

BEYOND THE EDGE

Exploring the outer universe, the deepest ocean, and the endless spaces in between

Features

The Art of Stars

Sarah Rosalena Brady merges traditional craft with computer science

The Weight of Water

Alumna Dawn Wright is the first Black person to descend to Challenger Deep

Outer Limits

The latest imagery of the farthest objects in our night sky

Quantum Quest

Invisible to the naked eye, the quantum world is a bizarre place





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11 Ballet Hispánico, *Doña Perón*

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13 Danish String Quartet, *The Doppelgänger Project, Part III*

21 Sō Percussion with Caroline Shaw

22 Ukulele Orchestra of Great Britain

23 ARTEMIS

27 Isabella Rossellini in Conversation with Pico Iyer

May 6 Mark Morris Dance Group, *The Look of Love*

11 Víkingur Ólafsson, *piano*



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From the Editor



'Beyond the edge of the world there's a space where emptiness and substance neatly overlap, where past and future form a continuous, endless loop. And, hovering about, there are signs no one has ever read, chords no one has ever heard.'

Haruki Murakami,
"Kafka on the Shore"

Funny things, boundaries. Are they constraints, meant to limit forward motion and progress? Or are they gateways to discovery – about the world, about life, about ourselves – only in place to be kicked down?

Depends on your perspective. And for us, for this issue, we're leaning in on the latter.

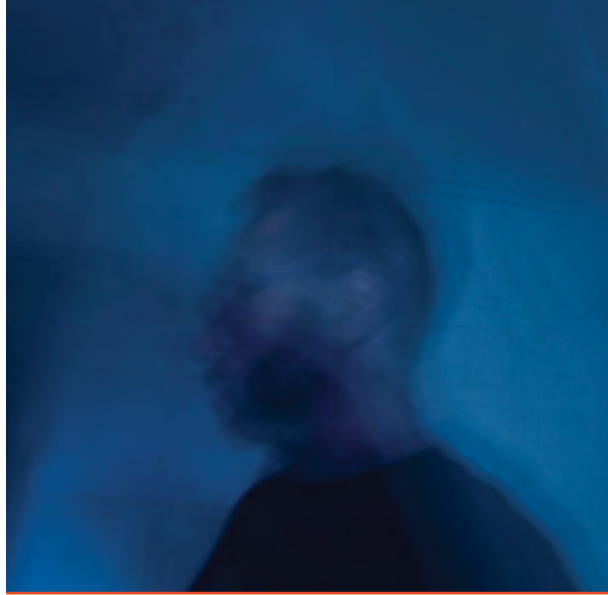
It seems only fitting in this environment, on this campus, where pushing boundaries – and knocking them clean over – is a way of life. In art and scholarship, in science and sport, in outlook and approach, at UC Santa Barbara and for our community around the world, no challenge is too great to confront, and no darkness absolutely immune to light.

You're about to meet some extraordinary individuals: scientists, artists, activists, students, faculty members, alumni. They are all innovators, and all are inspiring.

The people you'll see in the pages to come are not just moving barriers, they're running straight through them, expanding our view of what can be achieved – by our minds and our bodies alike – when we embrace the possibility of living beyond the edge.

Thanks for coming. Enjoy the ride, and the read.

Shelly Leachman
EXECUTIVE EDITOR



About the Art

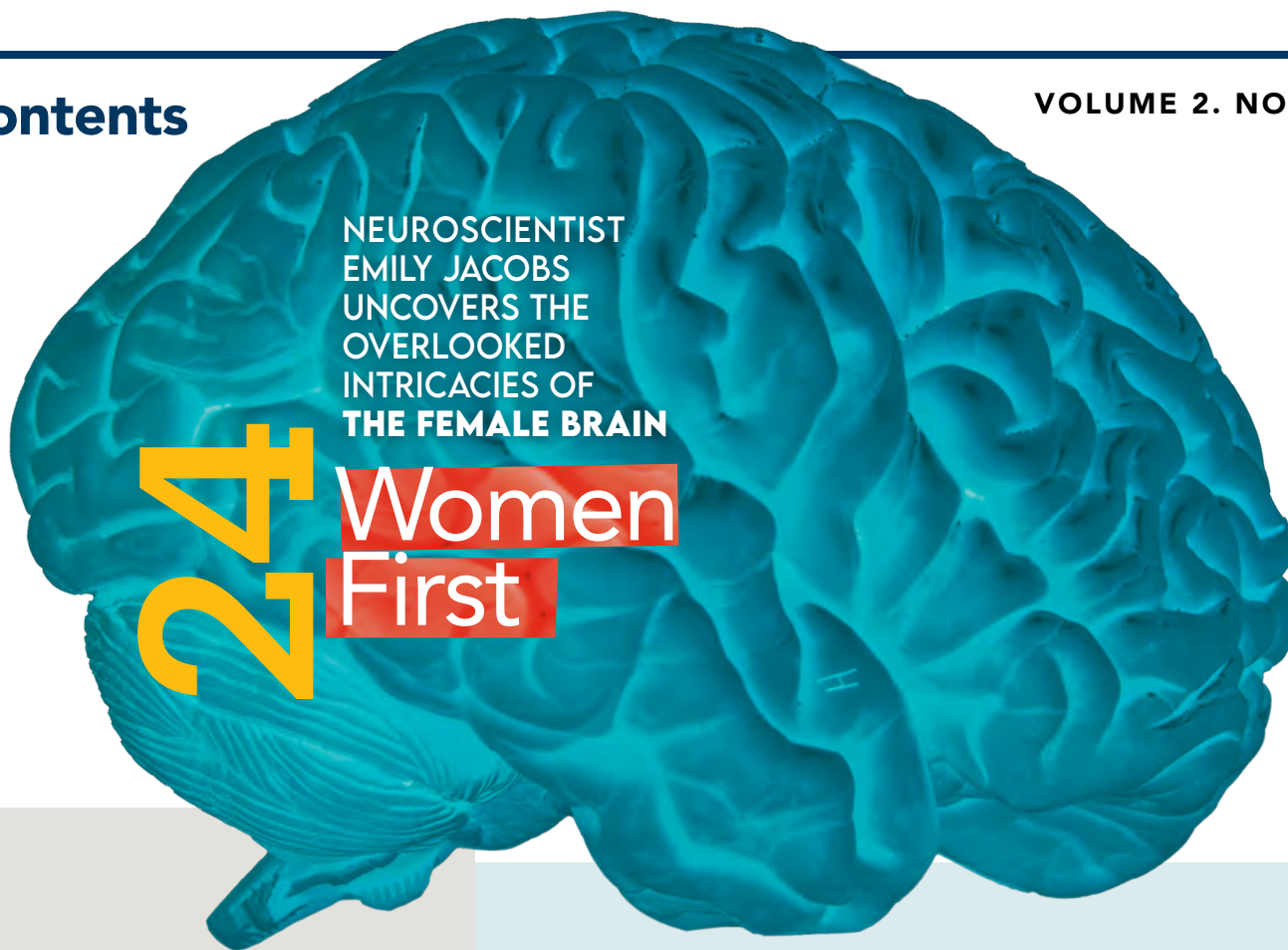
The approach to the art for many of the features in this issue has a common thread, one that has parallels to the very research it is trying to illuminate – the human touch.

In today's world, digital art is ubiquitous. The file that makes up this magazine is a digital one. All the art must be digitized eventually, but it doesn't have to start that way. Many of the photos and illustrations on the pages inside were purposefully done without the use of digital tools. Effects were created in camera, backgrounds were created with real materials, sets were built – all with an intention to introduce the possibility of error into the process.

This is a human endeavor, just as what these researchers and artists are doing also is a human endeavor, and with that comes surprise and discovery. Experimentation often leads to unexpected results. This is the beauty of scientific inquiry and scholarly research: the ongoing quest for discovery and solutions, each refined by human endeavor and the pursuit of knowledge.

