UC DAVIS

College of Agricultural & Environmental Sciences

UC DAVIS
COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES

Meeting the Challenges of Global Change

Expect Greater
From UC Davis. For the World.

A Message From the Dean

The College of Agricultural and Environmental Sciences is deeply connected to the agricultural, environmental and societal needs of California and the world. For more than a century, we have embraced our mission to serve the public through research, teaching and public engagement. Today, we leverage interdisciplinary innovation to address the 21st century's most complex challenges, including climate change, habitat conservation and ensuring reliable access to nutritious food.

From our core work in the nation's most important agricultural state to our partnerships on environmental projects in countries near and far, we excel in understanding the ecosystems and economies that support equitable communities and a stable planet. The COVID-19 pandemic has shown us how quickly shifts in our environment can have cascading effects on human health, food systems and financial security. **For us, sustainability is about creating comprehensive resilience, preparing tomorrow's leaders, and developing the tools that allow us to rapidly adapt as circumstances change.**

As the country's No. 1 college of agriculture, building on our leadership is key to creating a healthier, more sustainable world for all. At every step, you—our alumni, donors, friends and volunteers—have nourished the roots of this work. As we embark on the most ambitious fundraising campaign in our history to support the college's future, your philanthropy will make all the difference in elevating our acclaimed research, teaching and industry outreach to even greater heights.

We invite you to join us in supporting the creative solutions that will help our world flourish. Together, we can develop systems that help people and the planet thrive, and forge a brighter path forward for the next generation.

Sincerely,

Helene R. Dillard
Professor and Dean
College of Agricultural and Environmental Sciences

The Vision

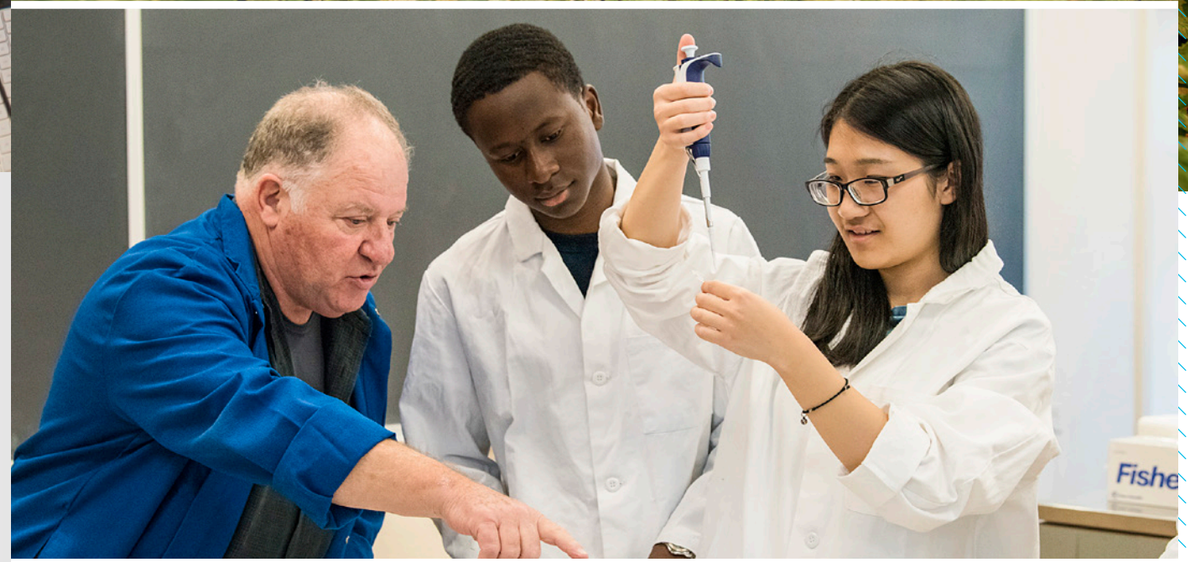
At the College of Agricultural and Environmental Sciences (CA&ES), we harness cross-disciplinary partnerships to meet the challenges of global change. Our 14 departments span fields as diverse as entomology, hydrology, nutrition science, agricultural engineering and urban design—bringing together unparalleled depth and breadth of expertise. CA&ES faculty, staff and students push the frontiers of knowledge to address critical needs, inspire innovation, and improve the lives of people in California, the nation and the world.

