGBTQ rights, and many more. Keep pushing the envelope of integration.

**Final tips**

* #1 — Always tip! 20 percent if you can. What you put out in the world comes back to you, but it also feels good.

* #2 — Find what you love and do it! And by the way, only you know what that is.

* #3 — Go see the world … and I don’t mean a weekend in Cabo. Go to South America, go to Beirut! Yes! Visit the Muslim world. You will quickly see that Muslims are not out to get you. They just want you to buy a rug.

* #4 — Never pay full price for the rug. Always negotiate.

* #5 — Kiss your parents every time you see them.
The Promise of Berkeley

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