I hope you enjoy the art along the way.

Matt Perko
ART DIRECTOR



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Illustration by Michael Glenwood / mglenwood.com

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On Campus



From Rendering to Reality

The Interactive Learning Pavilion is nearing the finish line. Occupancy of the campus's first new classroom building since 1967 is anticipated for spring 2023. The project is targeting a minimum of LEED Gold certification and is designed as an all-electric facility without the need to use natural gas.

NEWS AND NOTES

Use Less, Lose Less

Undergraduate earns national notice for her water scarcity solution

BY HARRISON TASOFF

FOURTH-YEAR environmental studies major Visala Tallavarjula made it to the final round of the 2022 Collegiate Inventors Competition with her innovative irrigation technique, Sequestron. She was one of only five undergraduate finalists in the contest run by the National Inventors Hall of Fame.

Sequestron promises to increase food production while reducing water use – all with readily available materials.

“You can do this in your own garden,” says Tallavarjula, who previously won grants from the Strauss Scholarship Foundation and UC Berkeley’s Big Ideas Competition to pilot Sequestron in Arizona and India.

Born and raised in Santa Clara, she was first inspired to invent Sequestron on a drive through California’s Central Valley, passing by field after field irrigated by sprinklers. “You could literally see the water evaporating off the fields because it was hot,” she recalls.

Her solution? Using a topsoil layer to suppress evaporation by way of an infiltration insert, keeping water in the root zone and preventing it from reaching groundwater reserves by spreading a layer of soil and charcoal below the roots.

Tests suggest the system increases crop yield while cutting water use in half. The perlite-amended top layer alone reduces water use by 30%. Sequestron even enables farmers to grow crops in sand.

“This could actually arrest desertification.”



PHOTO: TRIEU NGUYEN

Visala Tallavarjula

Quiz Show Kids

Students take the soundstage on NBC’s ‘College Bowl’

BY SHELLY LEACHMAN

THEY DIDN’T WIN THE TITLE, but wow, were they close.

The Gaucho undergraduate team of Schuyler Capita, a philosophy and political science double major; Natalie Ries, a philosophy and sociology double major; and Andy Knox, a political science and Chinese double major, got through the quarterfinals and into the blitz round of NBC’s “College Bowl,” hosted by Peyton Manning.

All three are members of UC Santa Barbara’s Ethics Bowl team. They appeared on three episodes of the show’s second season, competing against schools including Morehouse, Penn State, University of Georgia, Brigham Young University, Syracuse and season one champion, Columbia University. This season, Georgia unseated Columbia in the final round.

The show featured 16 teams, from some of the nation’s top colleges and universities, facing off in a battle of brains with a title, a trophy and scholarship money on the line. All competitors received tuition assistance for their participation.

LIVING HISTORY

Changing the Path

Native American Opportunity Plan boosts awareness — and access

BY ANDREA ESTRADA

Seeking to make a college education more affordable and accessible for California's Native American students, the UC-wide Native American Opportunity Plan is officially in effect.

The plan ensures that financial aid and other resources fully cover in-state systemwide tuition and student service fees for California residents — both undergraduate and graduate students — who are members of federally recognized Native American Indian and Alaska Native tribes. The legal status of these tribes makes it possible to administer scholarships and grants directly to their members. Tuition scholarships for California students from non-federally recognized tribes may also be available through external organizations.

To be eligible, students must be California residents for purposes of tuition and must be enrolled in qualifying UC degree programs.

"As an enrolled member of a federally recognized tribe — the Skokomish Tribe in Washington state — I am thrilled about the creation of the Native American Opportunity Program," says

Mike Miller, associate vice chancellor for enrollment services.

"While this in no way corrects what Native communities have endured for years, it does show a good faith effort by the university. Higher education is key in changing the path of Native communities that have been ignored for far too long and I think this new program will create both awareness and access for the next generation of Native leaders.

"As a first-generation and low-income student who grew up on the reservation," Miller adds, "I would never have been able to attend college without robust financial support, and I am hopeful this new program will uplift Native students across California. We need to recognize that this is just the first step and there is much more work to be done as we look to honor Native American people."



THEN & NOW

Femme in STEM

It's a no brainer. You don't need any equipment to see it at all. It's simple: There are more women working in STEM today than ever before. The lasting impact of the steady increase of female scientists? Immeasurable.

One thing's for sure, a woman's place is in the lab.

BY DEBRA HERRICK



Can you dig it?

Fun fact: The acronym "STEM" — short for science, technology, engineering and mathematics — was originally coined as an education term by the National Science Foundation in the early 2000s, 30 years after this photo was taken of an unidentified female scientist at work in the lab of Marvin Cassman in 1971.



You can call me doctor.

Her name's on the door. Alison Butler, pictured in 2017, is a distinguished professor of chemistry, serves as associate vice chancellor for academic personnel, and runs her mechanistic bioinorganic chemistry, metallobiochemistry and chemical biology lab. Oh, and she was recently elected to the National Academy of Sciences.

LIGHTING THE WAY

Scholars for Ukraine

Researchers raise funds for humanitarian aid

BY SONIA FERNANDEZ

What do you do when you're overseas and you find out that your home country has been invaded? That was the unfathomable question postdoctoral researcher Mariya Romanova was faced with last February when she learned that Russian forces had crossed the border into Ukraine.

"I was shocked," says Romanova, who works in chemistry and biochemistry at UC Santa Barbara and at the Quantum Foundry. Her hometown, Kharkiv, near Ukraine's northeastern border with Russia, was among the first to be attacked, with Russian troops firing long-range artillery into the city.

Her next thought? "I had to get my family out of there," she says. And so as invading troops advanced into the country, Romanova focused on getting her mother out of the line of fire. As with many overseas Ukrainians, communication with family back home became a precious lifeline as she saw news of attacks, shelling, destruction and war crimes.

"I felt helpless," she says. "I also felt guilty because I was outside and wasn't there to help."

She wasn't alone.

At an American Physical Society meeting in Chicago, Romanova encountered other scientists, Ukrainian and Russian, similarly shocked and feeling powerless to do anything about the situation. By the third week of the invasion, about 3 million Ukrainians had fled into neighboring countries – a full-blown refugee crisis.

Inspired by the desire to help and the solidarity expressed at that meeting, Romanova and some fellow scientists formed the nonprofit Scholars for Ukraine, established to send aid and to bolster humanitarian efforts in the war-torn area.

Using their trusted connections, members of the collective of expat Ukrainians and Russians are trying to fill local gaps in humanitarian aid that are not covered by broader efforts. The group includes researchers working at UC Santa Barbara, Stanford, UC Berkeley, Purdue, Vanderbilt, Cornell, Princeton, the University of Wisconsin-Milwaukee, Syracuse, Yale, Boston University, MIT and Caltech. They are collaborating with the larger humanitarian organization Nova Ukraine to establish and maintain nonprofit status.

Scholars for Ukraine is focused specifically on helping Ukrainians endure the horrors of war by contributing to four local organizations: Station Kharkiv, which delivers food and medication to residents in Kharkiv's bomb shelters; United for Ukraine, which works to get supplies to healthcare providers; New Level, a Rotary Club branch that distributes aid while funneling the skills of its volunteers toward the needs of the people; and Dnipro Fund, which raises money to help healthcare providers treat those wounded in the conflict. All the organizations provide assistance to refugees and displaced individuals.



HOW WELL DO YOU KNOW:

LABS?

1. Which UC Santa Barbara Nobel Prize winner is the current research director of the Solid State Lighting & Energy Electronics Center?