In response to the grand challenges our society faces, our college is finding sustainable solutions that support the well-being of communities and the natural systems on which we depend.

As we look to the future, our vision is twofold. We will amplify our impact by:

- **Pursuing innovative research** that generates new knowledge and the tools to build equitable systems in harmony with the land, air and water resources that sustain us
- **Preparing the next generation of leaders** through new models of teaching and transformational educational experiences

Significant investments in our research and educational enterprise are key to realizing this vision. We are seeking to raise **$500 million by 2024** to power our leadership in equitable, sustainable methods of growing food, stewarding natural resources, overcoming the challenges of climate change and fostering healthy communities.



With your partnership, our college will lead the changes necessary to thrive in our dynamic world. Together, we will grow a sustainable future from the ground up.

The Right Place
at the Right Time

Since our founding as the University of California Farm in 1908, CA&ES has earned a reputation for serving the state's vast agricultural needs and for translating research into global impact. Our college advances scientific solutions that support environmental sustainability, food security and community health, and we are internationally recognized for our excellence in plants and animals, agriculture and food science, environmental policy and management, community development and more.

You can taste the impact of our science every time you sip a glass of California wine. Our researchers introduced modern sanitation to winemaking, perfected the Chardonnay grape, gave us the vocabulary to describe aroma and flavor, and to this day breed disease-free grape vines that benefit industry and consumers. In the 1960s, we worked with industry to develop machine-harvested hybrid tomatoes and introduced the widespread use of drip irrigation, positioning California to become a global success story for efficiently growing and processing one of the world's most popular crops.

Over the decades, our experts have worked tirelessly with farmers, conservationists, producers, policy makers and other partners to restore and conserve natural and community spaces as agriculture expands. And as leaders in human and community health, today we leverage science into practical interventions related to nutrition, the genetics of stress, health care access and sustainable design.

Now is the time to build thriving communities and protect our environment—and no other institution can match the nexus of expertise found at UC Davis, where scientists and educators from dozens of disciplines work together to develop solutions for a sustainable future. We have refocused the CA&ES mission for a world in which cutting-edge research and high-tech tools are essential for optimizing limited resources and upholding the universal right to a healthy life. Catalyzed by philanthropy, CA&ES will continue to serve California and the world with comprehensive solutions that balance robust food production and resource management with environmental and social sustainability.

Marks of Distinction

- The College of Agricultural and Environmental Sciences is ranked **No. 1 in the world** for agricultural economics, agricultural policy research, and plant and animal sciences
- Among the top 10 in agronomy, biodiversity education, ecology, entomology, environmental sciences, horticulture, managerial economics, nutrition, soil science and toxicology
- Approximately 140 active patents
- Among the most published and cited U.S. research universities in agricultural sciences, plant and animal sciences, food science and nutrition, environmental sciences and ecology, soil sciences and toxicology
- 2,300 acres dedicated to agricultural research and teaching
- Home to 20 research facilities and 29 centers and institutes focused on topics like seed biotechnology, wine and food science, sustainable energy and coastal ecosystem research
- Multiple animal facilities and an active, productive Student Farm
- 33 American Association for the Advancement of Sciences Fellows
- 9 National Academy of Sciences members
- UC Davis is ranked as the **most sustainable university in the U.S.**

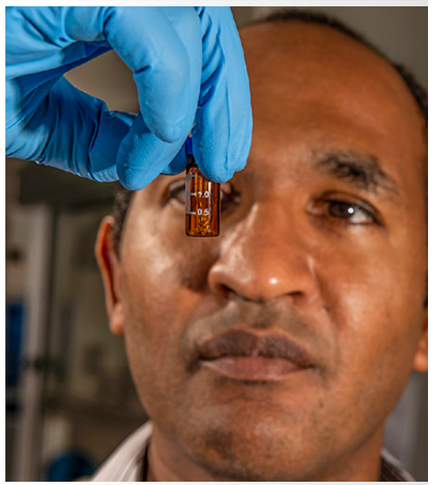
Bold Solutions for the Future

Through philanthropic gifts that support us in advancing research and widening the paths of opportunity for students, CA&ES will lead the world with bold solutions that enrich both people and the planet.

