

IN GREATER FOCUS

THE MAGAZINE OF THE EXPECT GREATER CAMPAIGN \ ISSUE 3 \ FALL 2023

UCDAVIS



Veterinary ER expansion

brings expert care to more patients

ALSO INSIDE

+ Avenues for STEM students

+ Restoring speech after paralysis

+ New sources of clean energy

+ From seeds to success in ag

Expect Greater
From UC Davis. For the World.

Acceleration is one of philanthropy's most powerful impacts.

It can transform ideas into reality, thanks to donors who trust brilliant minds to drive progress.

UC Davis supporters have confidence in our experts' vision and students' commitment to build a better tomorrow, as told throughout these pages.

You can see—and hear—accelerated progress at UC Davis Health's Neuroprosthetics Lab, where a generous gift has funded work to restore communication to those who have lost speech capability due to paralysis. There, philanthropic support has enabled researchers

to develop this life-transforming technology years faster than expected.

You can taste the promise in agricultural and engineering labs across campus, where innovation grants are supporting early explorations into sustainable uses for food byproducts like nut shells and pomegranate seeds to more efficiently use Earth's precious farming resources.

You can feel the excellence of our faculty, where the donor-funded Chancellor's Fellows Program helps early-career researchers launch novel avenues of inquiry—like green energy solutions using high-efficiency, stable solar cells.

And where donor-funded endowed chairs and professorships attract top faculty, offering them the resources to lead robust academic labs and programs.

And you can sense the energy in our students, who bring our campus to life with their goals, dreams and—for thousands—donor support. They are the generation who will build the future.

This issue offers example after example of why, with work elevated by your support, UC Davis is soaring higher than ever in national rankings: We are now the #6 public university and #28 of all universities in the country (U.S. News & World Report).

As we head into the final year of our comprehensive campaign, "Expect Greater: From UC Davis. For the World," we are continuously impressed by the examples of philanthropy driving progress right before our eyes. Your invaluable partnership is truly helping UC Davis give greater to the world.

Thank you.

Gary S. May
Chancellor

Shaun B. Keister
Vice Chancellor for Development and Alumni Relations
President, UC Davis Foundation

Cecelia Sullivan '83
Chair, UC Davis Foundation



above photo, l-r: Vice Chancellor for Development and Alumni Relations Shaun B. Keister, Chancellor Gary S. May and UC Davis Foundation Chair Cecelia Sullivan '83.
PHOTO: SAM SELLERS / UC DAVIS



UC DAVIS

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EDITOR

Rebecca Furtado

MANAGING EDITOR

Betsy Towner Levine '93

ASSOCIATE EDITOR

Joe Lynch

ART DIRECTOR

Sam Sellers '06

WRITERS

Clémentine Sicard '20

Courtney Tompkins

Bryan Anthony

University of California, Davis

CHANCELLOR

Gary S. May

VICE CHANCELLOR FOR DEVELOPMENT AND ALUMNI RELATIONS

Shaun B. Keister

UC DAVIS FOUNDATION CHAIR

Cecelia Sullivan '83

Contact

Office of Development and Alumni Relations

530-754-4438

MAIL

In Greater Focus magazine

University of California, Davis

Development and Alumni Relations

One Shields Avenue

Davis, CA 95616

E-MAIL

development@ucdavis.edu

WEB

campaign.ucdavis.edu

on the cover: Emergency and Critical Care Resident Anna Bank with very good girl Cali at the UC Davis School of Veterinary Medicine.

PHOTO: KARIN HIGGINS / UC DAVIS

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IN GREATER FOCUS



At the UC Davis Bodega Marine Laboratory, experts work to conserve our ocean waters and wildlife (story page 20).

PHOTO: AMBER CEBLIK / UC DAVIS

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Avenues pave the way

FOR STEM TRANSFER STUDENTS

BY COURTNEY TOMPKINS

left to right: Jennifer Dang (AvenueM),
Jose Gavidia '24 (AvenueE),
Aron Kishore '23, M.P.H. '24 (AvenueB)

When Jennifer Dang was 14 years old, her sister was admitted to a pediatric intensive care unit after flu symptoms led to severe, full-body seizures.

Dang sat at her sister's bedside daily, advocating for care while translating conversations between health care providers and her parents, whose first language is Vietnamese. Her sister was later accepted into a clinical trial at UC Davis Children's Hospital after being diagnosed with a rare disorder, febrile infection-related epilepsy syndrome, or FIRES.

Dang said her family's experience with UC Davis Health had a huge impact on her.

"I saw the delicacy required for great patient care and the application of research and evidence-based medicine," she said. "It was there that I realized I wanted to become a doctor so I could help people like my sister."

But Dang did not have any direct role models working in medicine to help her chart a path.

Navigating the complex system of higher education is challenging for most students, but it can be even harder for students transferring from community college, who often come from households with limited means or are the first in their family to attend college. That's where the donor-supported UC Davis Avenues programs come in.

The Avenues offer a robust transfer support system for students pursuing undergraduate degrees in the fields of science, technology, engineering and mathematics (STEM). UC Davis currently offers three distinct Avenues, all funded by a combination of philanthropy, grants and industry sponsorships: AvenueB in biological sciences, AvenueE in engineering and AvenueM in medicine.

Widening pathways into medicine

Today Dang is a student at Sacramento City College and one of 50 scholars in the inaugural class of the UC Davis School of Medicine's AvenueM, a unique pre-med program that supports community college students as they prepare to transfer to a four-year university, and then on through their undergraduate studies and application to medical school.

"I feel like my pathway to education looks a lot clearer now," she said.

Launched in 2022, AvenueM was funded with a three-year, \$1.8 million seed grant intended to train the next generation of health care workers to provide culturally competent care in rural and medically underserved communities. AvenueM is widening pathways into medicine at a time when many California regions face physician shortages and disparities in health outcomes.

CONTINUED ON NEXT PAGE...



WAYNE THROCK / UC DAVIS HEALTH

AvenueM students practice their suturing skills during one of the program's many hands-on teaching sessions.



KARIN HIGGINS / UC DAVIS

Jennifer Dang

Breaking down barriers

The UC Davis Avenue model was created in 2016 by the UC Davis STEM Strategies team within the Office of the Provost.

Scholars begin their AvenueM journey with a two-week orientation at the UC Davis School of Medicine, where they meet medical professionals from varying backgrounds and learn to practice basic procedures, such as drawing blood and stitching up an incision.

Future AvenueM classes will accept up to 50 students, depending on the number and quality of applicants. Program leaders hope to expand the program's reach by partnering with more community colleges throughout the Northern California area.

Dang hopes to transfer to UC Davis in the fall of 2024.

Beth Broome, senior advisor to the provost for STEM Strategies, said the Avenues programs began with a vision for a true pipeline program to support incoming STEM students every step of the way, from enrollment at UC Davis through graduation and transition to the workforce or graduate school.

"Avenue program students are diverse, innovative thinkers with the capacity to change the world," Broome said. "The Avenues were created to amplify their success by breaking down barriers and providing comprehensive support."

In addition to connecting students with the campus and its many

resources through a two-week Transfer Bridge experience, faculty and staff help students navigate life's challenges while providing targeted academic support through tutoring, mentoring and an inclusive peer network.

"The Avenues continue to make a substantial impact by increasing diversity, promoting access and equity and enhancing academic preparation and research opportunities," said Provost Mary Croughan. "With increased donor support, we can extend these opportunities to many more deserving, young scholars."

Providing culturally competent care

AvenueB is similar to AvenueM in that it prepares students for a future in health care, but the program is for new UC Davis transfer students in

the College of Biological Sciences. Throughout AvenueB, scholars attend social events, speaker presentations and workshops that enable them to build community, learn from their peers and explore career opportunities.

Born and raised in the Fiji Islands, Aron Kishore '23, M.P.H. '24, said his decision to study biological sciences, public health and medicine was inspired by his mother's diabetes diagnosis when he was a young boy.

"I knew that I wanted to find a way to fix it," he said. "I wanted to find a cure for my mom."

Kishore is pursuing a master's degree in public health at UC Davis School of Medicine, where he is researching preventative strategies to reduce obesity and diabetes rates, and exploring how underserved and unhoused communities can gain better access to health care and nutrition. He said AvenueB had a profound impact on his undergraduate experience.

"AvenueB is the best thing that's ever happened to me," he said. "I don't think I would have been able to



KARIN HIGGINS / UC DAVIS

“AvenueB is the best thing that’s ever happened to me. I don’t think I would have been able to navigate my way through the system, especially as a first-generation college student.”

- ARON KISHORE '23, M.P.H. '24

navigate my way through the system, especially as a first-generation college student.”

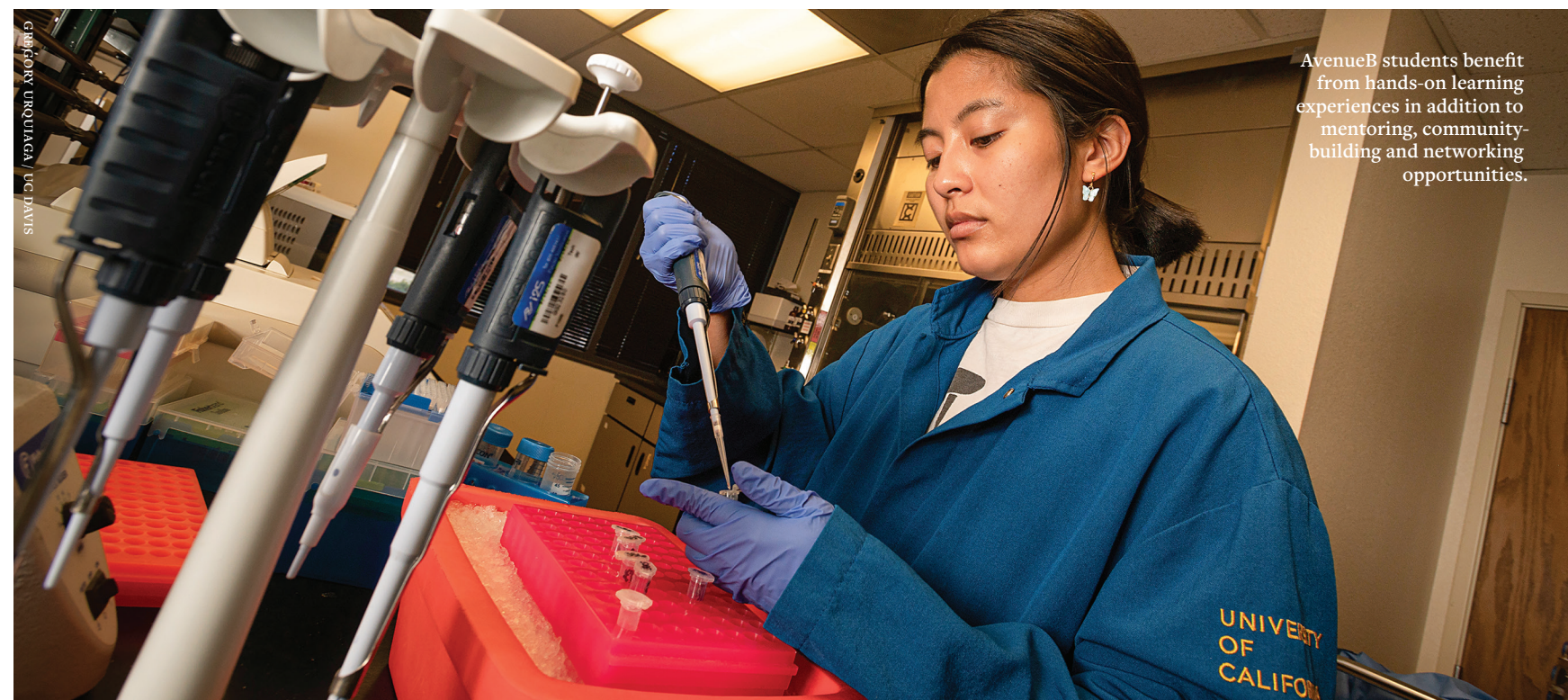
The AvenueB program was launched in 2020 with a donation from the Genentech Foundation, a charitable foundation of physicians which invests in organizations with a proven track record of driving diversity and inclusion in science and medicine. The program has graduated 60 students since its inception.