- a) Carol Greider '83
- b) Herbert Kroemer
- c) Shuji Nakamura
- d) Finn E. Kydland

2. In what lab is a plasma activation (EVG 810) instrument housed?

- a) Mass Spectrometry Facility
- b) Nanofabrication Facility
- c) Microfluidics Lab
- d) Ectoplasm Lab

3. Which of these is NOT a lab facility at UC Santa Barbara?

- a) Rodwell & Buckwalter Lab
- b) Hawkins National Lab
- c) Harold Frank Hall
- d) Hansma Lab

4. How much did UC Santa Barbara receive in grants and awards for research across facilities and disciplines in 2021?

- a) \$241.5 million
- b) \$1 billion
- c) \$75 million
- d) \$195.1 million

5. What can you find in the Materials Research Laboratory?

- a) UCSB free-electron lasers
- b) Tesla magnet
- c) SQUID
- d) All of the above

Answers on page 60

LIGHTING THE WAY

Freedom to Focus

Racial Justice Fellows receive funding to pursue research and earn graduate degrees

BY MARGE PERKO

A LICENSED THERAPIST with a background in clinical work, Kaela Farrise aspires to increase access to culturally responsive treatments in Black and Latinx communities. To determine how best to get it done, she's diving into research as a doctoral student in the Gevirtz Graduate School of Education.

Farrise's work and her Ph.D. – along with the research and degrees of nine other students – are being completely funded by way of the Graduate Division Racial Justice Fellowship Program.

Launched in 2021 with four students, the program now has a new cohort six-strong. In addition to Farrise, the new fellows are Victoria Diaz (chemical engineering), Humberto Flores (sociology), Nya Hayes (classics), Fabián Pavón (Chicana/o studies) and Kendall Rallins (feminist studies).



LtoR:
Kendall Rallins, Fabián Pavón, Kaela Farrise, Victoria Diaz, Nya Hayes, Humberto Flores

Each awardee of the competitive fellowship receives an \$8,000 summer stipend for the first three years of their program, in addition to a five-year, fully funded support offer.

"This fellowship means that I have more time and freedom to focus on the reasons I decided to pursue a Ph.D. – to examine Black and Latinx mental health disparities through research," says Farrise. "It also indicated to me as a prospective student that studying issues of racial justice from a mental health perspective is meaningful to and supported by the university."

Designed to enhance the recruitment of graduate students committed to teaching, research and mentorship around racial justice, the program is

a collaboration of the Graduate Division and the deans of the Bren School, the Gevirtz School and the College of Engineering as well as the divisions of humanities and fine arts, social sciences and mathematical, life and physical sciences.

"In so many different ways, these students are enhancing and conveying knowledge about racial justice and providing social support to students from underrepresented communities," says Dr. Leila Rupp, Interim Anne and Michael Towbes Graduate Dean.

Doing so is a key motivating factor for new fellow Pavón, who is seeking a Ph.D. in Chicana studies, with his eyes on the professoriate.

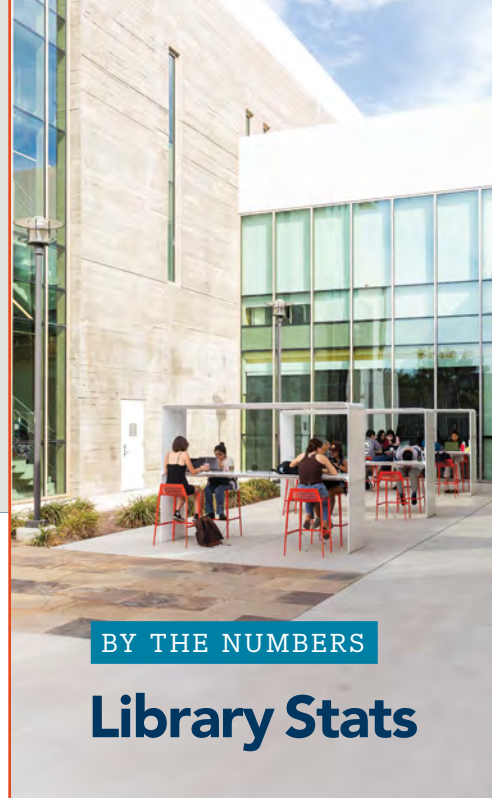
Receiving this fellowship, he says, "encourages me to continue to document and research movements for racial justice in order to create a blueprint that will move us closer towards racial justice for future generations of scholar-activists to follow.

"What drives me is my community," Pavón adds. "I want my community to know that if a person who is a low-income, transfer, formerly incarcerated, first generation and Indigenous can be a Ph.D. student, so can they."



Bedside Reading

BY NORA DRAKE



BY THE NUMBERS

Library Stats



150+

Student workers
employed annually



16,000

Linear feet of
manuscripts in Special
Research Collections



53,922

Books checked out



200,000

Early sound
recordings in
Special Research
Collections



1,619,917

Total number of
visitors



1,713,444

Article downloads

[library.ucsb.edu]

AS THE NEW Michael Douglas Dean of Humanities and Fine Arts, Daina Ramey Berry is busy settling into her role as an administrator, professor and leader of the campus's creative core. But she's always got time for a good book.

Berry, who joined UC Santa Barbara from her position as chair of the history department at the University of Texas at Austin, calls herself a voracious reader when it comes to her research interests: the history of slavery and Black women's history. She is particularly drawn to books with descriptive writing about tactile experiences that transport her to new places.

As she begins work on a biography of Anna Murray Douglass (the wife of abolitionist Frederick Douglass), Berry has been delving into memoir and fiction. She describes her reading as reflective of the kind of writing she's doing and says that she is currently endeavoring to learn the art of how to talk deeply about one person's life.

Here are five books that have inspired her, in her words:

1. Heavy: An American Memoir by Kiese Laymon

A powerful memoir by one of the most prolific young writers of our time. Laymon shares the intimate history of growing up in Mississippi, a complex relationship with his mother, and a host of coming-of-age experiences that will both shock and resonate with his readers.

2. Looking for Lorraine: The Radiant and Radical Life of Lorraine Hansberry by Imani Perry

A journey into the life and experiences of an American icon. Hansberry is a playwright and the first African-American writer to have her work appear on Broadway.

3. Liberty's Prisoners: Carceral Culture in Early America by Jen Manion

Manion unveils the early history of incarceration in the United States, a topic that interests me given contemporary problems facing system-impacted people.

4. Parable of the Sower by Octavia Butler

Butler is one of my favorite writers because she allows readers to see into the future and to imagine a world beyond our wildest dreams. I started this book with a good friend and she's anxiously waiting for me to finish it.

5. Beloved by Toni Morrison

I decided to reread this novel because it is currently on several banned books lists. It had a profound impact on me when I was young and it drew me into my profession as a scholar of the enslaved.



OFF THE CLOCK

Of Flight and Photography

'Parallel interests' keep Glenn Beltz looking up

BY DEBRA HERRICK

IT'S NO WONDER GLENN BELTZ became a mechanical engineer specializing in the mechanics of structures and the strength of materials. He has been captivated by airplanes since he was a kid. Growing up near a municipal airport, he marveled at the gigantic machines that flew despite gravity.

Once he arrived at UC Santa Barbara, where he is now a professor and the associate dean of undergraduate studies, Beltz took to the air himself by becoming a pilot.

The simpler mechanics of a 35mm film camera have also bewitched Beltz from an early age. What started with him taking to his dad's 35mm Argus C3 developed into a lifelong avocation in photography and a full-fledged collection of 35mm cameras dating back to the 1960s.

Still, while Beltz has photographed many things in his life, there is nothing he has photographed more of, or for longer, than the airplane.

Like flies in amber, film cameras will work after decades of dormancy as if a day hasn't passed. Beltz still has his dad's 1950s Argus, and it still works. He has his first very-own camera too. It's a Canon AT-1, a gift he begged his parents to get him one Christmas.

"Film cameras were made to last forever," he says. "When they sold one to someone, the expectation was that

it would last a lifetime." This is part of what Beltz appreciates most about them: They'll outlive him.

It wasn't long before Beltz's love of film found its life partner in his fondness for flying. Beltz calls it "parallel interests." As a kid, he was getting into cameras and photography at the same time he was getting into aviation.