A sustainable future for all of us depends on our combined efforts today. We invite you to join us in supporting our philanthropic priorities:

1. Smart Farming and Food Systems
2. Leading-Edge Research
3. Tomorrow's Change Makers

With your partnership, we will leverage our unparalleled expertise and a broad network of collaborators to give communities in California and beyond the resources to live well, now and always.



1. Smart Farming and Food Systems

Food is fundamental to all aspects of human life, and how we grow, produce and distribute it significantly impacts the health of people and ecosystems. Weather-related events like droughts and wildfires can quickly disrupt agriculture and limit access to safe, healthy and nutritious food. In a rapidly changing world, we need systems that allow us to flexibly adapt and equitably serve every community while sustaining finite resources.

Our Smart Farm Big Idea is developing new technologies and cutting-edge science to support the next generation of resilient, competitive farming and food systems.

The UC Davis Big Ideas are forward-thinking, interdisciplinary programs and projects that build upon the key strengths of our university to positively impact the world for generations to come.

Indoor farming: Making nutritious food available anywhere

Picture stacked metal racks of strawberry plants, their bright red berries grown without sunlight, pesticides or soil. Or moveable towers of leafy bok choy, flourishing in paved city lots using orders of magnitude less water than conventional crops. Changing how we grow food is essential to nourishing a growing population, and that's why expanding scientific and technical capacity in indoor farming systems—which use lights, nutrient solutions, water and air to raise high-quality crops in confined spaces—is crucial. Researchers are working to answer urgent questions like: How do we expand hydroponic farming in a way that large-scale agriculture can implement? How do we make lighting systems more energy-efficient than the sun? "The near-future possibilities for vertical indoor farming might sound like science fiction, but they are what my lab is working on right now," said **Heiner Lieth**, professor and extension specialist in crop ecology. "Our goal is to dramatically accelerate vertical indoor farming research and ensure that UC Davis leads the field and serves as a partner to industry for generations to come."

The Smart Farm Big Idea is responding to challenges within food systems of all kinds to ensure equity, safety and good health for workers, consumers, communities, industries, animals and the environment. By bringing expert scientists and engineers together with industry and corporate partners from a wide variety of disciplines, this innovative initiative is developing powerful data and high-tech tools to transform food, agricultural and environmental systems.

Remaking the food system through artificial intelligence and team science

In 2020, UC Davis was awarded a $20 million grant from the National Science Foundation to support data science and research that could completely change how we produce and distribute food. **Nitin Nitin**, professor of biological and agricultural engineering and food science and technology, and **Mason Earles**, assistant professor of viticulture and enology and biological and agricultural engineering, are collaborating with dozens of colleagues across the disciplines to develop artificial intelligence, robotics and bioinformatics technologies that increase efficiency, sustainability and safety throughout food systems. "We need talented people from areas like computer science, engineering, business and others to accomplish our goals," Earles said. "We all need to work together to turn raw data into information that can help revolutionize agriculture."

Smart Farm: Philanthropic Opportunities

Endow a faculty or extension specialist position to give a preeminent scientist the resources to advance their research

ENDOWED GIFTS STARTING AT $1.5 MILLION

Prepare the next generation of leaders with a gift to help **launch the Agricultural and Environmental Technology undergraduate major**

SUPPORT THE PROGRAM'S LAUNCH: CURRENT-USE GIFTS OF ANY SIZE OR ENDOWED GIFTS STARTING AT $50,000

SPONSOR SCHOLARSHIPS: $25,000 CURRENT-USE GIFTS OR $50,000 NAMED, ENDOWED GIFTS

Provide seed funding to catalyze high-risk, high-reward research projects

$250,000 ENDOWED GIFTS

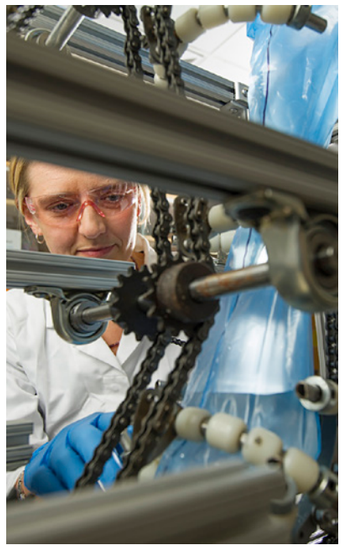
Build high-tech facilities to support critical research and innovation, including a drone port, a phenotyping greenhouse, vertical indoor farms and maker spaces

GIFT AMOUNTS VARY BY PROJECT

The Smart Farm Big Idea provides students interested in tomorrow's high-tech agricultural careers with opportunities to participate in hands-on learning, modeling and research. With an emphasis on customizing smart technologies for California specialty crops and interventions that support the state's unmatched ecodiversity, our students work with professors and industry partners to translate scientific breakthroughs into leading-edge tools. Our new Agricultural and Environmental Technology major builds on the innovative work happening at our field sites and in our labs to prepare creative graduates ready to lead in a changing world.