Kishore plans to apply to medical school at UC Davis to fulfill his dream

of providing culturally competent care to patients in rural or underserved communities. Aron said he saw the need for a “humble approach to health care” when he volunteered at the UC Davis student-run Shifa Community Clinic, which provides free high-quality multilingual and multicultural health care.

“Seeing the look in patients’ eyes when they learned we could address their health concerns at no cost made me realize that this is the most impactful type of care I could provide,” he said.

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GREGORY BROUGHTON / UC DAVIS

AvenueB students benefit from hands-on learning experiences in addition to mentoring, community-building and networking opportunities.



Hands-on projects at AvenueE include prototyping automated car systems such as lighting, braking and parking.

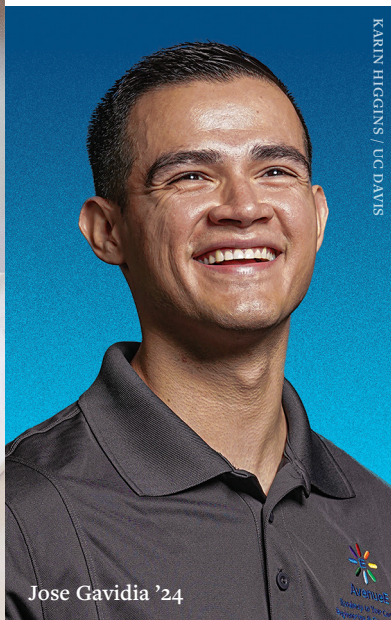
RISHI DONAPATI / UC DAVIS

Teaching tomorrow's top minds

The first Avenue model, AvenueE, began in 2017 with the support of founding corporate partner, Chevron, and a generous gift from the Koret Family Foundation. AvenueE scholars are new UC Davis transfer students in the College of Engineering who gain hands-on work experience and receive guidance from professionals active in engineering, technology and computer science fields.

AvenueE scholar Jose Gavidia '24 moved from Guatemala to the United States when he was 19 years old. He soon got a job washing dishes and enrolled in a course to learn English through the Marin Community College District. There he met an academic advisor who encouraged him to achieve more.

Gavidia is now in his senior year at UC Davis, studying computer science and engineering, with hopes of becoming a software engineer or exploring opportunities in artificial intelligence. He credits the AvenueE program with giving him a sense of belonging.



Jose Gavidia '24

KARIN HIGGINS / UC DAVIS

"The AvenueE program leaders helped me believe in myself and see that I am capable of achieving my goals in life," he said.

AvenueE has doubled in size over the past five years, graduating 150 students since it began.

Growing up, Gavidia said he watched his father struggle to achieve the American Dream, working long hours at janitorial jobs in the U.S. so he could send money home to his family. His mother also did everything

she could to provide a good life for him and his sister, making sure there was always food on the table and a roof over their heads.

When challenges arise, he said their perseverance inspires him to never give up.

"I'm here because I want to honor my parents," he said. "I want to make them proud." +

UC Davis is #2 among top public university performers for social mobility in the U.S.

(Washington Monthly, 2023)



SAM SELLERS / UC DAVIS

Backed for the future

BY CLÉMENTINE SICARD

Every day at UC Davis, students benefit from the generosity of donors via scholarships and awards that allow them to pursue their goals. Meet just four of the thousands whom donors help thrive.

Jericka Morrow Cred. '23, M.A. '25

PROGRAM: Master of Arts in Education

HOMETOWN: Susanville, CA

Why UC Davis? I picked UC Davis for my teaching credential because I like the emphasis on creating an inclusive learning experience. Being Native American, I've never felt really welcome in school, so the fact that UC Davis has a program focused on creating inclusive learning environments and having empathy for others and diversity is very important to me. Other schools have that as part of the curriculum but at UC Davis it's fundamental.

What inspires you? My children. I grew up in a low-income household on a reservation where we didn't have a lot. I want to make sure that my kids have everything they need. They are my inspiration to make sure what I'm doing in life is meaningful.

Why do you want to become a teacher? I want to be the teacher that I've never had. I will be there for students who are struggling and need somebody to push them to succeed.

How has your scholarship supported you? Scholarships have allowed me to provide for my children while pursuing my dreams. When I started my credential program, my daughter was a perfectly healthy 8-year-old—then she was diagnosed with a brain tumor. Without scholarships, I would not have been able to stay in school, pay for medical bills and support my daughter.

What has this support meant to you? I am proof that donor contributions not only make a huge impact in college students' lives, but also the lives of elementary school students. This support has allowed me, a single mother of two, an ambitious Native American girl who grew up on her reservation, to defy the odds and continue my educational journey.

CONTINUED ON NEXT PAGE...



Lena Svanholm '21, M.S. '23, Ph.D. '26

PROGRAM: Ph.D. in chemistry and chemical biology

HOMETOWN: Hoersholm, Denmark

How many languages do you speak? Three: Danish, German and English.

What is it like to be an international student at UC Davis?

I came to the U.S. by myself when I was 18 to play college basketball. I come from a small country and it was a big transition speaking a new language and living in a different culture, but I found a support system with my teammates, coaches and academic advisors. There were a lot of people willing to help me out and help me navigate the challenges that I faced.

Why are you studying chemistry? I really like the problem-solving and critical thinking skills that are needed in chemistry and I want to apply them in the world.

What has been your experience on the women's basketball team? My experience here has been a unique and very positive one. In the recruiting process, I connected with the basketball team and coaching staff, especially Coach Jennifer Gross. They have managed to create a positive and healthy environment where we can all work well together.

How does your scholarship support you? Without scholarships that have helped pay for my academics I simply would not be here, about to enter my fifth year at UC Davis. They have made this whole adventure possible, from living in a new country, meeting new people and getting out of my comfort zone to being at a school that challenges me academically and athletically.



Felipe Gutierrez '25

MAJOR: Cognitive science and computer science

STUDY ABROAD PROGRAM: Americans in Paris Summer 2022

HOMETOWN: Imperial Valley, CA

Why did you choose these fields? I'm very excited about how technology like AI can be implemented in all sorts of ways to benefit human cognition in the future.

Why did you want to study abroad? It fulfilled a writing requirement for my major, but also I got to explore a new part of the world I had never seen before.

Best part of your experience? I loved how people in Paris value the small things in life. It really opened me up to the feeling of enjoying life's simple pleasures.

How did scholarships support your study abroad?

If I didn't receive the multiple scholarships that I got, I wouldn't have been able to go. I've been on my own financially since I left home. Having all of my expenses covered was really liberating and it allowed me to explore Paris and integrate into the daily life of a citizen there.

What inspires you? I am a first-generation college student. Thankfully, my older sisters advised me to pursue higher education, so what really inspires me is that my family believes in me and I want to believe in myself, and reach my full potential. +

Xaviera Azodoh '25

MAJOR: Electrical engineering

HOMETOWN: Born in California, raised in Abuja, Nigeria

Why UC Davis? I attended webinars to learn more about UC Davis and everyone was so friendly. I knew that this was the community I needed that would have many resources to help me.

Favorite study spot on campus? The LEADR (Leadership in Engineering Advancement, Diversity and Retention) Student Center.

Why did you choose this major? Back home in Nigeria, there isn't a very good or reliable power system. I chose electrical engineering because I want to understand it and help make it better.

What inspires you? Working to increase the diversity in STEM really inspires me to keep going, even when I'm struggling. I work with the organization Ujima GIRL (Girls in Robotics Leadership) Project, to promote STEM and mentor African American girls from middle and high school. I want to inspire the future generation because they never know what can be done until someone does it.

How have scholarships supported you? Scholarships have been a great help for me and my family—I don't think I would have been able to put myself through school without them. My parents are in Nigeria and support my three other siblings. Scholarships really helped me be able to focus on my studies and not worry about things like where I am going to live or how I am going to feed myself.



Distinguished professor endows fund for graduate students in water management

Jay Lund, distinguished professor of civil and environmental engineering, and his wife, Jean Lund, have given \$800,000 to endow graduate student fellowships at the Center for Watershed Sciences (CWS). It is the largest gift in the center's history and will encourage interdisciplinary water management research in student dissertations.

"California will always have big water challenges that require insights and scholarship from more than one field," said Lund, who is the vice director of CWS. "This endowment will fund students who are writing dissertations that combine ideas from several fields to help solve water problems in the state and globally."

Lund is a world-renowned expert in water management. He has advised government agencies and organizations on water management issues, and his models and research have impacted water management policies worldwide.

"Professor Lund's gift is an investment in transformational research and the next generation of water management leaders, both of which will have a profound impact at UC Davis and in the field," said Chancellor Gary S. May. "This example of philanthropy from one of our own faculty members is just one more reason our university is a special place."

The Lund Water Management Dissertation Fellowship will support Ph.D. students at CWS conducting interdisciplinary research. The center, which is part of the UC Davis Institute of the Environment, is California's leading academic institute in the study of critical water challenges and sustainable solutions for managing rivers, lakes, estuaries and more.





Veterinary ER expansion

BY COURTNEY TOMPKINS

brings expert care to more patients

Quorra, a 6-year-old French bulldog from Florida, was on a cross-country adventure with her human family this year when things took a turn for the worse. During a camping trip in Yosemite, Quorra started breathing heavily and limping on one of her back legs. Within 24 hours, she could barely walk.

“It went from what we thought was a minor strain to a very serious injury,” said Tyson Sailer, Quorra’s owner. “We were at a loss for where to go, so we did some research and learned that UC Davis had the best veterinary specialists around.”

The Sailers rushed Quorra to the UC Davis School of Veterinary Medicine’s emergency room. A day later, they received a call that Quorra needed immediate spinal surgery. Her spine had a herniated disc that could cause paralysis if left untreated.

“It all happened so fast,” Sailer said. “We were extremely impressed at the level of care she received.”

The Sailers were some 2,500 miles from their home vet in Florida, so having access to world-renowned veterinary care at that crucial moment was a “huge blessing,” he said.

It has been several weeks since her surgery, and Quorra is back to her “playful, spunky self,” Sailer said. “It’s like it never happened.”

\$2.1 million gift saves lives

Quorra was treated in the newly renovated emergency room (ER) and intensive care unit (ICU), an expansion that was supported by a \$2.1 million gift from an anonymous donor.

The expansion nearly doubled the size of the existing facility, adding

exam tables and oxygen cages for patients along with a new diagnostic laboratory and staff lounge. The improved treatment space allows veterinary staff to care for patients more optimally.

“Philanthropic support like this empowers us to continue providing the highest level of care,” said Brenda Keegan ’13, small animal emergency and critical care assistant manager. “We are so thankful to the donors who made this possible.”

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SAM SELLERS / UC DAVIS

SAM SELLERS / UC DAVIS

Care providers in the newly renovated emergency room saw an average of more than 900 patients a month in 2022.



A feline burn victim receives treatment and comfort.

SIYANG CHOI / SEAQUEST FOLSOM



Quorra the French bulldog is back to living her best life after emergency spinal surgery.

Admittances to the ER have more than doubled since before the pandemic, with an average of more than 900 cases per month in 2022 and some months seeing more than 1,200 patients.