"I was one of those kids who would jump on a bike with my camera and drive out to the local municipal airport in Latrobe, outside Pittsburgh, and take pictures of any and all airplanes that I saw," Beltz says. He was shooting tiny single-engine aircraft, private planes and big regional airliners. "If it flew, I was interested in it," he says.

Fortunately for Beltz, the '70s were a special time for an intrepid kid with a camera and a zeal for planes. "You wouldn't see this today at an airport



PHOTOS BY GLENN BELTZ

with airline service, but back then, you could just walk out to the ramp. Anyone could, just as a member of the general public,” he recalls. “There was no fence, and if there was, it had a gate you could walk through. And no one would stop you; they didn’t care.”

Many years on, Beltz’s boyhood pastime has developed into a coherent body of work, defined by the geometry of cities, the curves of open spaces and the shape of the soaring aircraft.

Today, shooting in digital as much as film, Beltz is a regular at Santa Barbara (SBA) and Los Angeles International (LAX) airports and he occasionally visits John F. Kennedy Airport in New York. LAX is famously attractive to aviation photographers, he says, because the runways are all parallel to each other, and the wind always blows in the same

direction – off the ocean – making the flight paths of aircraft predictable.

At LAX, he’s found a community of fellow aviation photographers and enthusiasts, many of whom connect via nycaviation.com and attend the organization’s annual meetup at LAX. Through his pursuit of pictures, he’s made friends with like-minded photographers, aircraft admirers and pilots, an aspect he says keeps him coming back.

One friend and American Airlines pilot, Keith Bracker ’83, has been particularly helpful by tipping off Beltz when he’ll be arriving at SBA, giving Beltz a head start on getting in the right position at the right time.

Nowadays, Beltz has added rockets to his subject matter, driving up to Vandenberg Space Force Base to catch NASA and SpaceX launches.

As many challenges as he faces with catching airplanes in flight, he faces more with rocket launches, which are often canceled a split second before launch.

“I’ve been there where they count down 5-4-3-2-1-CANCELED,” says Beltz, who has learned to enjoy playing the long game, “but when you get a launch, it’s so worth it.”

Luckily, despite only capturing a launch about every 10th time he travels to Vandenberg, Beltz has no intention to stop trying. There are more photographs to come from him, celebrating the spectacular feats of engineering and imagination that get airplanes, rockets and beyond up in the air.

GAUCHO GIVING

A Winning Formula

Professor emeritus Gene Lucas '73 supports first-gen undergraduate researchers

BY JILLIAN TEMPESTA

GENE LUCAS '73 participated in two research projects during his senior year at UC Santa Barbara, experiences that set him on the path to graduate school. After obtaining a doctorate of science in nuclear engineering from MIT, he returned to UCSB to join the faculty, working alongside one of his research advisers. Lucas retired in 2013 as executive vice chancellor after serving the campus for 36 years.

Colleagues and friends established the Gene and Susan Lucas Undergraduate Research Fund to honor and recognize his contributions as a scholar, teacher and gifted administrator. Lucas and his late wife, Susan, were proud to support the fund, which helps first-generation undergraduate students conduct research in partnership with faculty. Scholarship support may be used for stipends, research materials, travel, conferences or field experience.

Inspired by Lucas's passion for the fundamental principles behind a research university and the value of research endeavors, the fund also honors his father, Glenn E. Lucas, a first-generation college student.

"I have a great fondness for first-generation kids pursuing STEM education," says Lucas, reflecting on his ongoing support. "My father was born and raised on a farm in Nebraska and was the first to deviate from that life. He got his B.S. in chemical



"This scholarship helps first-generation students experience part of the academic world they may not have thought about."

engineering on the GI Bill after World War II. This financial support for first-generation students pursuing STEM will be a great way to honor their courage in taking this step and help them achieve their success."

Eight students each year receive scholarships for experience in a research environment, including laboratory and field work. Fifty-seven students have benefited since its establishment. A community of donors has joined Lucas and others in supporting this scholarship.

"I am grateful to Gene Lucas for the opportunity that allowed me to conduct research and share exciting progress," says Steven Man, a fourth-year mechanical engineering student. "I performed experiments to research embryonic cell motion applied to centimeter-scale robotic shape-change dynamics, investigating reduction in drive energy using local vibrations." As a Lucas scholar, Man worked with Elliot Hawkes, whose lab focuses on bringing together design, mechanics and

nontraditional materials to advance the vision of robust, adaptable and human-safe robots.

To honor Lucas's publishing history and his advocacy for the dissemination of research, such as Open Access protocols, the fund also supports students' efforts to publish.

"Publication is a key part of research and a goal for any graduate student. It ensures that the scientific community agrees with your results," Lucas says. "This scholarship helps first-generation students experience part of the academic world they may not have thought about."

Lucas hopes that many scholarship recipients will go on to graduate school, and that of those, a good fraction will continue as faculty or researchers in some capacity.

"I owe UC Santa Barbara everything for my own successful career," says Lucas. "I'm very proud of UCSB's growth. The university recruits the best and the brightest scholars, and it's been a winning formula."

Queering the Spirit

Religious studies course brings LGBT figures front and center

BY DEBRA HERRICK

WHEN YOU TAKE A CLASS THAT YOU LOVE IN COLLEGE, and then you become a professor, you know the feeling you want your students to have in your class: a whirlwind of interest, intellect, risk and reward.

An associate professor of religious studies, Elizabeth Pérez wanted to give her students a classic survey course like the ones she loved as a college student, but instead of telling students what religion is, she wanted students to be asking, “What is religion?” And she wanted them to be asking: “Who? Who is allowed to participate in and shape a religion’s practices?” Specifically, Pérez wanted to center LGBT people as the throughline of their investigation, since it is little known that there are roles traditionally held by LGBT people, such as healers and trance mediums, in many different religions around the globe.

In her class, LGBT Religious History: Queering the Spirit, students look at different world religions and Indigenous traditions, sometimes through the lens of pop culture. While examining texts from queer studies and religious history, students also engage with cultural icons and artists – from The Sisters of Perpetual Indulgence to Lil Nas X. For its innovation, the course was awarded the second annual Educational Resource Prize from the LGBTQ Religious Archives Network.

“I’m interested in students developing media literacy,” Pérez says, “equipping them with the analytical tools they need to understand how movies, music and social media communicate their messages.”

Pérez has long researched traditions in which women held leadership roles, many of which were religions in the Americas with African roots that emerged from the transatlantic slave trade, including Afro-Cuban Lucumí (Santería), Haitian Vodou and Brazilian Candomblé. In her ethnographic fieldwork – including her immersion within a Lucumí house – she further observed that while gay and lesbian practitioners are often welcomed in these traditions, transgender people are not.



“I’m interested in students developing media literacy, equipping them with the analytical tools they need to understand how movies, music and social media communicate their messages.”

“Transgender people still have a hard time in so-called ‘gay-friendly’ religions because of how they challenge the gender binary and reject social scripts that say biology or sex assigned at birth is destiny,” Pérez says. “So trans people have had to re-envision established religious forms.”

The course also connects with Pérez’s current book project, “Faces of Faith, Kindred Spirits: Black & Latinx Transgender Religious Lives,” which received a National Endowment for the Humanities summer stipend in 2021.

“I don’t have an end goal for the course,” she says. “I could see some religious studies scholars saying this is about developing empathy or seeing cultural values, but for me, I am interested in students honing their critical thinking skills. I want to expand their understanding of what religion is and what is possible.”

Innovating to Save the Seas

New gift from Marc and Lynne Benioff propels work to heal our oceans

BY SHELLY LEACHMAN

FROM SAVING WHALES TO ARRESTING THE INFLUX OF PLASTICS, the challenges facing Earth's oceans are as vast as the seas themselves. Solutions will require science, ingenuity and innovative technology.