How smart sensors support healthier chickens

Smart devices and wearable technology are all around us, from cell phones and activity trackers to coffee makers and self-driving cars. They're becoming critical tools in fields and barns, too. Poultry specialist **Maja Makagon**, assistant professor in the Department of Animal Science, is using smart technology to understand bird behavior, safeguard animal welfare and improve productivity. For example, by attaching sensors to hens, Makagon has been able to record when chickens bump their breastbones—a significant source of injury that can also affect egg laying. Targeted technology like this is surfacing entirely new information in the fields of animal science and management. Previously, "we have not had the technology to look at individual birds, so we have been limited to studying flocks," Makagon said. "A lot of this data is hard to get at without technology." Makagon has helped design a special course—part of the new Agricultural and Environmental Technology major—that will teach students how to build remote-controlled smart devices and use the data they generate to support individual animals, even at commercial scale.



2. Leading-Edge Research

CA&ES faculty and scholars are the reason we are a top-ranked research institution with highly competitive educational programs. Our experts' ingenuity and passion fuel a culture of creativity and service to society—and by joining forces across academic disciplines, they generate solutions that address the most complex challenges we face.

At a time when it has never been more critical to amplify diverse voices, our faculty are dedicating their life's work to addressing social, economic and environmental injustices and promoting solutions that benefit all.

Feeding cattle seaweed to reduce greenhouse gas emissions

In 2018, Animal Science Professor **Ermias Kebreab** made a dramatic discovery: by supplementing dairy cows' diets with seaweed for just two short weeks, he was able to reduce their methane emissions by more than 50%. Kebreab found that the seaweed inhibits an enzyme in cows' digestive systems that contributes to the production of methane, a potent fuel for global warming. Further research showed that a bit of seaweed in cattle feed might reduce methane emissions from beef and dairy cows by as much as 84%. The results are an exciting contribution to California's goals for cleaner air and a lighter carbon footprint, and could pave the way for the sustainable production of livestock throughout the world. Kebreab holds the esteemed Sesnon Endowed Chair in Animal Science, funded by philanthropy, which provides him with dedicated resources and time to accelerate studies in livestock biology and production.

Our researchers are recognized throughout the world for fostering scientific discovery and innovations that fuel tomorrow's transformations and inspire talented students. Prestigious endowed faculty positions, which promise dedicated resources, greatly enhance our ability to attract and retain the world's best scientists and educators. These positions also create research opportunities in faculty labs for graduate students and postdoctoral scholars who go on to careers in a variety of academic, industry, nonprofit and policy fields.

Healthy soil, healthy planet

As a professor of soil science and microbial ecology, **Kate Scow** studies how the microorganisms in soil support healthy ecosystems. She previously directed the Russell Ranch Sustainable Agricultural Facility, a working farm where UC Davis scientists conduct long-term studies of crop and land management that are relevant to growers, ranchers, farm advisers and policy makers. At the farm and in their daily work, Scow and colleagues have explored how healthy soil addresses problems exacerbated by climate variability. The right balance of microbes can strengthen soil so that it can grow more food, hold more water, break down pollutants, prevent erosion and sequester carbon—benefiting agriculture, environmental conservation and public health. In fact, "you can't sequester carbon without microbes," Scow said. "They're far more important than we ever imagined." With partners in industry and local communities, UC Davis scientists are uncovering the keys to sustaining agricultural ecosystems and the communities they support.