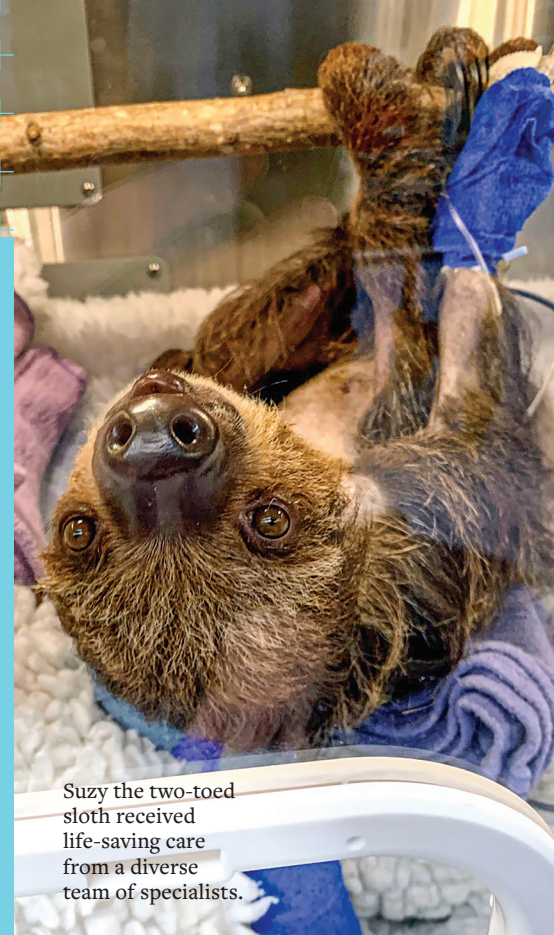
ER veterinarians work on a wide array of cases daily, from rattlesnake bites and lacerations to allergic reactions and respiratory distress. Some cases are life-threatening and require immediate care, while others involve temporary treatment and referral to the hospital's specialty services.

Veterinarian Anna Bank has been working at the UC Davis William R. Pritchard Veterinary Medical Teaching Hospital since 2020, when she moved to California from Sweden to begin an internship. In 2022, she began her three-year residency in small animal critical care.

"The level of knowledge we have in our facility, and at this university, is incredible," Bank said.

"If we had not brought Suzy to UC Davis, she might not be with us today. We knew there was nowhere better she could have gone for care."

- JESSICA CARSCADDEN, ASSISTANT GENERAL MANAGER AT SEAQUEST FOLSOM



Suzy the two-toed sloth received life-saving care from a diverse team of specialists.



SAM SELLERS / UC DAVIS

The university's teaching hospital is home to one of the best veterinarian residency training programs, offering more than 35 specialties.

Bank said working in a state-of-the-art space provides advanced learning opportunities, especially when experts collaborate to solve a complex case.

Saving Suzy the sloth

Suzy, a young two-toed sloth, was one of those cases. Suzy was treated in the new facility, and her case was so unique that it required an entire team of specialists to figure out what was ailing the 8-pound patient.

"I truly believe if we had not brought

her to UC Davis, she might not be with us today," said Jessica Carscadden, assistant general manager at SeaQuest Folsom, Suzy's home. "We knew there was nowhere better she could have gone for care."

Early one morning in May, Carscadden called the Small Animal Clinic because Suzy was lethargic and uninterested in her favorite foods. She just wasn't her sweet, sassy self, Carscadden explained. The UC Davis veterinary team told her to bring Suzy in as soon as possible.

Although the Small Animal Clinic typically treats cats and dogs, UC Davis also has veterinarians who specialize in exotic animals, including

ferrets, turtles, birds and chinchillas. But this was the first time anyone on staff had treated a sloth. The team called in all hands—from emergency services, internal medicine, exotic species, neurology and surgery—to assess and care for Suzy.

Suzy was hospitalized for over a week in the ICU, receiving constant care that included fluids, nutrients and medication to support her immune system.

Thanks to the life-saving care she received, Suzy made a strong recovery. Today, she enjoys hanging out in her spacious enclosure and snacking on one of her favorite treats, mulberry leaves.

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Donor funding launches new orthopedic surgery center

This fall the UC Davis School of Veterinary Medicine celebrated the opening of a new Center for Advanced Veterinary Surgery, a 7,300 square foot, state-of-the-art

orthopedic surgery facility that represents the start of a new clinical era of the school.

With three operating rooms, a radiology suite and other advanced features, the world-class space will help reduce wait times for surgeries and allow more training opportunities for residents and fellows.



UC Davis is:

- > #1 in the U.S. in veterinary science (QS World University Rankings)
- > #1 in the U.S. for a school of veterinary medicine (U.S. News & World Report)

"I appreciate all the time and attention to detail they put into Suzy's care," Carscadden said. "We would not have been able to get that level of care anywhere else. I will be forever thankful to UC Davis."

Philanthropy elevates veterinary medicine

Generous donors have helped support new developments throughout the UC Davis Veterinary Medical Center, including the ER/ICU expansion, which is part of a campaign to transform the current teaching hospital into the foremost veterinary facility in the world.

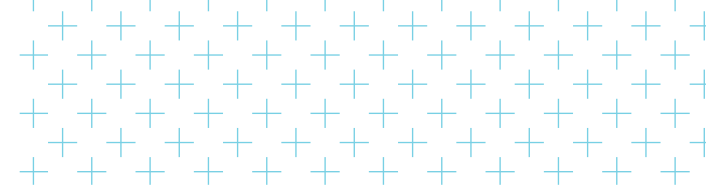
"Philanthropy is driving the expansion of our first-class veterinary instruction, research and clinical care as we continue to position UC Davis at the top of veterinary education," said Mark Stetter, dean of the School of Veterinary Medicine.

The School of Veterinary Medicine is amidst the largest fundraising effort in its history, with a goal of raising \$75 million by the end of the 2023-24 academic year.

The ER/ICU is one of two impactful projects that will bookend the school's 75th anniversary year, along with the All Species Imaging Center which is projected to be complete in 2024.

Philanthropic support will enable the university to open the Dentistry, Oral, and Maxillofacial Surgery Center to allow faculty to continue advancing the field, ultimately leading to increased levels of patient care beyond its current status. Recently completed projects include the Center for Advanced Veterinary Surgery, the Feline Treatment and Housing Suite, and the Cardiology Service Suite.

UC Davis also plans to build the Equine Performance and Rehabilitation Center, Livestock and Field Service Center and an entirely new Small Animal Hospital later this decade. +



A FULL-BELLY FOOD TRUCK

The AggieEats food truck debuted on campus in spring 2023 with a concept believed to be the first of its kind in the nation: a place where students can eat for free.

The bright green truck serves up to 500 meals each school day during the regular academic year on a free or pay-what-you-want basis. Funded with a \$400,000 lead gift from an anonymous donor, the food truck is the result of a collaboration between the Aggie Compass Basic Needs Center, Student Housing and Dining Services, and the Division of Student Affairs.

Pablo Reguerin, vice chancellor for Student Affairs, said the popular food truck model helps address food insecurity while reducing negative associations tied to seeking assistance.

"We've been wanting to have multiple options to address stigma," Reguerin said. "I think this is going to be game-changing."



KARIN HIGGINS / UC DAVIS

PetSmart Charities gives \$6 million to improve access to veterinary care

PetSmart Charities has committed \$6 million to name an endowed chair at the School of Veterinary Medicine, the largest gift to date by the nation's top funder of animal welfare.

The endowment will be used to build more equitable access to veterinary care.

"I'm thrilled to join forces with PetSmart Charities to make a greater impact in an issue that affects many animals and their owners," said Mark Stetter, dean of the School of

Veterinary Medicine. "Together, I believe that we can advance new models that can expand veterinary care to those who need it most."

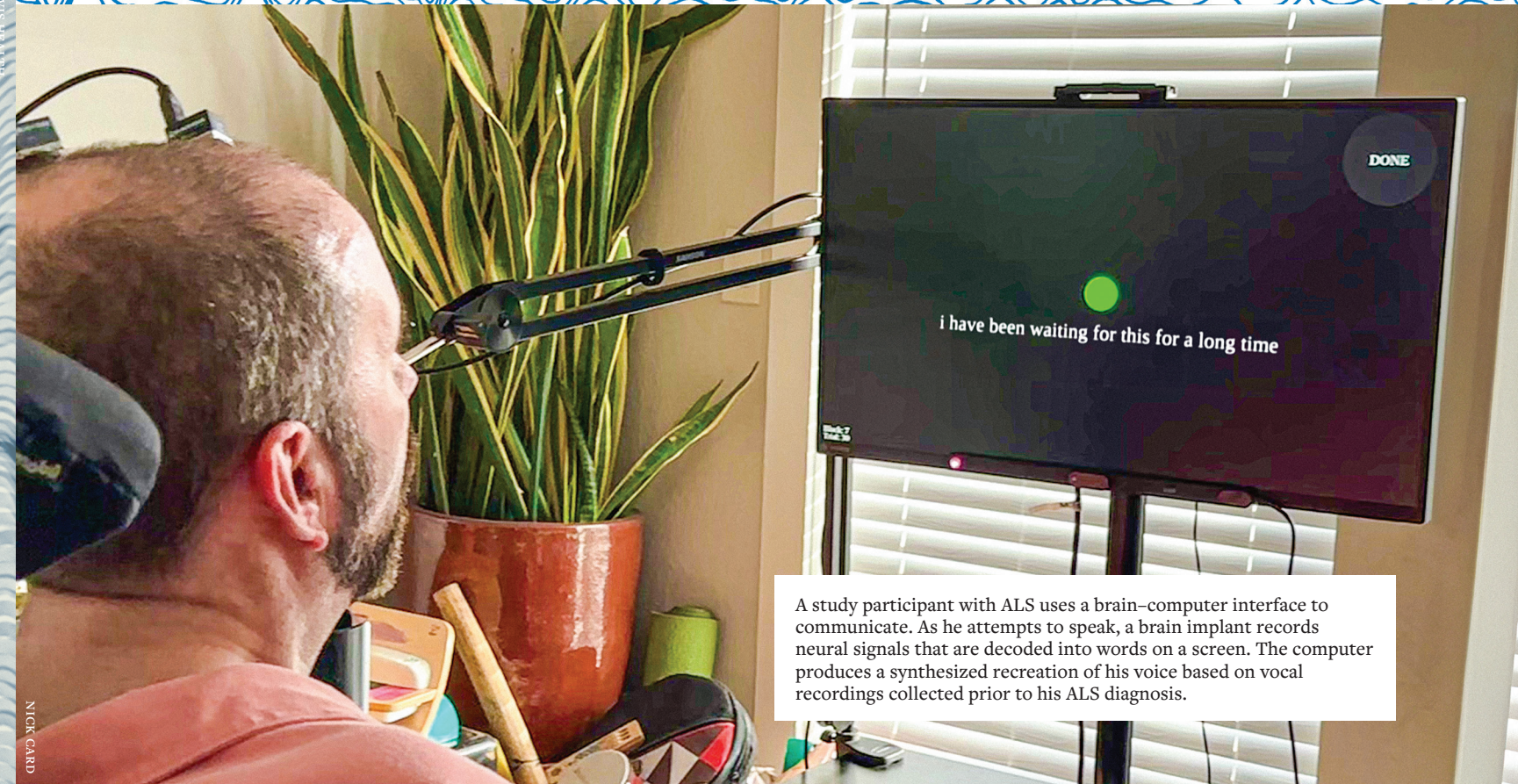
The PetSmart Charities Endowed Chair in Accessible Veterinary Care will leverage the university's collaborative research environment to expand innovative, compassionate care for all pets. The endowment will also support hands-on clinical training for veterinary students and

develop research models that can scale nationwide. (For more about the power of endowed chairs, see story on page 32.)