In recognition of this reality – and driven to improve and safeguard the health of our oceans – Marc and Lynne Benioff gifted the university, one of the world's most important marine research centers, with \$60 million. Their donation is the largest ever for ocean science at UC Santa Barbara – and one of the largest known gifts anywhere to support ocean research.

The gift builds on the Benioffs' legacy of support to the campus to address ocean problems and advance science-based solutions, and it establishes the new Benioff Ocean Science Laboratory.

"We are deeply grateful to Marc and Lynne Benioff for their extraordinary generosity," says Chancellor Henry Yang. "This transformative gift establishing the Benioff Ocean Science Laboratory underscores the Benioffs' continuing commitment to marine science research that seeks to address the most pressing ocean environmental issues of our time. The laboratory builds on the achievements of the Benioff Ocean Initiative, whose groundbreaking research under the direction of Professor Douglas McCauley has expanded our knowledge and understanding of marine ecosystems and promoted innovative solutions to the concerns facing our world's oceans."

The bulk of this philanthropy, \$50 million, will go toward expanding the work of the Benioff Ocean Science Laboratory (formerly the Benioff Ocean Initiative). The remaining \$10 million will be invested to upgrade and renovate the university's Marine Biotechnology Lab, a premier ocean research facility overlooking Campus Point. The building will be renamed for the Benioffs, to honor their commitment to ocean science.

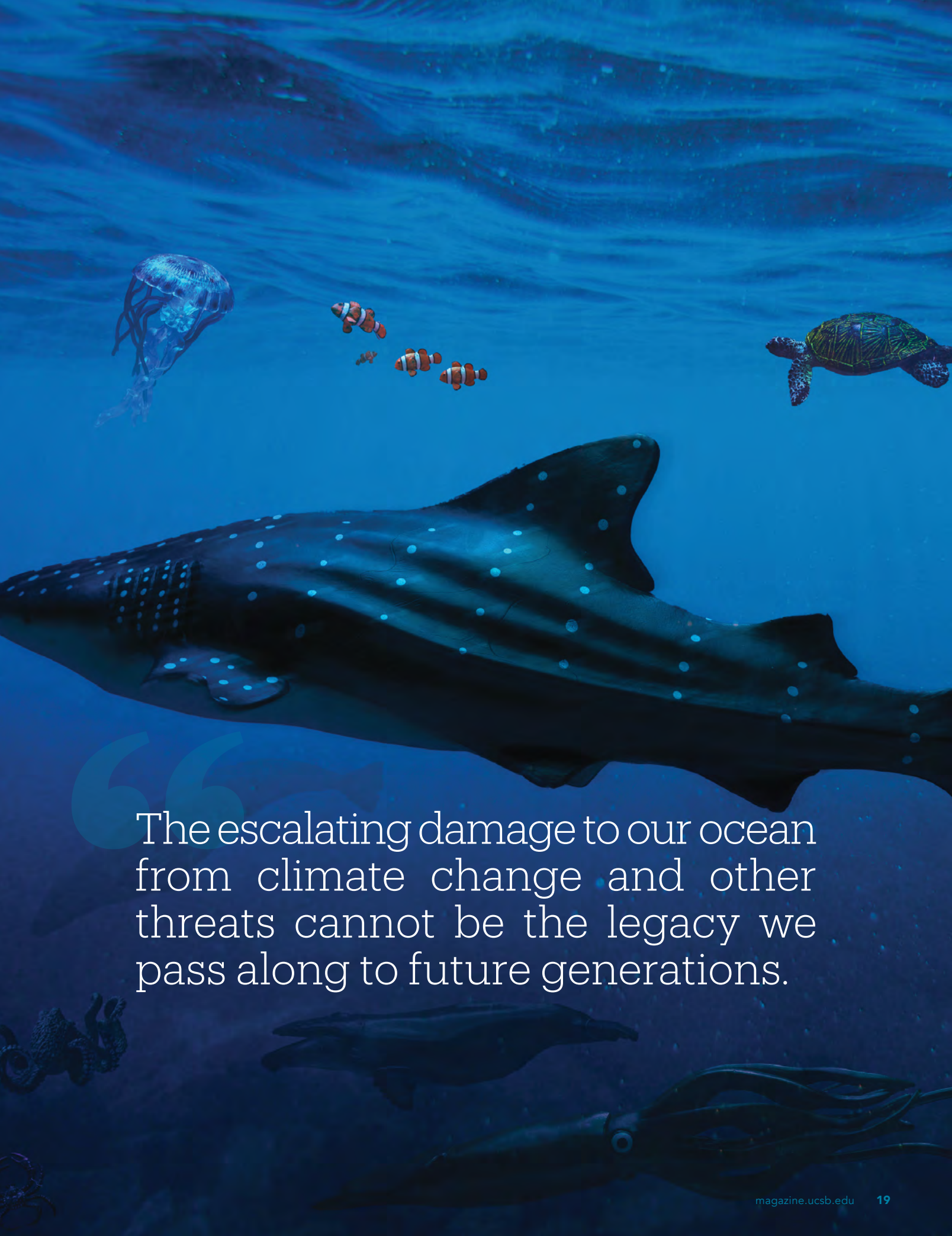
"Around the world, our ocean and the millions of species that inhabit it, as well as the billions of people who depend upon a healthy ocean, are in danger. The escalating damage to our ocean from climate change and other threats cannot be the legacy we pass along to future generations," says Marc Benioff. "Lynne and I are so thankful we are able to support the incredible marine science community at UC Santa Barbara and the collaborations they've forged with ocean scientists internationally to develop the innovative solutions needed to help bring our oceans and planet back to health."

Among its many projects around the world, the Benioff Oceans team led by McCauley has partnered with researchers on Whale Safe, California's first automated whale detection system. Meant to prevent whale-ship collisions – a leading threat to endangered whale population recovery – the system is powered by artificial intelligence, whale occurrence data and satellite data. Whale Safe was

piloted in the Santa Barbara Channel and has now been expanded off the coast of San Francisco to help reduce whale deaths in the Bay Area. Through the global Clean Currents Coalition, they are helping to pioneer new methods for reducing plastic pollution in the ocean by capturing it first in rivers. Technologies have been developed to intercept more than 2 million pounds of plastic waste and divert the majority of it to be repurposed or recycled, including by way of a semiautonomous interceptor, or "trash wheel," launched recently in Panama.

The group also is engaged in efforts to promote the coexistence of people and sharks, to establish new marine protected areas, to foster awareness of the negative impacts of industrial activities in the ocean, and to promote diversity in ocean science and support research on environmental justice. Coming up: a \$10 million challenge with climate change in its sights.

"I'm proud of all that our team has been able to achieve thus far at UC Santa Barbara. But the most important work is ahead," says McCauley. "The Benioff Ocean Science Laboratory is excited to dedicate the full power of UC Santa Barbara science to the urgent fight against climate change. Not only does the ocean depend on winning the climate battle – we all do."



“The escalating damage to our ocean from climate change and other threats cannot be the legacy we pass along to future generations.

PRAISE FOR PROFESSORS

Stellar Scholars

A sampling of recent honors and accolades for UC Santa Barbara faculty

Cultural anthropologist **Jeffrey Hoelle** has been selected to direct the Fulbright Program's new \$1 million Amazonia Initiative, with Carlos Valério Aguiar Gomes, of the Federal University of Pará, Brazil. Hoelle and Aguiar Gomes will lead a collaborative group of 16 Amazonian scholars from the U.S., Brazil and seven other Amazonian nations to address key research and policy questions for the Amazon Basin, including how to support the integrity of the basin's ecosystems and the well-being of its communities.