Research: Philanthropic Opportunities

Name an endowed professorship or chair to support a faculty scholar who will amplify core college strengths and interdisciplinary excellence

ENDOWED PROFESSORSHIPS STARTING AT $1.5 MILLION, ENDOWED CHAIRS STARTING AT $2 MILLION

Endow seed funding to catalyze high-risk, high-reward research by college faculty that addresses sustainability challenges from many angles

ENDOWED RESEARCH FUNDS STARTING AT $250,000

Enhance research and educational excellence through an **investment in key equipment or facilities, classrooms and labs**

GIFT AMOUNTS VARY BY PROJECT

Helping consumers make food choices

Research into food quality and safety is essential to protecting consumers. In the first extensive U.S. study of commercial avocado oil quality and purity, Cooperative Extension specialist **Selina Wang** and her team found that four out of every five samples were either stale before expiration date or mixed with other oils—highlighting the need for regulated standards in this burgeoning industry. "Most people who buy avocado oil are interested in the health benefits," Wang said, but there is little monitoring of labels that may be false or misleading. Wang, who is also research director at the UC Davis Olive Center, had previously discovered that most olive oil sold in the U.S. as "extra virgin" was of a lower grade—sparking a cascade of responses that led California to establish one of the world's most stringent standards for grading olive oil.

Connecting climate change and worsening wildfires

An intense summer heat wave in 2020 contributed to California's worst-ever year for wildfires. That's according to **Yufang Jin**, an associate professor in the Department of Land, Air and Water Resources, who uses machine learning and satellite remote sensing to study ecosystem responses to climate change. In a recent project, she and graduate student researcher Yuhan Huang examined how extreme climatic conditions exacerbated wildfires in California. Together, they developed a machine-learning model that considers factors like drought and other extreme weather effects to make near-real-time predictions of fire severity. "Our study shows how prolonged droughts lead to extreme fire behaviors, especially when they coincide with warmer temperature," Jin said. Her research highlights the importance of land-use planning and fuel management in reducing the risk of large, catastrophic fires as the climate becomes drier and warmer.

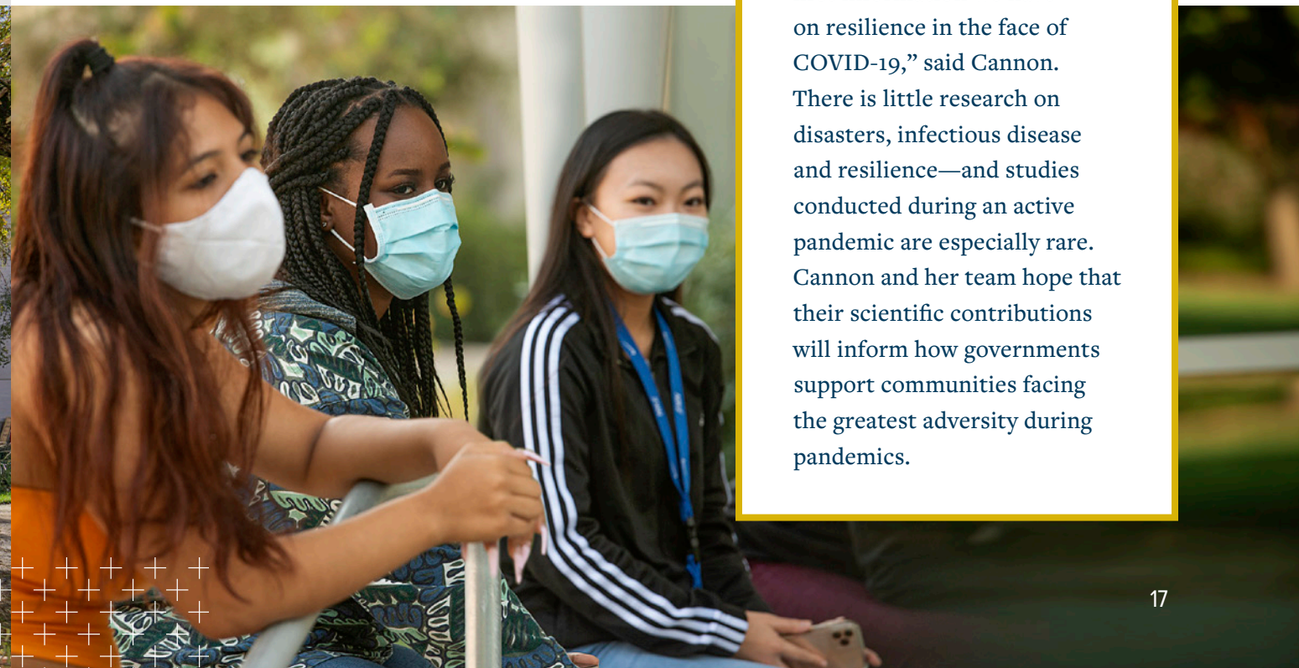
A landscape of possibility: How design serves communities