The School of Veterinary Medicine's continued reign as the top veterinary school in the country, along with its experience serving communities in need and commitment to attracting a more diverse population of students to the field, made UC Davis the ideal recipient for this gift.



David Brandman (left) and Sergey Stavisky, co-directors of the UC Davis Neuroprosthetics Lab



A study participant with ALS uses a brain-computer interface to communicate. As he attempts to speak, a brain implant records neural signals that are decoded into words on a screen. The computer produces a synthesized recreation of his voice based on vocal recordings collected prior to his ALS diagnosis.

Giving their voice back

Donation advances tech allowing those with paralysis to communicate

Imagine someone with paralysis having their first conversation with a loved one in years. Or imagine them making a simple request—*I need my glasses*—and the words appearing as text on a screen while spoken out loud by a computer.

BY CLÉMENTINE SICARD

This life-changing technology is quickly becoming a reality at the UC Davis Neuroprosthetics Lab thanks to a transformative gift that has accelerated research there. The lab is led by David Brandman and Sergey Stavisky, assistant professors in the Department of Neurological Surgery at UC Davis Health.

“Losing the ability to speak is devastating,” said Brandman, who is a board-certified neurosurgeon. “The number-one need for people living with paralysis is communication, but the existing technologies that can be prescribed by doctors are often inadequate to meet this need.”

Brandman and Stavisky, a neuroengineer, are conducting a clinical trial to build brain-computer interfaces (BCI), electronic medical devices placed in the brain, that can restore speech for people who have lost their ability to speak due to neurological injury or diseases like stroke, Parkinson’s and amyotrophic lateral sclerosis (ALS).

The device is still in the investigational stage, meaning that it can’t yet be prescribed to someone, but their vision is to bring it to patients one day.

“It’s my hope that brain-computer interface technology will one day restore functional independence for people living with paralysis,” said Brandman.

“The information that we learn from these early clinical trials will be essential to bringing this technology to people within the next decade.”

As the lab was starting up in 2021, it received \$600,000 from the family of a patient who had received care at the Department of Neurological Surgery.

“This donation allowed us to hit the ground running,” said Brandman. “One of the biggest challenges of starting laboratories is the expense of the equipment, personnel, and actually doing clinical research.”

In less than two years, Brandman and Stavisky have been able to hire a team of students, postdoctoral scholars and staff. In July 2023 they reached the lab’s first major milestone: successfully performing the first brain implant surgery of a clinical trial participant, a man living with ALS and unable to speak.

“We are incredibly grateful to the donors for the opportunity to show that we have a vision for what we want, and that we are trying to address a specific need for people living with paralysis,” said Brandman.

Additional funding can support the cost of the implantation and research for more clinical trial participants and help advance their work to restore other abilities like reach and grasp.

How it works: clinical trial stage

Participants in the clinical trial have tiny devices known as Utah arrays implanted in the region of their brain that coordinates speech. The arrays obtain neural recordings from nerve cells that are conveyed to two small metal pedestals on top of the head.

During data recording sessions, a participant is presented with a

sentence on a screen and attempts to say the sentence. As they do, the arrays record brain signals corresponding to attempted movements of the lips, jaw, tongue and voice box.

“By implanting electrodes that can record from individual brain cells involved in generating speech, we hope we can enable the participants to communicate by just trying to speak,” said Stavisky.

To turn the signals into the intended speech, the team uses advanced machine-learning techniques to create computer algorithms that decode the neural patterns into speech. The computer-decoded speech can then be paired with text-generating or synthetic speech-generating devices and displayed or played aloud on the computer.

CONTINUED ON NEXT PAGE...



Wairagkar (foreground) researches how to synthesize speech from recorded brain signals.

The UC Davis Medical Center is ranked a U.S. best hospital for neurology and neurosurgery, and the School of Medicine is a **top 50** medical school in research (U.S. News & World Report)

They hope to recreate a person's voice in the synthesized speech, gathered from old home videos or past recordings, allowing the patient and their loved ones to hear their voice again.

"This BCI for voice synthesis could allow individuals to speak naturally using their own voice, restoring full range of expressive and prosodic speech, including intonations, at a natural pace," said Maitreyee Wairagkar, a postdoctoral scholar whose research focuses on synthesizing speech directly from recorded brain signals.

Making the synthesized speech as accurate as possible is essential. Past studies of this type of technology by other research groups captured about 75% of words accurately. The goal is to bring the error rate down to 3% to 5%, where patients could use it for reliable and fast day-to-day communication.

The research is so novel they are still determining what to measure to define success.

"There's no gold standard measure for how well it works yet," said Stavisky. "We're part of this very

small but growing field that is creating new medical devices and we need to quantify and develop new metrics."

Their study is part of BrainGate, a consortium of universities and academic medical centers studying how brain-computer interfaces can be used to restore neurological function in people living with paralysis.

The right team

A scientist and surgeon co-leading a lab is a rare but innovative setup that allows the research process to come together more efficiently.

"Our lab is a testament to UC Davis' progressive vision for next generation technology development," said Brandman. "You need people who are invested in both technology and patient care to bring innovation to patients as quickly as possible."

Students and staff at the lab come from different areas of expertise, from bioengineering, computer science, neuroscience, surgery and more.

"We focus on translational problems," said Brandman. "The nature of the work we do is highly multidisciplinary, giving us a tremendous opportunity for further growth."

For Wairagkar, who was one of the first members to join the lab after its founding, helping build a new lab and research from the ground up has been a special experience.

"Working closely with such highly driven and dedicated researchers, all working towards a common goal of building effective speech BCIs, is exhilarating," she said. "It's amazing that we are able to work together to apply our research that can have a direct impact on the lives of our clinical trial participants."

Having the right team and necessary resources is crucial for conducting clinical trials with people.

"We owe it to people undergoing brain surgery and committing their time to research sessions to do the best possible work at full speed ahead," said Stavisky. "We need to have a large team that is devoted to working with them and can make the most of their contribution to science."

Both Stavisky and Brandman noted their gratitude for those who volunteer to participate in clinical trials.

"It takes a very selfless kind of person to be willing to give their time and energy to research that will help people in the future," said Brandman.

'Clear pathway' to building new technology

As they progress in the clinical trial, Brandman and Stavisky are aiming for a faster and more accurate speech BCI. One day, they'd like to see a wireless device that enables instantaneous communication for people with paralysis.

"We want this to be a reliable and robust way for people to communicate, and as intuitive for users as fluent speech is for able-bodied people," said Brandman.

Their vision for the future includes collaborating with other scientists at UC Davis and in industry to develop the BCI technology further. Their work also provides an opportunity to learn more about the brain and research that can help a wider range of neurological conditions.

"We have a very clear pathway to developing this technology and making UC Davis a world leader in this field," said Brandman. "We are really well positioned to not only bring this technology forward, but to help grow and expand this vision here at UC Davis." +

"This donation allowed us to hit the ground running. ... We have a very clear pathway to developing this technology and making UC Davis a world leader in this field."

- NEUROSURGEON DAVID BRANDMAN

Alumna gives \$8 million to biological sciences

Life sciences industry expert Deborah Neff '76 has given \$8 million to the College of Biological Sciences, the largest donation by an individual in the college's history.

The gift, established as part of her estate, includes \$5 million for the Deborah J. Neff Endowed Dean's Chair in Biological Sciences to provide discretionary funding for research and teaching.

"Deb's gift to the college is an investment in our continued exploration of health and teaching, research, and the cultivation of future leaders and innovators," Dean Mark Winey said.

Neff's interest in neuroscience research goes back more than a decade, to when her late sister Janet was diagnosed with younger-onset Alzheimer's disease. With \$3 million of her gift, the Center for Neuroscience will establish the Janet A. Neff Innovation and Research Endowment.

"This is driven by my love for my sister," Neff said. "I know Jan would feel honored to have a research program that is working on understanding Alzheimer's and hopefully leading us closer to therapies."

Neff is the principal of DJN Consulting, LLC, which provides executive management, business strategy and operations consulting. She is an executive trustee and vice chair of the UC Davis Foundation Board and chair of the College of Biological Sciences' Campaign Leadership Council.



Deborah Neff '76 and College of Biological Sciences Dean Mark Winey

Protecting ocean health in a warming world

BY CLÉMENTINE SICARD

At the UC Davis Bodega Marine Laboratory (BML), ocean water streams in through crisscrossing pipes, sea creatures crawl in bubbling tanks, panoramic windows show views of the ocean—and students, faculty and staff are making crucial discoveries for ocean and coastal health.

“The seawater system is really at the heart of the lab,” said BML Associate Director Kristin Aquilino, M.S. ’10, Ph.D. ’11. “You walk in, and you can see and hear the lifeblood of the Bodega Marine Lab flowing all around you.”

For more than 50 years, the core research facility of the UC Davis Coastal and Marine Sciences Institute has provided a front-row seat for experts from different disciplines to study the impacts of climate change and human activity on the ocean, inform solutions to complex challenges and provide hands-on education for students and the public.

“Everything we do here is to understand the ocean better in California and throughout the world,” said BML Director John Largier, professor of coastal oceanography. “Improving ocean health needs integrative studies that can be woven together into a big-picture perspective.”

With the support of donors, BML is renovating its learning facilities and expanding opportunities to keep working toward a sustainable future for the ocean and coast.

Solutions for California and beyond

Half a million gallons of seawater are pumped through the facilities every day, providing opportunities for studies that address challenges such as rising sea levels, disease and pollution.

“Bringing the ocean inside allows us to investigate what’s happening out there now and what might happen in the future because we can manipulate conditions to mimic a changing environment,” said Aquilino.

Home to one of the most productive coastal ecosystems in the world, northern California waters are threatened by global warming, deoxygenation and acidification in addition to changes caused by local human activity. Surrounding BML, the 362-acre Bodega Marine Reserve stewards protected lands and waters for research and education.

“The lab and reserve give us access to these beautiful natural ecosystems to study from and teach students about, but we’re seeing these ecosystems change right before our eyes,” said Eric Sanford, a professor of evolution and ecology who has taught at BML for almost 20 years.

One of the major environmental threats that Sanford studies is ocean acidification. About 30% of the carbon dioxide added to the atmosphere by human activities has been absorbed by oceans, causing changes in water chemistry that are particularly dangerous for shellfish, corals and species like sea urchins and abalone.

UC Davis is #2 in the U.S. for ecology and evolutionary biology
(U.S. News & World Report)

“Donor support is essential to helping us keep a finger on the pulse of the ocean.”

- JOHN LARGIER, BODEGA MARINE LABORATORY DIRECTOR

The lab’s many research programs span a wide range of areas, including climate change, oceanography, aquaculture, disease, toxicology and restoration.

“One of the strengths of UC Davis is that we do research aimed toward informing solutions,” said Sanford. “We focus on what changes are taking place and how those changes potentially impact the important natural ecosystems that we rely upon for California recreation and coastal fisheries.”

Growing with donor support

Built in the 1960s, BML is fundraising to renovate classrooms and modernize lab infrastructure—including large aquarium tanks and high-tech environmental sensors—so that students and faculty have access to state-of-the-art spaces and data for their research.

“Donor support is essential to helping us keep a finger on the pulse of the ocean,” said Largier. “The Bodega Marine Lab is like a mini campus by itself: We provide amazing learning

opportunities for students in addition to being a top-tier research institution that is engaged with government agencies and local communities.”

Another unique feature of the lab is an on-site residence for visiting faculty, scholars and students. Donor funds can advance visits and collaborations through making this visitor housing more affordable.

“The ability to stay here is critical when conducting research that requires one to be in the field monitoring day and night or over tidal cycles, as well as when conducting experiments in tanks at the lab,” said Largier.