For his steadfast scholarship spanning four decades, **Professor Richard Durán** of the Gevirtz Graduate School of Education has been elected to the National Academy of Education (NAEd). Fewer than 300 professors worldwide are members of the prestigious association, selected on the basis of outstanding scholarship related to education. Durán's research focuses on literacy and learning for people of varied language and cultural backgrounds, with an eye toward improved instruction and academic outcomes. He joins only one other UC Santa Barbara professor in the NAEd, **Professor Emeritus Russell Rumberger**.

Bringing a high-octane adaptation of Charles Dickens' famous "prince of thieves" to the screen, **James McNamara**, a lecturer in film and media studies, has started production on the Disney+ series "The Artful Dodger." McNamara is the co-creator and showrunner of the character drama that takes place 15 years on from the events of "Oliver Twist" and is set in the frontier colonies of 1850s Australia.

With a recently awarded \$1.5 million National Institutes of Health Director's New Innovator Award, **Michael Beyeler**, assistant professor of computer science and psychological and brain sciences, aims to bring to the mainstream an AI-powered bionic eye that can generate artificial vision. The five-year grant is given to exceptionally creative early-career scientists to push the boundaries of biomedical science.

João Pedro Oliveira, professor and Corwin Chair of Composition, was honored in the audiovisual category at the MA/IN festival for his piece "Coalescence." The international festival – held annually in south Italy – celebrates innovations in electroacoustic music and digital art. Originally from Portugal, Oliveira uses his music to explore the interaction between acoustic instruments and electronic sounds as well as the relationship between sound and images. **Rodney Duplessis Ph.D. '22**, a composition alumnus, and current Ph.D. candidate **Dariush Derakhshani**, also were honored at MA/IN.

World Renowned

UC Santa Barbara continues to rank high amongst national and international universities.

NUMBER

7

Public
National
University

For the **ninth consecutive year**, the campus placed in the Top 10 for public national universities ranked by U.S. News & World Report 2022–2023 Best Colleges listing of Top Public Schools.

Among all ranked Best National Universities, which includes both public and private institutions, UC Santa Barbara placed **No. 32**.

NUMBER

14

BEST COLLEGES
FOR

Veterans

NUMBER

15

BEST COLLEGES
FOR

Social Mobility

2022 Academic Ranking of
World Universities (ARWU)

Area Specific Rankings

4 Communication

Metallurgical
Engineering 6

7 Electrical & Computer
Engineering

Automation
& Control 8

8 Physics

features



The Art of Stars

Sarah Rosalena Brady merges Huichol traditions with computer science in stunning computational crafts

by Debra Herrick



Atop a 1,740-meter peak in the San Gabriel Mountains above Los Angeles, on land first settled by the Indigenous Tongva peoples, is the Mount Wilson Observatory, where throughout the 20th century some of the world's biggest telescopes helped lead men – primarily of Western European origin – to monumental discoveries. At Mount Wilson, founded by George Ellery Hale in 1904, Harlow Shapley figured out the size of the Milky Way and Edwin Hubble calculated the distance to Andromeda.

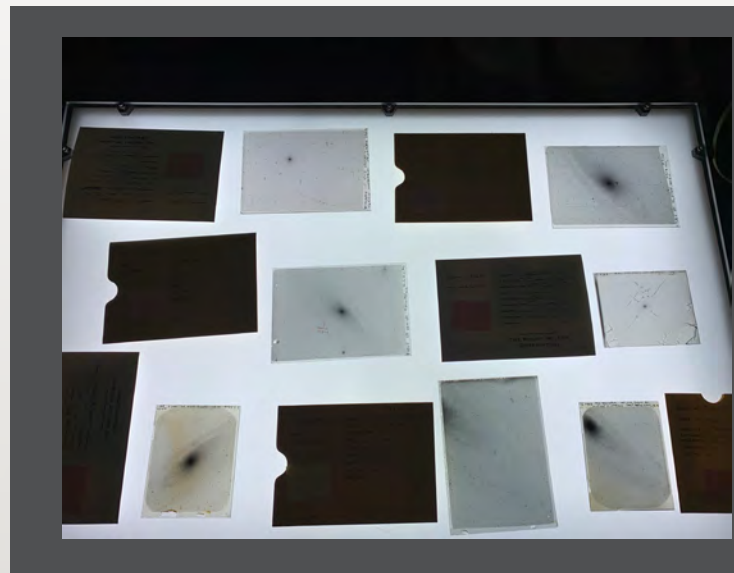
Throughout Mount Wilson's early history, women worked there as data scientists, often called "computers." Female computers meticulously charted and cataloged the changing coordinates of stars over time, recording their positions and light from glass plates – an early capture medium of photography.

Much of the shimmering starlight collected by women and recorded on glass plates – at once early data used to illuminate our place in the universe and time capsules of the stellar past – is now out of reach to observers, as Los Angeles' light pollution has obscured its presence in the night sky.

The glass plates, today a part of the observatory's archival collection, are now also the subject of "Standard Candle," an interdisciplinary research project by artist Sarah Rosalena Brady, who is reexamining labor conducted by female computers at Mount Wilson.

Producing Indigenous weaving and beading based on data sets from the glass plates, Brady proposes a hybrid language, emphasizing the female computers' hidden labor and acknowledging that Indigenous cosmovisions predated the Mount Wilson telescopes.

"It was a way of capturing light materially – on glass plates – and whatever they've captured is tied to a sense of place, as stars are grounded to a physical location and time," says Brady, an assistant professor of art. "Not only was the light that was coming through the telescope only happening at that exact moment, but it is absolutely irreplaceable due to light pollution, including the devaluation of Indigenous knowledge and female labor."



Sarah Rosalena Brady, above: CMB, 2022, glass beads, wood, thread, 40 x 7 x 4 inches; below: CMB RGB, 2022, glass beads, gourds, pine sap, beeswax; Cosmic Microwave Background visualization dimensions variable; previous page: detail, Standard Candle, 2022, glass beads, thread, 11 parts, 4 x 6 inches each. CMB photos by Ian Byer-Gamber



Weaving modern magic from ancient starlight

A *rising star* in the field of craft in contemporary art, Brady works in computational craft and haptic media. Her practice includes machine learning, digital fabrication, ceramics, beading and weaving.

Growing up in Los Angeles, Brady learned Indigenous crafts from her maternal grandmother – a Huichol (Wixárika) weaver and beader. She also spent meaningful time with her paternal grandfather, who worked on the Voyager program and the Deep Space network at NASA's Jet Propulsion Laboratory.

Perhaps Brady became a conduit for this peculiar clash of magic and modernity as she charted her own journey into computer programming by way of weaving and textiles.

With her project, “Standard Candle,” she hopes to uncover a deeper understanding of the role of female computers and how they understood and processed information using glass plates, also known as photographic plates. Her work at Mount Wilson is funded by a Creative Capital award and builds on her earlier research as a fellow of the Los Angeles County Museum of Art (LACMA) Art + Tech Lab. (Brady also captured the 2022 Carolyn Glasoe Bailey Foundation Art Prize, with a solo exhibition coming in March 2023.)

“Standard Candle” follows an invitation to make new work for a one-of-a-kind exhibition between LACMA and the Mount Wilson Observatory through the LACMA Art + Tech Lab. Opening May 6, 2023, the exhibition will take place at the base of the 100-inch telescope, presenting 10 textiles and seven beaded works.

Brady's textiles are woven on a digital Jacquard loom using the starlight as a weaving template.

“Mount Wilson Observatory in Southern California, on unceded Tongva land,” Brady says, “is ground zero for measuring our universe and proving that our universe is expanding, providing a conceptual vantage point where men of science produced precise instruments for observation, claiming political and cultural power over knowledge and science under settler colonialism.”

Computational craft often takes a hybrid form between analog and digital. In an interview with Contemporary Art Review Los Angeles, Brady called computational craft a critique of Eurocentric traditions, including computational art, which is heavily rooted in the military industrial complex.