As a landscape architect and environmental designer, Assistant Professor **David de la Peña** has worked with city dwellers in Europe and communities across the U.S. to develop spaces that meet collective needs. One of those consortiums is right at UC Davis: the Sustainable Living and Learning Communities (SLLC). This grassroots initiative brings like-minded campus organizations together on shared land to explore a broad range of sustainable principles and practices. SLLC participants include the Student Farm, Project Compost and the Domes, a low-income, eco-minded housing cooperative run by students. “I do a lot of research around informal spaces or landscapes that are built and managed by citizens, by neighbors, by residents,” de la Peña said, “and this is a classic example of that.” In 2018, with the support of alumni donors, de la Peña led a year-long project among SLLC students to reenvision the design of their shared spaces to facilitate environmental stewardship, strong community ties and experiential learning. The vision of sustainable community design they developed is an example of how campus collaborations create lasting change while providing students with invaluable hands-on experience.

Philanthropic support for faculty and research promotes the groundbreaking science for which UC Davis is known, making it possible to launch important startup projects or advance current studies.

Pandemics and health equity

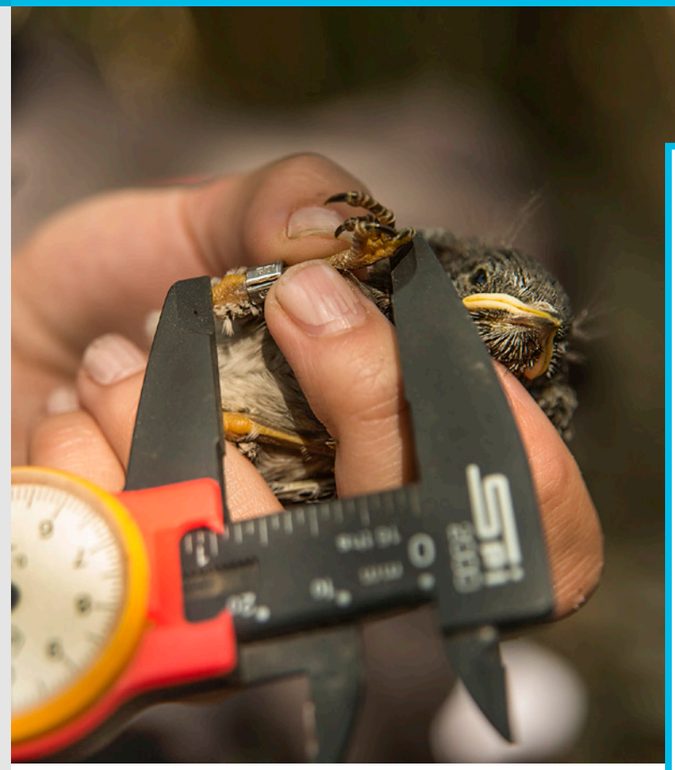
COVID-19 has increased stress across the U.S., severely affecting mental health and emotional wellness. But some groups are more vulnerable than others to these effects, says **Clare Cannon**, an assistant professor in the Department of Human Ecology who is researching pandemic resilience with colleagues at Tulane University. Cannon’s team conducted a virtual study in April 2020 that correlated a lower education level and speaking English as a second language with reduced ability to cope. “This is some of the first information we have on resilience in the face of COVID-19,” said Cannon. There is little research on disasters, infectious disease and resilience—and studies conducted during an active pandemic are especially rare. Cannon and her team hope that their scientific contributions will inform how governments support communities facing the greatest adversity during pandemics.



3. The Next Generation of Change Makers

Student support is vital for attracting and retaining the most talented undergraduate and graduate students. Scholarships and fellowships make a CA&ES education accessible to deserving students of all backgrounds, expanding learning opportunities while enriching the diversity of our campus community and the professional fields our graduates choose.

Scholarships and fellowships ease the financial burden of pursuing higher education, allowing students to focus on learning and exploring the tremendous range of CA&ES programming. Philanthropic support for experiential learning further expands student opportunities to participate in projects with real-world impacts, helping them develop practical skills, professional experience and firsthand wisdom that will serve them over a lifetime. Previous gifts have provided students with resources like residential housing for research at the Bodega Marine Laboratory and trips to the Central Valley to meet with industry leaders and conduct field studies.