Funding graduate students and post-doctoral researchers and increasing community engagement are other key areas where the lab is looking for support to advance interdisciplinary discoveries in marine science.

“The lab plays a critical role in addressing the impacts of climate change on the ocean and coast, here and globally” said Largier. “There are many opportunities for donors to help us in this work.” +



Resnick fund sparks ag innovation

BY COURTNEY TOMPKINS

How do UC Davis researchers grow an idea from seed to success?

Often, it's through the generosity of donors who invest in innovation. Supporting new ideas can lead to accelerated results, sustained grant funding and ultimately some of the greatest discoveries of our time.

Thanks to a generous gift from Lynda and Stewart Resnick, co-owners of The Wonderful Company, researchers across the university are investigating new ways to use agricultural waste to benefit the climate and sustain the growing world population.

The exploratory projects are funded through a \$50 million pledge made in 2022 by the Resnicks to create the Lynda and Stewart Resnick Center for Agricultural Innovation, with \$10 million of that gift directed to annual competitive research grants.

The grants are awarded to UC Davis researchers seeking sustainable ways to use agricultural byproducts from California's iconic specialty crops—pistachios, almonds, walnuts, grapes and pomegranates.

"These projects have the potential to lead to incredible, scalable innovations in a short period of time, and we are excited to see what can be accomplished," said Helene Dillard, dean of the College of Agricultural and Environmental Sciences. "We anticipate transformational discoveries at UC Davis."

The research fund is unique because project leads have the potential to apply for additional grants to advance an idea from proof of concept to implementation. For the first round, nine proposals were selected to receive more than \$1.6 million in seed funding to develop sustainable solutions for the next generation of agriculture.

Shells to skyscrapers: Climate-friendly cement could alter construction industry

Can almond shells be used to create a climate-friendly cement? That's what one team of researchers is exploring with hopes of chipping away at the concrete industry's colossal carbon footprint.

Concrete is the most widely used substance on earth after water and it is responsible for 8% of planet-warming carbon dioxide emissions.

"We are keeping the scope limited for this first round of research, but there is a tremendous amount of potential if this turns out to be a viable concrete alternative," said Associate Professor of Civil and Environmental Engineering Somayeh Nassiri, one of the project's principal investigators.

To begin their project, Nassiri and a team of civil and environmental engineers will investigate repurposing discarded almond hulls to create a bio-ash that can be used in geopolymers, an innovative and eco-friendly construction material, Nassiri explained.

The team will create different recipes with the materials, which will be formed into small mortar blocks. After the blocks are cured, their strength and durability will be tested.

For the past year, Nassiri has studied the use of biomass ashes—wood chips, rice straw and other organic waste—to create alternative building materials at the University of California Pavement Research Center (UCPRC). The UCPRC is a UC Berkeley-UC Davis research partnership sponsored by the California Department of Transportation (Caltrans) that is focused on improving pavement structures, materials and technologies.

"The concrete industry is getting a little shaken up right now," Nassiri explained. "It's starting to break down old barriers and become more sustainable."

With California's commitment to build a 100% clean energy grid and achieve carbon neutrality by 2045, the race is on to reduce greenhouse gas emissions and slash fossil fuel consumption.

"In an ideal world, more climate-friendly materials could be used to build roads, highways, structures and sewers. By re-engineering the materials we use in these applications, we can create substantial benefits to the environment," said Sabbie Miller, associate professor of civil and environmental engineering and co-principal investigator for the project. Miller studies how to minimize environmental impacts caused by industrial materials production, use and disposal.

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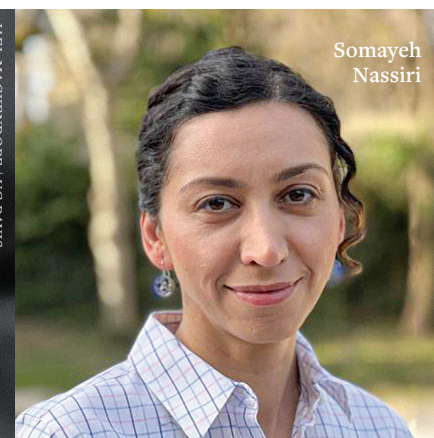


GREGORY ERQUINDA / UC DAVIS



Small mortar blocks of geopolymer concrete are made with discarded almond hulls.

JANEL MACKENDORF / UC DAVIS



Somayeh Nassiri



Sabbie Miller



A researcher prepares test batches of geopolymer concrete made with discarded almond hulls.

JANEL MACKENDORF / UC DAVIS

UC Davis is:

- > #1 U.S. university for agriculture and forestry (QS World University Rankings)
- > #3 for biological/agricultural engineering (U.S. News & World Report)
- > #12 for civil and structural engineering (QS World University Rankings)

Fungi to fuel: Food waste leads to new, nutritious food products

Professor Ruihong Zhang has been studying how to create high-value products from agricultural waste for nearly 30 years, including her latest project: merging fungi with extracts from walnut and almond hulls to create nutrient-dense “myco-foods.”

“Even though the industry is treating them as waste, there are large quantities of agricultural byproducts that are clean,” Zhang said. “Why not turn them into food?”

Zhang and a team of biological and agricultural engineers developed this innovative process in her lab at UC Davis, where they are growing small balls of edible fungi that can be processed into products like boba and lab-grown caviar, with a wide

range of textures, colors and flavors.

With the Resnick funding, Zhang hopes to test the process with pistachio shells. She will also work to develop prototypes of nutritious food products, including boba pearls for fresh consumption in drinks like bubble tea, as well as dried snacks and powdered supplements high in protein and fiber.

“We want to create healthy, on-the-go snacks,” she said. “The possibilities for this product are endless.”

Eating fungi is nothing new, as mushrooms are a staple of diets around the world, but the team believes this application has untapped potential. Myco-foods are rich in protein and can be cultivated anywhere using

a fraction of the space required for traditional agriculture.

It takes about three to five days to grow the pearls in her lab, which is done by extracting sugars from the nut hulls and combining them with microscopic fungi spores that grow larger by eating the extracts.

Since agricultural byproducts often contain many of the same nutrients as the main food source, re-using them reduces waste while adding more value to the existing materials. Zhang pioneered the process, which she says is all-natural and safe.

“If we can take this process to a commercial scale, it’s going to have a huge impact on the planet,” she said. +

Innovation in a nutshell

The 2023 Resnick grants are funding 7 additional teams of experts who are exploring novel uses for agricultural byproducts

Enhancing probiotics

Digestive and gut health products are a rapidly growing part of the food and health industries. Food scientists are teaming up with biological and agricultural engineers to see if they can use a new fruit byproduct-based matrix to boost probiotics’ effectiveness by delivering active probiotics to the gut, supporting their growth and persistence there.

Pistachi-Grow

Faculty researchers from the departments of Animal Science and Biological and Agricultural Engineering are exploring whether pistachio shell byproducts can be suitable growing materials for hydroponic food production, potentially yielding a great breakthrough in sustainability in California agriculture.

Superfood for cows

Biological and agricultural engineers are working with animal scientists to investigate whether pistachio and

pomegranate byproducts can serve as a lower-cost feed supplement to reduce methane production, reduce dairy production costs and improve environmental health.

Almond shells for wastewater

The agri-food industry is responsible for up to 140 billion tons of organic waste each year. An interdisciplinary team of professors from the departments of Viticulture and Enology and Food Science and Technology are collaborating with a researcher from the Almond Board of California to test whether almond shells can be used as an affordable, environmentally friendly way to filter compounds from food processing wastewater.

High-value oils from grape and almond byproducts

Food and animal scientists are working with biological and agricultural engineers to determine whether there is at least one type of non-GMO

yeast capable of converting nutrients in almond hulls and grape pomace into a sustainable oil, like the highly valued but dwindling palm oil.

Biopesticide from pistachio and almond hull extracts

Faculty members from the departments of Entomology and Nematology and Food Science and Technology are testing extracts from pistachio and almond hulls to determine their ability to suppress soil borne pests, a serious problem in California due to increased regulation on chemical pesticides.

Phenolic compounds in almond skins

A team of food science and technology researchers are testing ways to sustainably extract polyphenols from almond skins and blanch water to harness potential antioxidant-boosting properties. These compounds could have many beneficial uses in supplements, food and hygiene products.



“Myco-foods” developed by Zhang (right) combine fungi with extracts from walnut and almond hulls.



JAEL MACKENDORF / UC DAVIS



JAEL MACKENDORF / UC DAVIS

Voices for good

The “why” and “how” of giving are different for everyone. UC Davis donors share what makes their support personal.



“As a nurse for over 20 years at UC Davis Health, I have witnessed the work we do to improve the lives of patients and our community. I started giving slowly, before joining the Founding Donors campaign for the Betty Irene Moore School of Nursing. Today, I am honored when I walk by the beautiful building and see the annual graduating nurses, and know I had a small piece in making this dream a reality. UC Davis Health is an organization that I believe in to do the extraordinary!”

JOLEEN LONIGAN, R.N., M.S.N., NE-BC

Associate chief nursing officer and executive director, Patient Care Services at UC Davis Medical Center



“Carlos and I support the UC Davis Foundation as a way to express our gratitude for the superior education our daughter, Alexis, received at UC Davis while attending the College of Letters and Science.”

ANDREA ALBERINI

UC Davis Foundation trustee



“I have the privilege of seeing the impact of the UC Davis MIND Institute’s research, clinical service and training programs

each and every day. As a result, I feel compelled to help advance the mission of the Institute in any way I can. As a donor, I personally focus on supporting graduate students, innovative programs reducing social inequities and postsecondary programs for people with intellectual and developmental disabilities.”

LEONARD ABBEDUTO, Ph.D.

Retired director and emeritus faculty, UC Davis MIND Institute
Former Tsakopoulos-Vismara Endowed Chair of Psychiatry and Behavioral Sciences



“I am grateful to the UC Davis School of Law for my legal education, which allowed me to pursue an interesting and rewarding career in

environmental law. I give to the School of Law because I care deeply about the environment and would like to encourage and support future law students with an interest in protecting the environment. When I attended King Hall more than 40 years ago, the students learned in a supportive and cooperative atmosphere, and I believe that still stands true today.”

VIRGINIA “GINNY” CAHILL, M.A. ’68, J.D. ’81

Faculty emeritus, UC Davis Department of Land, Air and Water Resources



“My professional successes have been, in large part, due to my education and experiences at UC Davis and the Graduate School of Management.

It is important for me to give back when and where I can to provide resources, assistance and experiences to current and future MBA students and campus entrepreneurs. My giving back is a great investment in the future of the school and university, as well as to our larger community, the state and everyone.”

ROGER HALUALANI ’89, MBA ’91

UC Davis Foundation trustee



“I give to the UC Davis Student Foundation because I want to help remove barriers to education that many

students face. I believe that a quality education should be available to anyone willing to learn. As a trustee on the Student Foundation Board, I am also able to engage fellow students in discussions of philanthropy and share with them the important role it plays across the entire campus. I hope to encourage students to give their time to support this mission of school-wide philanthropy, and hopefully get more people interested in joining the Student Foundation.”

JASSAN DHAMI ’24

UC Davis Student Foundation trustee
Marketing and Stewardship Committee for Aggies Helping Aggies



“When I first stepped onto the UC Davis campus, I was overwhelmed and unsure of where to go and who to ask for assistance because I didn’t see many people who looked like me. My older brother, also an alum, encouraged me to tap into the resources that were available to help me succeed. When I visited campus years later, I saw familiar fearful looks mixed with the comfort of seeing an adult of color on campus. This experience propelled me to donate; now, I encourage other alumni to join CAAA, get involved and pay it forward. I am a proud Aggie for life.”