“Pixel per bead, pixel per thread – it is a powerful way to work through media because it becomes the one physical point that you can control and manipulate an image in the material world,” Brady says. Weaving, beading and other crafts have inherent feminist and Indigenous sacred knowledge, she adds. Through crafts, new forms are created and it's possible to create something more holistic. “Sacred knowledge has been put in darkness and now we have to bring it back into the light.”

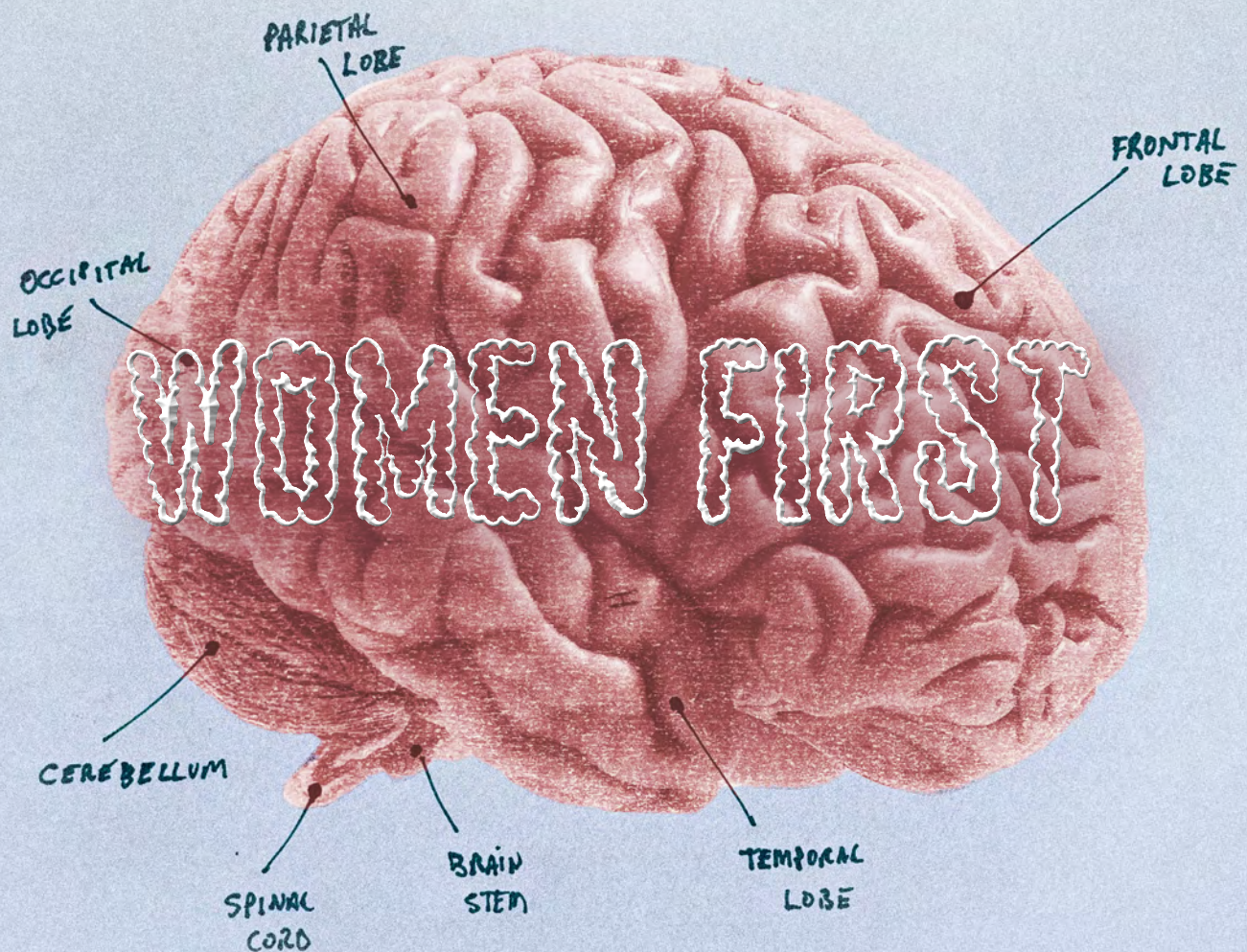


“Sacred knowledge has been put in darkness and now we have to bring it back into the light.”

Sarah Rosalena Brady

NEUROSCIENTIST EMILY JACOBS UNCOVERS
THE OVERLOOKED INTRICACIES OF

THE FEMALE BRAIN



WRITTEN BY NORA DRAKE  ART BY MATT PERKO

Much of Emily Jacobs' research focuses on how sex hormones – estrogen, progesterone, testosterone – affect the brain. Where are they acting? On what circuits? And over what time span?

She studies these changes in both men and women, but Jacobs, a neuroscientist and a professor of psychological and brain sciences, is keenly aware that the female brain has, historically, been overlooked.

“Most of what we know about health and disease is centered on the male body,” Jacobs says. “Science and medicine have been fearful of women’s bodies for millennia. This dates back to Hippocrates, who suggested that a woman’s ‘wandering womb’ was to blame for any ailment she was suffering from. You can see traces of these myths today.”

These myths persist not out of willful ignorance or malice, Jacobs posits, but due to a lack of representation. “Neuroscientists know little of how menopause, pregnancy, the menstrual cycle and hormone-based medications influence the brain,” she says, “despite a growing awareness that gonadal hormones are critical neuromodulators of learning and memory.”

Could it be, she asks, that male scientists don’t think about the female body and brain because it is not central to their everyday lives? Jacobs has sought to correct this imbalance, pursuing studies that focus specifically on the brain during menopause, the menstrual cycle and pregnancy.

Therein lie the twin themes of her life: the power of scientific inquiry and the power of the female perspective. In all that she does, Jacobs puts women – their lived experiences, their health, their biology – at the forefront.

“For me and my lab,” she says, “shining a floodlight on women’s brain health motivates everything that we do.”

CHARGING AHEAD

Named one of 10 scientists to watch by Science News in 2022, Jacobs, with her lab at UC Santa Barbara, is now leading a multicampus initiative to study female brain health, in partnership with UC Berkeley and UC Irvine. The project, the Women’s Brain Health Initiative, will pool data across several UC brain imaging centers to answer a large range of questions about how reproductive factors (such as the use of hormonal birth control or an irregular menstrual cycle) might shape the brain.

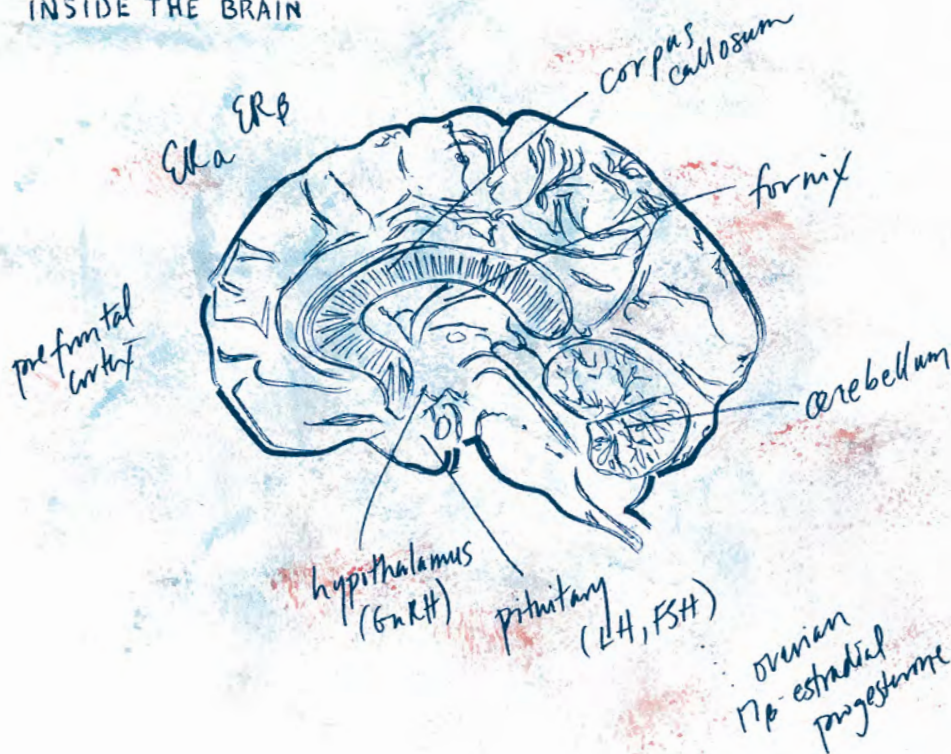
Jacobs says It all stemmed from a conversation with a postdoctoral scholar, Jacobs says, who approached her in hopes of studying the impact of hormonal birth control on the brain. After realizing that no large, systematic study had been conducted on the topic, Jacobs, acutely aware of the biases women face in the biomedical sciences, was irked – and inspired.