Scholarships: Investments in education and catalysts for careers

Whether she's studying atmospheric science, researching wildlife conservation or rowing crew, environmental science and management major **Ellie Alto** keeps the bigger picture in mind. "While at my community college, I worked hard to ensure that my goals of attending UC Davis were realized," she said—and after transferring, she was committed to making the most of what the university and CA&ES have to offer. "I want what is best for my present and future, and UC Davis supports both of those equally," she said. "My education, career and personal development are cultivated so well here." With the support of the William and Linda Sullivan Environmental Sciences Scholarship, Alto has been able to focus on interdisciplinary learning, research and extracurriculars without the pressure to work or accrue debt to make ends meet. "With a scholarship like this, my education can be realized, and my career boosted. It goes beyond a dollar amount," she said. "It is about investing in a future where a profound difference can be made."

Student Support: Philanthropic Opportunities

Fund **graduate fellowships** that attract diverse and talented students

GIFTS STARTING AT $50,000 CURRENT-USE OR $100,000 TO ENDOW

Support the **Experiential Learning Fund** to ensure all students have access to hands-on opportunities

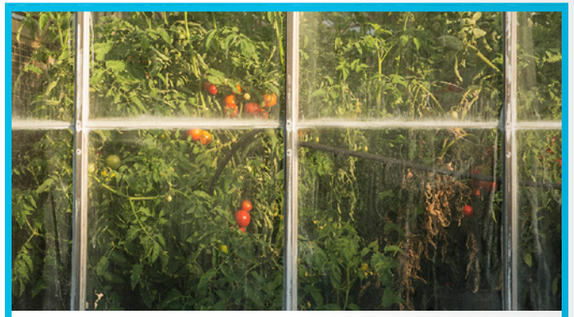
SEEKING CURRENT-USE GIFTS OF ANY SIZE

Create **undergraduate scholarships** that give promising students every opportunity to excel

GIFTS STARTING AT $25,000 CURRENT-USE OR $50,000 TO ENDOW

Give to the **Student Emergency Fund** to help meet urgent student needs for housing, food and educational technology

SEEKING GIFTS OF ANY SIZE



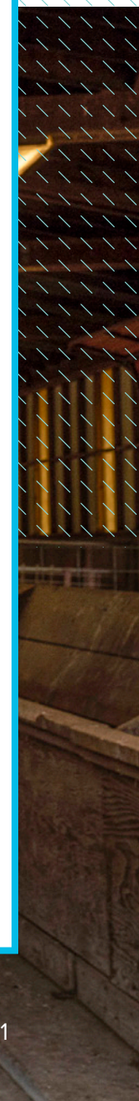
Fellowships: Furthering scientific discovery

UC Davis alumnus **John E. Boynton, Ph.D. ’66**, was a renowned expert on photosynthesis. Crediting UC Davis for helping to inspire his research passion and set the stage for his success in academia, Boynton established a fellowship at the time of his passing in 2018 named for Charles M. Rick, Jr., his UC Davis mentor and the world’s foremost authority on the genetics and evolution of the tomato. “I am very pleased to make this gift to further the excellence of UC Davis,” Boynton said early in 2018. Like Rick’s before him, Boynton’s research significantly contributed to our understanding of how plants function. Now, his gift supports new generations of doctoral students working in plant molecular genetics or molecular plant breeding. “Thanks to John,” said Helene Dillard, dean of the College of Agricultural and Environmental Sciences, “graduate students studying in the fields he found so fascinating will have the opportunity to carry on his legacy.”

Our vision is to make an exceptional CA&ES education accessible to every student. With the continued support of alumni and friends, we will give our students every opportunity—in the classroom and beyond—to hone professional skills, spark innovation, and jump-start successful and meaningful careers.