DEBORAH THOMPSON-AUSTIN ’87

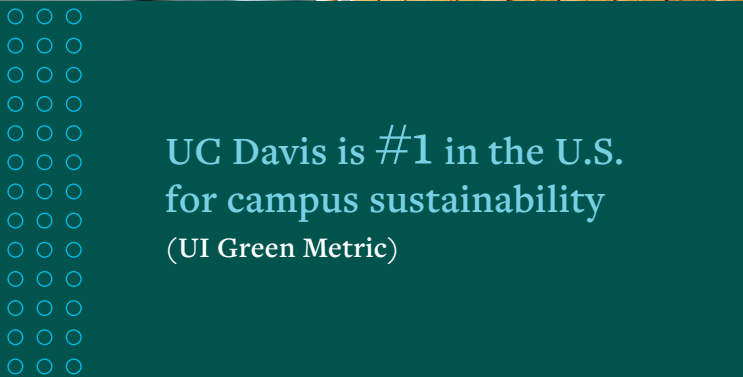
Cal Aggie Alumni Association Board of Directors, DEI Committee chair

The edge of energy

Developing renewable resources from surprising places



Close-up of hand-woven bamboo blade.



Mushroom mycelium, a component of the blades.

La Saponara's lab is developing compostable wind turbine blades.

left to right: Nicholas Gallo '24, La Saponara, Shivani Torres-Lal '25 and Zeyyad Borham '24

UC Davis is #1 in the U.S. for campus sustainability (UI Green Metric)

Faculty across UC Davis are making breakthroughs in renewable energy that have the potential to power our lives while protecting the planet.

BY CLÉMENTINE SICARD

Donor support is essential to giving UC Davis experts the resources and freedom to explore high-risk, high-reward endeavors, such as wind turbines with compostable blades and more efficient solar cells.

Meet just two of the UC Davis experts who are pushing the boundaries of what's been possible so far, with an eye toward a sustainable future.

Bamboo + mushrooms = compostable wind turbines

Wind energy is currently one of the fastest growing sources of renewable energy around the world.

But as the production of wind turbines increases, so does the number of used wind turbines, most made with fiberglass, in landfills. More than 2 million tons of decommissioned blades in the U.S. are projected to be sent to landfills by 2050, according to a recent study in the journal Resources, Conservation and Recycling.

UC Davis researchers are developing a potential solution to this problem: compostable wind turbine blades built with sustainable materials.

"We want to have clean energy, but clean energy cannot pollute the environment," said Valeria La Saponara, professor of mechanical and aerospace engineering, who is the principal investigator of the project.

The co-principal investigator is Michele Barbato, professor of civil and environmental engineering. For the aerodynamics analysis of the newest blade concept, they were assisted by Camli Badrya, assistant professor of mechanical and aerospace engineering.

Their current prototypes are made with a combination of bamboo and mushroom mycelium, a versatile type of living material that is grown on repurposed agricultural waste. When composted, mycelium is also capable of bioremediation, meaning it can break down environmental pollutants and help clean the area where it is composted.

"I'm trying as much as possible to use materials with a low carbon footprint that are locally sourced," said La Saponara. While bamboo is not local, she explained, it is the fastest growing plant on Earth and is strong and flexible enough for a turbine blade.

With additional funding, La Saponara envisions working on the path to commercialization so that building compostable wind turbine blades becomes a less labor-intensive, more automatic process that can one day be scaled up for production.

"My goal is to see a competitive 10-kilowatt compostable turbine blade to get people interested in using these blades instead of the ones that end up in the landfill," she said.

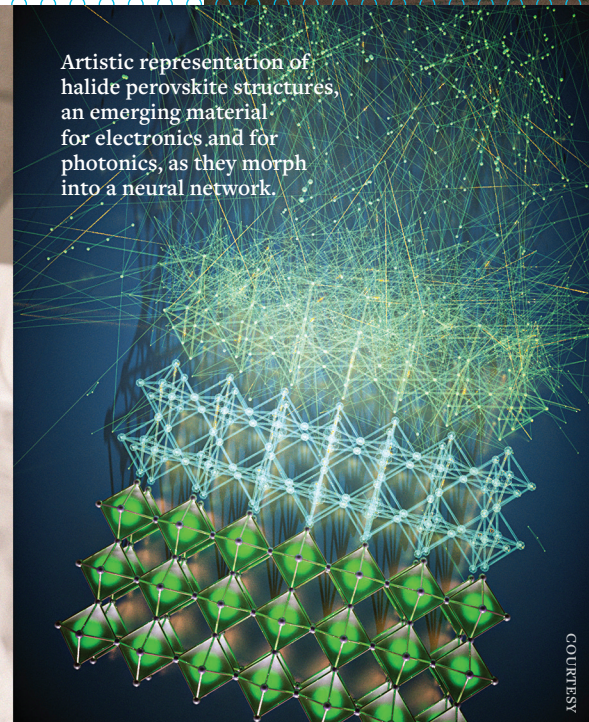
"There is a market for 10 kW blades, for example in rural areas or in areas hit by natural disasters that need an easily deployable source of power. We're at a tipping point in the environment, and our next generation are the ones who will pay the highest price."

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GREGORY DRQULIGA / UC DAVIS



Leite (*right*) and graduate student Peifen Lyu, '19, Ph.D. '25, created a magnesium-based nanoscale optical device that can change color across several applications, such as a coating for pills.



Artistic representation of halide perovskite structures, an emerging material for electronics and for photonics, as they morph into a neural network.

COURTESY



GREGORY DRQULIGA / UC DAVIS

Hybrids = efficient solar cells

Marina Leite, professor of materials science and engineering and a UC Davis Chancellor's Fellow, is using machine learning to test new materials for high-efficiency and stable solar cells—used to harvest light in renewable energy systems such as solar panels—that are more efficient and affordable.

The materials, called perovskites, are hybrid organic-inorganic molecules that can potentially be used as a low-cost alternative to silicon; however, they degrade quickly once exposed to high heat or humidity. To identify resilient perovskites, thousands of chemical combinations must be tested.

"This is a situation where machine learning can really help speed up the

discovery of stable chemical compositions," said Leite. "Understanding the stability of perovskites under different environmental conditions is critical, but the number of possible chemical combinations is enormous to use trial-and-error conventional methods."

As a part of the Chancellor's Fellows program, which is donor-supported, Leite notes that philanthropic funding has allowed her to explore bold ideas that may not have received funding from government or other traditional sources.

"The Chancellor's Fellows Program is a fantastic initiative that has allowed faculty like me to implement daring ideas that will help establish UC Davis as a leader in new fields," said Leite.

Chancellor's Fellows

Thanks to the support of donors, UC Davis has named 191 faculty members as Chancellor's Fellows over the program's 23-year history. Each fellow receives \$25,000 in unrestricted funds for research or other scholarly work.

"When we look at the history of science, risky moves are the ones that have often led to breakthroughs. It's important to have the freedom to explore new pathways to find a solution for mitigating climate change," she added.

Machine learning is an innovative approach to test and predict the right perovskite and the potential

effects of environmental stressor combinations with high accuracy. To develop the right algorithm, graduate students Meghna Srivastava, M.S. '22, and Abigail Hering, Ph.D. '26, collected over 7,000 measurements of five different perovskite films that were submitted to humidity conditions that mimic hot summer weather in Sacramento.

"Our paradigm is unique, and I am eager to see the upcoming measurements," Leite said.

Using perovskites in solar cells could have a huge impact for light-emitting devices as well. Leite has dedicated her career to research on functional materials for sustainability.

"It's important to me that my research can have a long-lasting impact on sustainability, and advancing the development of materials and devices for clean energy has been one of my primary goals," she said. +

“When we look at the history of science, risky moves are the ones that have often led to breakthroughs.”

- MARINA LEITE, PROFESSOR OF MATERIALS SCIENCE AND UC DAVIS CHANCELLOR'S FELLOW

TED Audacious Project funds \$70 million UC collaboration for health, climate

UC Davis scientists are teaming up with UC Berkeley and UC San Francisco researchers on a \$70 million donor-funded initiative that aims in part to cut climate change-causing emissions from cattle by using the genome-editing tool CRISPR on microbes in cows' guts.

Professor Ermias Kebreab and Associate Professor Matthias Hess will collaborate with a world-renowned team at UC Berkeley: Professor Jill Banfield and Professor and Nobel Laureate Jennifer Doudna.



Hess (*left*) and Kebreab with equipment that mimics a cow's digestive system.

Kebreab, associate dean of global engagement and holder of the Sesnon Endowed Chair in the College of Agricultural and Environmental Sciences, and Hess, a microbiologist in the college's Department of Animal Science, hope to build on their successful work reducing methane emissions in livestock.

Methane emitted in cow burps comes from gas-producing microbes in the gut. The goal is to use CRISPR technology to engineer these microbes to produce less methane.

"We're trying to come up with a solution to reduce methane that is easily accessible and inexpensive, without restrictions or limitations, and that can be made available not only to California but globally," said Hess.

The groundbreaking health and climate initiative will be funded by TED's Audacious Project, which provides donor support to encourage the world's greatest change makers to dream bigger. It is the largest scientific award funded through the project to date.

The Power OF AN Endowed Chair

BY COURTNEY TOMPKINS

Hiring the world's top faculty.
Training tomorrow's leaders.
Conducting groundbreaking research.

All of these are made possible at UC Davis thanks to the power and prestige that endowed chairs and professorships bring to the university.

"The endowed chair is definitely what attracted me to UC Davis," said Professor Nicholas Pinter, who joined UC Davis in 2015 as the Roy J. Shlemon Chair in Applied Geosciences. "I could not do what I do without the resources that this chair brings, and the high-profile interest that comes along with it."

Pinter works in the College of Letters and Science, where 21 endowed faculty positions elevate interdisciplinary research and world-class teaching every day. As the university's largest college, with more than 110 undergraduate majors and minors, Letters and Science offers a unique lens for exploring the profound impact donors have when they endow a chair or professorship.

"We have an incomparable breadth and depth of research taking place in the college, and what makes us unique is our ability to work together to address some of the greatest challenges we face as a society," said Estella Atekwana, dean of the College of Letters and Science. "Endowed chairs substantially accelerate these efforts by attracting star faculty who elevate the national profile of our programs and mentor our junior faculty and students."

With funds from the Shlemon Chair endowment, Pinter leads students on immersive field trips to experience waterways in the wild.

Professor Pinter shapes the future of world water

The Shlemon Chair was established with the intent of encouraging research that isn't purely theoretical, but is relevant to the real world, Pinter said. One area it supports is the Ecogeomorphology Program, a series of multidisciplinary classes that allow UC Davis students to study some of the wildest river and coastal locations on the planet.

"The idea is to bring people from all these disciplines together—geologists, watershed scientists, biologists, ecologists and engineers—and get them talking about water science and water management challenges, not just in the classroom, but out in nature," he said.

Caroline Newell '19, M.S. '24, attended a research trip on the Yampa and Green rivers, which wind through Dinosaur National Monument in Colorado and Utah. Gathering research in the field allowed her to think more holistically about ecological systems.

"I could not do what I do without the resources that this chair brings, and the high-profile interest that comes along with it."

PROFESSOR NICHOLAS PINTER,
ROY J. SHLEMON CHAIR IN
APPLIED GEOSCIENCES

"These trips provide an opportunity for students to connect to nature on a deeper level than we ever have before," Newell said. "It's a life-changing experience that totally shapes the way everyone moves forward."

Another important area of focus within the Shlemon Chair is the World Water Initiative, a program that brings experts together to solve local and global water challenges. Pinter is the associate director of the UC Davis Center for Watershed Sciences (CWS), which has one of the largest concentrations of water science knowledge around the world. Pinter leads the World Water Initiative with Jay Lund, distinguished professor of civil and environmental engineering and vice director of CWS (read about Lund's own endowment gift to CWS on page 9).

"UC Davis has been a humble leader in this field for a long time, providing expertise in water and flood management mostly to the state of California," Pinter said. "The mission of World Water is to take that leadership expertise to a global scale."

Floods remain the most damaging of all natural disasters, he explained, so there is a big need for long-term planning and recovery, which most of the world doesn't have.

Disadvantaged communities are disproportionately affected by water issues—droughts and floods alike—and those hit hardest are usually the least capable of recovering from these events.

"There is the potential for UC Davis to leap in and provide scientific expertise in the aftermath of water crises around the world," he said.



Middleton Manning participates in a Woodland cultural burn with students and community members. Native tribal leaders guide the cultural burning ceremonies.

Professor Middleton Manning strengthens ties with Native communities

Professor Beth Rose Middleton Manning was appointed to the Yocha Dehe Chair in California Indian Studies in 2014. Her research focuses on environmental policy with respect to California Native land and Indigenous homelands.

She said the endowment has been critical in funding research opportunities for students and bringing guest speakers to discuss a wide range of topics, from environmental policy and land-back initiatives to cultural fire and land stewardship practices.

"It's very important that students hear directly from California Tribal members, leaders, policymakers and cultural practitioners," she said. "I really believe in recognizing and respecting the knowledge and expertise of these community members."

Middleton Manning said she works to meet every one to two years with the Tribal Council for the Yocha Dehe Wintun Nation to share some of the key opportunities the endowed professorship has supported.

In 2018, the endowment funded a field trip to a cultural burning workshop with Tribal Chairman Ron Goode of the North Fork Mono Tribe. The experience was so transformative that it led to the creation of Keepers of the Flame, a new course about the traditional Native American practice of burning grasslands and forests for maintaining the health and balance of the ecosystem.

CONTINUED ON NEXT PAGE...



Nicholas Pinter

Deniss Martinez '17, M.S. '20, Ph.D. '23, focused her doctoral research on environmental policy and forest management and worked with Middleton Manning to create Keepers of the Flame. The project connects students, community members, researchers, policymakers and Indigenous fire practitioners to learn about cultural burning and support its revitalization.

“Reducing fuels in the forest is a big benefit of native cultural fire practices,” Martinez explained, “but the focus is really on caretaking of the land and creating an abundance of food and fiber that wildlife are dependent on.”

Middleton Manning mentors students in a wide range of disciplines—natural science, humanities, social science and environmental science, to name a few.

The work she has done as the Yocha Dehe Chair has laid the foundation for long-term collaborations between UC Davis and California Indian tribes.



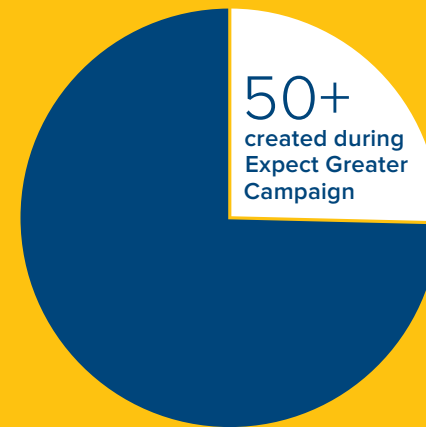
ALYSSA BECK / UC DAVIS

UC Davis students, academics and members of the local Native American community take part in a collaborative cultural burn at the Tending and Gathering Garden at the Cache Creek Nature Preserve in Woodland.

FACULTY ENDOWMENTS AT A GLANCE

Endowed chairs and professorships are prestigious academic positions established through a significant philanthropic gift. Funds are invested in perpetuity, with a portion of generated interest and returns used each year to allow the faculty holder to pursue ambitious research projects, mentor students and contribute to the advancement of knowledge in their field.

197 ENDOWED CHAIRS AND PROFESSORSHIPS AT UC DAVIS



TOP 6 SCHOOLS AND COLLEGES WITH ENDOWED FACULTY POSITIONS

School of Medicine	92
College of Ag. and Environ. Sciences	36
College of Letters and Science	21
College of Engineering	11
School of Law	7
School of Veterinary Medicine	7

MARKET VALUE OF UC DAVIS FACULTY POSITION ENDOWMENTS
\$401 million

MARKET VALUE OF ALL UC DAVIS ENDOWMENTS
\$2.2 billion

Distinguished Professor Britt sparks advancements in clean energy

Distinguished Professor David Britt grew up on a peanut farm in North Carolina, an experience that inspires groundbreaking research conducted in his chemistry lab today.

Britt has been studying photosynthesis for more than 30 years using a technique called electron paramagnetic resonance (EPR) spectroscopy. He uses EPR instruments to study the structure and function of biologically important enzymes, especially those involved in capturing the sun's energy to split water and generate hydrogen.

Understanding these enzymes could lead to new ways to generate clean fuels from solar energy, impacting

global energy production on a profound level.

“If we could just, on a really big scale, convert sunlight and water to hydrogen and use that as a fuel, that would be an energy-revolutionizing technology,” Britt said.

The Britt lab operates the California EPR Center, the largest of its kind on the West Coast. He just finished building a one-of-a-kind instrument that works at three times the potency of any high-power pulse EPR in the world, he explained.

“This is a huge leap in EPR technology worldwide, and it is right here at UC Davis,” he said.

Britt is the first holder of the Winston Ko Professorship in Science Leadership, named after the late professor and dean of physical sciences. The endowed position was created to recognize national or international science leadership.

Britt, who worked closely with Ko throughout his career at UC Davis, said he keeps Ko's vision in mind when selecting scientific experts for the endowment's accompanying lectureship series.

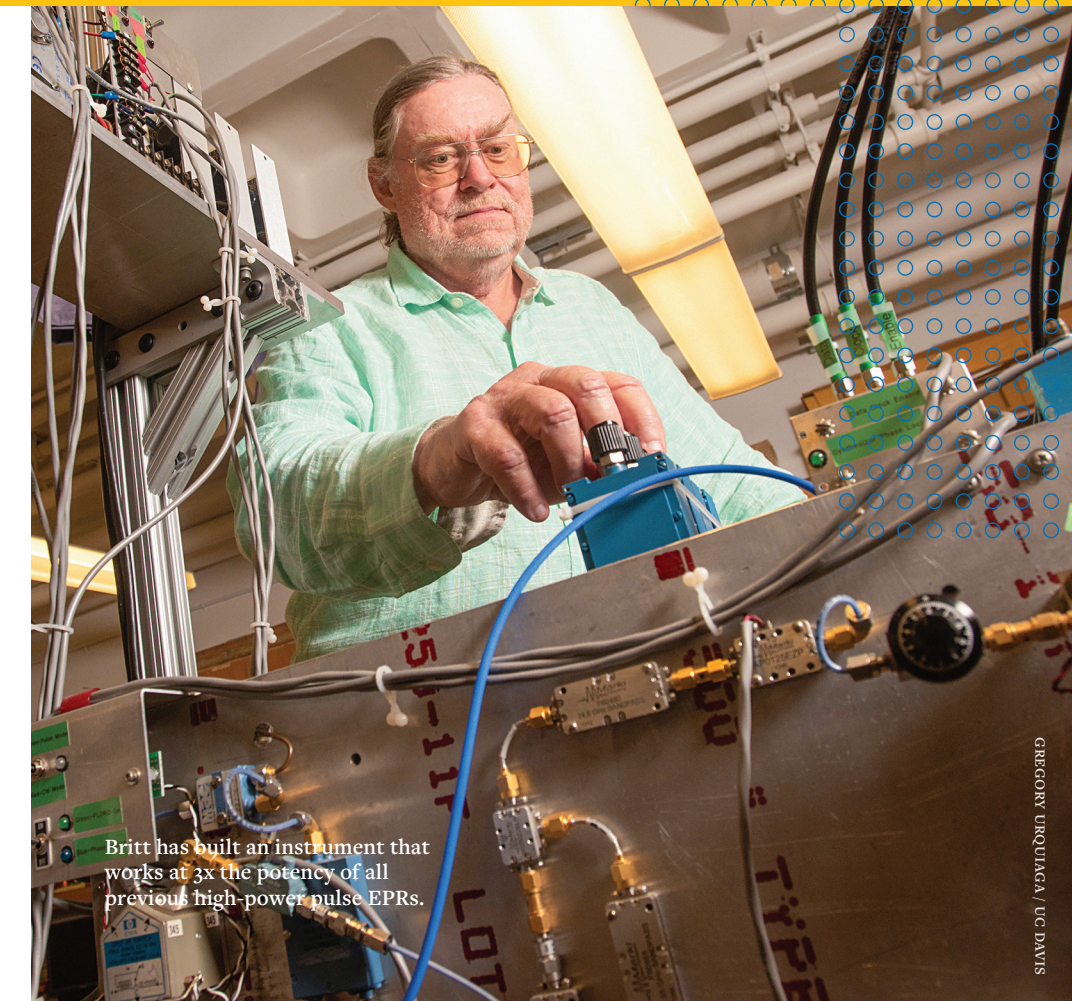
One hallmark of the Britt lab is his focus on bringing interdisciplinary scholars together to tackle tough problems. Daniel Suess, associate professor of chemistry at MIT, spent

four years in the Britt Lab as a post-doctoral researcher. He said he chose UC Davis solely for the opportunity to learn from a highly respected scientist who is a known expert in his field.

“It was really thrilling for me because I learned so much,” Suess said. “My research direction and mentorship style were influenced by the strong diversity of thought Dave brought to his lab.”

Suess runs his own chemistry lab at MIT where he mentors graduate students and postdoctoral researchers.

The Britt lab has opened doors for many students and researchers who now hold positions at top institutions across the country, including UC Berkeley, Caltech and Northwestern. +



Britt has built an instrument that works at 3x the potency of all previous high-power pulse EPRs.

GREGORY URQUINA / UC DAVIS

Accolades

Honoring faculty, alumni and donors who make a greater impact with their dedication and generosity.



Women & Philanthropy Impact Award

Colleen E. Bronner, associate professor of teaching and vice chair of the Department of Civil and Environmental Engineering, won the 2023 Women & Philanthropy Impact Award. The recognition celebrates Bronner for her work as a mentor, leader, and champion of diversity, equity and inclusion.

The award comes with a donor-funded \$25,000 prize that the winner allocates to a campus program of their choice. Bronner has directed her winnings to the UC Davis AB540 and Undocumented Student Center, which helps alleviate burdens for students by providing legal, financial and emotional support.



UC Davis Teaching Prize

The 2023 UC Davis Prize for Undergraduate Teaching and Scholarly Achievement was awarded to **John Eadie**, distinguished professor with the Department of Wildlife, Fish and Conservation Biology. The annual recognition honors faculty who are both exceptional teachers and scholars, and includes a \$60,000 prize, funded through philanthropic gifts.

Eadie serves as the Dennis G. Raveling Endowed Chair in waterfowl biology. The world-renowned scholar has helped find solutions for some of the most pressing challenges in his field, including developing tools to aid conservation planning for wetland-dependent birds threatened by climate change, drought and urban development.

With his prize money, Eadie is establishing a scholarship to increase diversity in the field of wildlife and waterfowl biology.



Charles J. Soderquist Award

Bruce '71, M.S. '73, and Marie West are the recipients of the 2023 Charles J. Soderquist Award, given by the UC Davis Foundation in recognition of exceptional volunteer leadership and philanthropic support. The Wests are directing the award's \$10,000 prize—which recipients can allocate to the university area of their choice—to the College of Engineering's Strategic Vision Investment Fund.