The ultimate in experiential learning

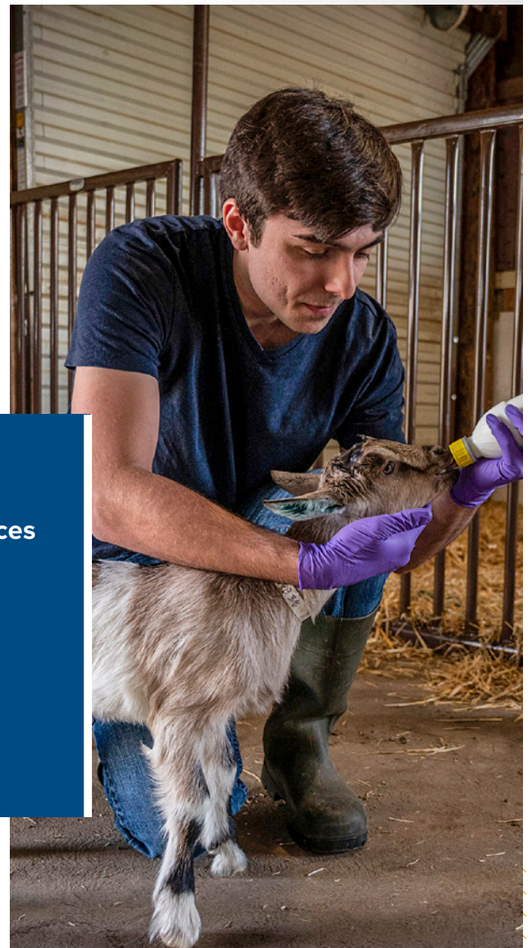
Animal science and management major **Jackson Sawyer ’20** didn’t just study sheep—he lived with them. As part of a program that offers students housing in exchange for managing animals, in his fourth year Sawyer lived full-time at one of the UC Davis sheep barns, where he cared for a flock of over 150. In this immersive role, Sawyer learned to balance the needs of the livestock with his academic schedule. “Even though it’s finals week, they don’t know that,” he said of the ewes due to deliver lambs during a busy time in the quarter. “It’s still our responsibility to make sure that they’re taken care of every day.” Sawyer took advantage of other experiential learning opportunities during his time in the country’s best animal science program, including competing nationally as a livestock judge and serving as president of the university’s Young Cattlemen’s Association. His goal is to share his passion for animal agriculture as an educator after earning a teaching credential and master’s degree.



An Invitation

Philanthropy has always been key to our success in moving powerful ideas forward. As the College of Agricultural and Environmental Sciences builds on a tradition of excellence and innovation, your partnership helps to advance a healthy, humane and sustainable world at a time when we need it most.

We look forward to discussing how your philanthropic goals may be achieved through a gift to our campaign. Together, we can inspire new ideas, educate our future leaders and work toward a greater tomorrow.



For more information, please contact:

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Email: supportcaes@caes.ucdavis.edu

Ways of Giving

We respect that, for each donor who wishes to provide significant philanthropic support, there are personal, financial and gift planning aspects to consider. We will work with you to realize your goals and develop the gift plan that best meets your needs. At your request, we can also work with your tax and financial advisors.

Following are various gift types and their associated benefits. You may wish to consider a mix of gift types to help you achieve both your philanthropic and financial objectives.

Cash Gifts

- Are the simplest and most popular giving method
- Can be tax deductible in the year they are given

Gifts of Securities

- Include stocks, mutual funds and bonds
- Can avoid capital gains taxes
- Can provide an income tax deduction for the full fair market value of long-term, appreciated securities

Gifts of Real Property

- Include land, farms, personal residences, and rental or commercial property
- Can avoid capital gains tax on appreciated assets
- Can provide an income tax deduction for the full fair market value of long-term, appreciated property
- Can eliminate property expenses and taxes
- Can provide continued use for life through a retained life estate gift

Bequests and Living Trusts

- Establish the UC Davis Foundation as a beneficiary of your estate
- Can provide an estate tax deduction equal to the value of the gift
- Offer flexibility by allowing you to provide for family first

Retirement Plan Gifts

- For current gifts, utilize the IRA Charitable Rollover provision (for donors aged 70½ and older)
- Name the UC Davis Foundation as a beneficiary
- Can eliminate income tax on the plan distributions
- Preserve the plan's full value for gift purposes

Life Income Gifts

- Include charitable remainder trusts and gift annuities
- Can provide potential tax savings on income, estate and capital gains
- Generate income for you and/or your loved ones for a fixed period of time or until your passing
- Distribute the remaining assets to the UC Davis Foundation

Expect Greater

From UC Davis. For the World.