Bruce West has been fostering excellence at his alma mater for decades. He has served as chair of the UC Davis Foundation's board of trustees and chair of the Davis Chancellor's Club, the university's oldest donor recognition society. Marie West has become an honorary Aggie through her decades of supporting the university.

The Wests have donated to many areas of interest across UC Davis, including health, veterinary medicine, athletics, the arts, and a wide array of academic programs.



UC Davis Medal

International arts patron and philanthropist **Maria Manetti Shrem** was presented with the 2023 UC Davis Medal, the university's highest honor, at a commencement ceremony on June 18.

"It means the world to me. I am elated and humbled to receive such a high honor and recognition from UC Davis," Manetti Shrem said.

Manetti Shrem is the largest supporter of what is known as the UC Davis arts renaissance, funding visionary projects such as the Jan Shrem and Maria Manetti Shrem Museum of Art, artist residencies and new arts curricula in the College of Letters and Science. Her international influence and advocacy have raised the visibility of UC Davis' arts programs worldwide.

"Maria's profound arts legacy and passion for creating opportunities for exploration, learning and engagement with art and artists has enriched the lives of everyone in our community, and will continue to do so over the years to come," Chancellor Gary S. May said. "We're thrilled to honor her with this exclusive award."

Readers fund veterinary care for animals and owners in need

The winners of the 2022 *In Greater Focus* magazine readership survey contest, Andrew Hadra and Isabelle Alessandra, have directed their \$10,000 prize money from the UC Davis Foundation to the compassionate care fund at the UC Veterinary Medical Center, San Diego, a unit of the UC Davis School of Veterinary Medicine.

Hadra and Alessandra are longtime UC Davis compassionate care donors, whose inspiration came from witnessing a heartwarming moment in the waiting room at their local veterinary emergency room.

A man brought in his critically ill dog, but he could not afford the costly surgery to save the pet's life, so he authorized the hospital to put his beloved companion down. An elderly couple in the waiting room offered to pay for the dog's surgery in full, stunning everyone in the room.

"The absolutely out-of-the-blue, extraordinarily generous and life-saving gift of funds from that couple touched us deeply," said Hadra. "It was so powerful, and so selfless, we decided we would like to be able to help people in the same way."

Compassionate care offsets costs for families who cannot afford to treat their sick or injured animals, and assists with the costs of treating shelter, stray and wild animals brought to the hospital. When Hadra and Alessandra won the magazine survey contest, they knew they wanted to continue supporting compassionate care—this time, for pet owners in Southern California.

"Giving to UC Davis was a perfect fit," said Hadra. "It combined our passion for animals with giving to an institution we can trust."



Hadra and Alessandra with their dog, Enzo.

For your chance to win this year's contest, fill out our brief survey at campaign.ucdavis.edu/survey and let us know where you would spend \$10,000 from the UC Davis Foundation to build a better world.

A grand opening year

UC Davis cut the ribbon on many new buildings made possible by donor support this year, transforming the campus landscape and bringing state-of-the-art spaces to Aggies and the public.



AGGIE SQUARE

A topping-off ceremony in May celebrated the full structural completion of the first phase of Aggie Square—a Sacramento hub for UC Davis research, donor-funded programs, innovative companies and startups, and talent from across the region.



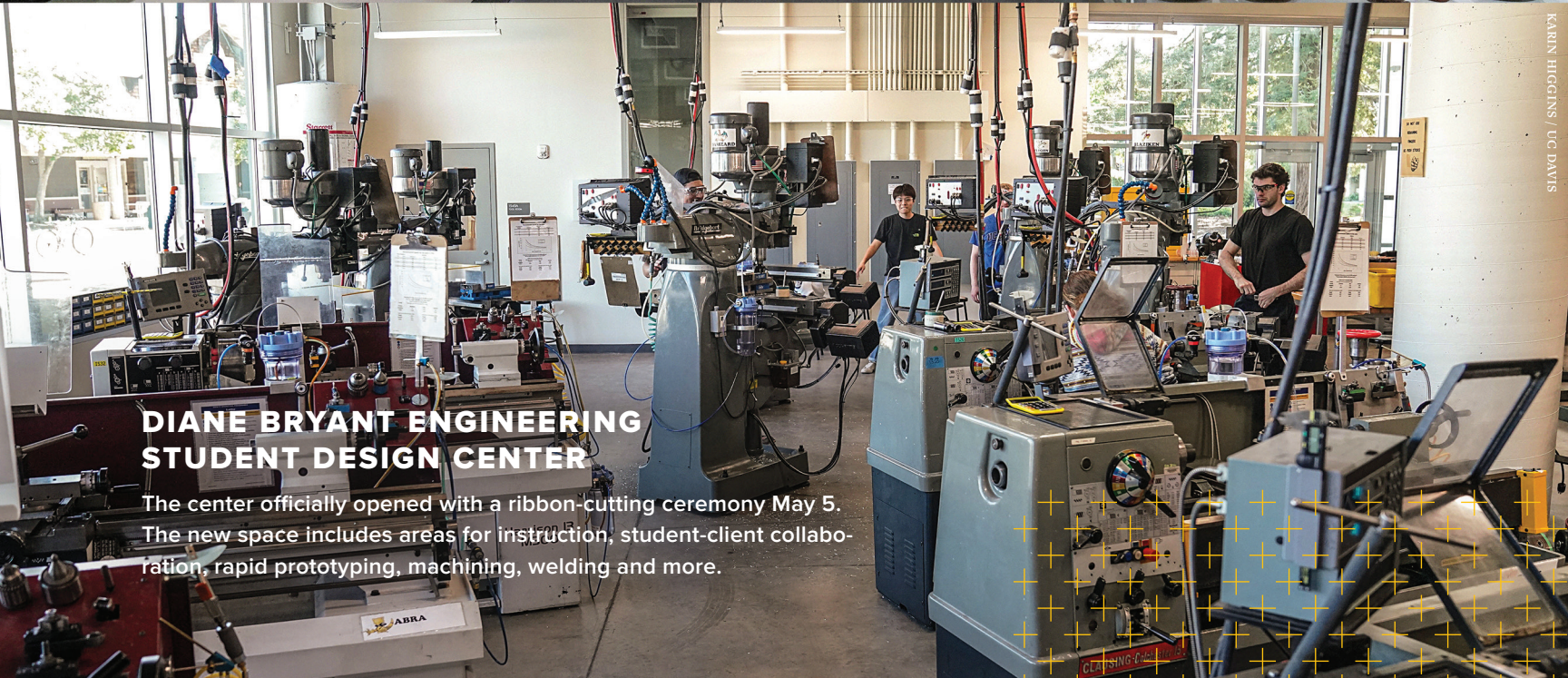
GORMAN MUSEUM OF NATIVE AMERICAN ART

The Gorman Museum dedicated and celebrated its new home September 22-23. The museum is committed to the creative expressions of Native American artists and artists of diverse cultures and histories, and exhibiting works by living Indigenous artists.



VETERINARY MEDICINE TEACHING HOSPITAL ER/ICU

The School of Veterinary Medicine's teaching hospital has expanded its clinical space with a new emergency room and intensive care unit, opened May 3, to meet the growing need for emergency and complex animal care (see full article on page 10).



DIANE BRYANT ENGINEERING STUDENT DESIGN CENTER

The center officially opened with a ribbon-cutting ceremony May 5. The new space includes areas for instruction, student-client collaboration, rapid prototyping, machining, welding and more.



ELIZABETH MARY WOLF ENVIRONMENTAL LEARNING CENTER

Opened this spring, this indoor-outdoor Arboretum facility serves as a public program space, classroom for visitor and volunteer events, and staging area for students in the donor-supported Learning by Leading environmental leadership program.

Grassroots giving for greater impact

Fundraising campaigns like Crowdfund UC Davis, Give Day, Aggies Helping Aggies and Employee Giving Month emphasize the power of engaging donors and the tremendous impact smaller gifts collectively make.

BY BRYAN ANTHONY

Crowdfund UC Davis

The Crowdfund UC Davis campaigns in October 2022 and February 2023 brought in a combined \$218,061 from 1,811 gifts for 51 different campus projects. One soaring success was Words Take Wing: Honoring Diversity in Children's Literature, which doubled its goal of \$2,500 and exceeded its stretch goal of \$5,000, raising a total of \$5,100 from 31 donors. "We were blown away by the generosity of our supporters and by the speed in which they helped us reach our initial goal of \$2,500," said project lead Joanne Galli-Banducci, retired lecturer and supervisor of teacher education.

Employee Giving Month

During Employee Giving Month in April, nearly 2,000 faculty and staff across UC Davis and UC Davis Health donated more than \$235,000. "I encourage employees to do a bit of exploration—find out what is happening at UC Davis and UC Davis Health," said Patty Covington Fleming, senior executive recruitment partner with Executive Programs and Recruitment, and member of the Employee Giving Committee. "Read Dateline, attend campus events, meet with students, faculty and staff. Find an area of interest and give to that area. It's meaningful to the donor and so impactful to the recipients."



Aggies Helping Aggies

Working together is what Aggies do best. This year, students of the Class of 2023 were challenged to make a gift of \$20.23 to commemorate their graduation year by lending a helping hand to fellow Aggies in need. The UC Davis Student Foundation, also known as Aggies Helping Aggies, encouraged support for programs like the Student Emergency Relief Aid (SERA) fund, which offers students quick cash awards for unexpected expenses not covered by other forms of financial assistance. In the 2022-23 academic year, SERA awarded a total of \$22,967 to 25 students with an average gift of \$919.

Give Day

Give Day is UC Davis' biggest fundraising event of the year, supporting students, research, programs and services across UC Davis and UC Davis Health. During Picnic Day in April, employees cruised around campus in a pair of cow-themed golf carts dubbed "Fund-Grazers" to whip up visibility and boost support. Nearly \$3.6 million in donations from alumni, friends, faculty and staff, students, business and community partners and others poured in from 44 states and 13 countries. "After seven years, Give Day has become an integral part of the Picnic Day experience," said Shaun B. Keister, vice chancellor for Development and Alumni Relations. "It provides a wonderful opportunity for donors to show their support for UC Davis across the Davis and Sacramento campuses and beyond."

top: Aggies Helping Aggies members are ambassadors for philanthropy that supports their fellow students. PHOTO: SIERRA RONNING / UC DAVIS



Ewe love to see it

UC Davis Sheepmowers is an ongoing research project using a fluffy flock to graze campus green spaces in place of conventional lawnmowers. What started as a study of environmental benefits has branched into mental health benefits as well, as sheep watching is proving to boost mood and lower stress. The project is also one of last year's most successful Crowdfunding campaigns, raising more than \$8,300 for new equipment, community events and an internship program (read more about Crowdfund UC Davis, opposite page).

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KARIN HIGGINS / UC DAVIS

Shivani Torres-Lal '25 (center) and Nicholas Gallo '24 in the lab of Valeria La Saponara, professor of mechanical and aerospace engineering, are working on compostable wind turbine blades built with sustainable materials like bamboo. For more on clean energy research, see page 28.

Partner with us to help advance UC Davis' excellence in teaching, research and public service. Every gift, no matter the size, can make a world of difference.

campaign.ucdavis.edu

Greater momentum

 **Expect Greater**
From UC Davis. For the World.

SPEND OUR
\$10k

You read that right. UC Davis Foundation is designating \$10,000 to benefit the university, but hasn't decided where.

That's where you come in.

Scan this QR code and answer a few questions about our magazine for the chance to make a big difference. Where would you give \$10,000 at UC Davis to build a better world?

Read about last year's winner on page 37.



Visit campaign.ucdavis.edu/survey for official contest rules and to complete the *In Greater Focus* magazine online survey.