“Our hands were forced,” she says, “so we set out to create a large-scale brain initiative that was unabashedly, unapologetically for women’s health.”

After a successful pilot program, and with funding from the Noyce Trust and UC Partnerships in Computational Transformation, the Women’s Brain Health Initiative is poised to roll out across UC campuses. Female participants who come in for brain scans will be given detailed health history questionnaires, further boosting the strength of the imaging data already being collected. Jacobs and her team will then use that data to answer any number of unique questions about how hormonal factors affect the female brain.

“I have always been drawn to the tools of science,” says Jacobs, reflecting on what drives her to keep searching for solutions, “but the motivation to answer these questions comes, I suppose, from being raised in a feminist family, and realizing early on that I could use the tools of science to drive discoveries for women who have historically lacked that support.”

INSIDE THE BRAIN



"I don't think any other university in the world could do this the way that the University of California can," Jacobs adds of the Women's Brain Health Initiative. "UC brain imaging centers generate data from 10,000 participants annually. By harnessing that power and integrating neuroscience discoveries across campuses, we can usher in a new era of women's brain health research."

A DIFFICULT PATH

And it comes none too soon, she says.

"We are decades behind where we should be in research into women's health," Jacobs says, "in part because we haven't done the work necessary to hire, sustain and support women in senior scientific positions."

Research backs up this assertion. A 2018 study published in *JAMA Neurology* found that 86% of tenured neuroscience faculty are men and the gender imbalance grows as scholars move up the academic ranks.

Part of this imbalance stems from a system that does not adequately support caregivers at critical

junctures in their academic careers. According to a recent report in *Nature*, half of all female scientists in the United States leave full-time science after having their first child.

"To be clear," Jacobs says, "women aren't leaving science because they're not good enough for the job. They may be leaving because the job is not good enough for them. What are the chances that a major scientific breakthrough will occur when you cut your pool of highly trained scientists in half?"

In addition to her research, Jacobs' advocacy work is focused on changing these tides. Her lab regularly partners with K-12 groups in Santa Barbara to advance girls' representation in STEM fields. She's even worked with members of Congress to advocate for sustained federal funding for women's health research.

Carving out her own niche in a traditionally male-dominated field, Jacobs has become a pioneer by ensuring that all of the spaces she leads serve the needs of women first. "I hope in my lab that I can signal a way to do good science while recognizing that this is one very enriching part of our life," Jacobs says, "but it is not the whole piece."



"For me and my lab,
shining a floodlight on
women's brain health
motivates everything
that we do."

**Emily
Jacobs**



OUTER MITS

The images speak for themselves. Good thing. Speechlessness is a trending reaction to the increasingly unreal images being captured by space telescopes including the James Webb, the Hubble and the Event Horizon. The number of UC Santa Barbara researchers engaged in space studies are many: Ben Mazin, Lars Bildsten, Andy Howell, Crystal Martin, Joseph Farah, May Gade Pedersen, Tim Brandt and Sean Ressler to name just a few. With views like these, it's no wonder so many scientists are captivated by the universe, driven to unlock its mysteries and what they may teach us all.



In this mosaic image stretching 340 light-years across, NASA's James Webb Space Telescope Near-Infrared Camera displays the Tarantula Nebula star-forming region in a new light, including tens of thousands of never-before-seen young stars, previously shrouded in cosmic dust. The most active region appears to sparkle with massive young stars, appearing pale blue. Scattered among them are still-embedded stars, appearing red, yet to emerge from the nebula.



The Pillars of Creation are set off in a kaleidoscope of color the Webb telescope's near-infrared-light view. Looking like arches and spires rising out of a desert landscape, the pillars are filled with semi-transparent gas and dust, and are ever-changing. This is a region where young stars are forming – or have barely burst from their dusty cocoons.

A smattering of hundreds of background galaxies, varying in size and shape, appear alongside the Neptune system. If Earth were the size of a nickel, Neptune would be as big as a basketball. In most portraits, the outer planets of our solar system reflect this otherworldly size. However, Neptune appears relatively small in a wide-field view of the vast universe.

Produced by the Event Horizon Telescope Collaboration, this long-anticipated look at the supermassive black hole sitting in the very heart of our galaxy, in the center of the Milky Way, was revealed in 2022. The image provides overwhelming evidence that the object, Sagittarius A*, is indeed a black hole and yields valuable clues about the workings of such giants, which are thought to reside at the center of most galaxies.

This image from the Hubble Space Telescope shows spiral galaxy NGC 1309, where, in its outskirts, astronomers have observed a rare type Ia supernova. These thermonuclear supernovae are among the most important tools in astronomers' toolkit for measuring cosmic distances. Beginning in 1998, observations of these explosions revealed that the universe has been expanding at an ever-accelerating rate. This is thought to be due to dark energy, the discovery of which won the Nobel Prize in Physics in 2011.

A photograph of a man in a dark jacket working on a complex, multi-layered metal frame structure. The structure is filled with various mechanical components, wires, and optical elements. The scene is illuminated with a mix of blue and red light, creating a high-tech, futuristic atmosphere. The man is looking intently at his work, with a slight smile. The overall image has a grainy, artistic quality.

Quantum

By Sonia Fernandez / Photos by Matt Perko

Invisible to the naked eye and highly counterintuitive, the atomic-scale quantum world is a bizarre place. Here, one object can occupy multiple states and multiple objects can occupy the same state. Particles can correlate with each other regardless of distance and collective behaviors emerge that can't be predicted by the actions of individual bodies. How these tiny, strange phenomena underlie our rather orderly, far more intuitive human-scale universe is difficult to know, and physicists who work in this realm are constantly reminded of how fuzzy things can be.

“Even quantum mechanics is an approximation,” says David Weld, an experimental physicist with expertise in ultracold atomic physics and quantum simulation. It’s science’s best and quite successful attempt at explaining the fundamental processes of the universe, while leaving room for things that are not yet known or understood. “Physicists are always approximating,” he adds, “and we just try to be honest and smart about the approximations we use.”

Unlike our orderly, deterministic classical physics, with its well-defined locations and velocities, and discrete objects, the quantum world leans toward randomness. Uncertainty is baked into the math, and scientists speak in terms of probabilities. Beneath all this is one of the fundamental oddities of quantum mechanics, which renowned physicist Richard Feynman called “the only mystery”: Particles are also waves. This duality of matter gives rise to some signature quantum behaviors that when better understood will help us on our quest to understand nature. Harnessed, they can lead to powerful new technologies.

Relationships: Coherence, Superposition, Entanglement

The promise of a quantum computer lies in the ability to perform exceedingly complex calculations at speeds that would be out of reach for even the most sophisticated of classical computers. Enabled by their ability to encode multiple, entangled states, arrays of quantum bits (or “qubits,” the basic unit of information in a quantum computer) could hold multitudes of possibilities, solving problems that would require countless calculations. Imagine being able to predict the interactions of molecules to design the next big antibiotic, or to accurately model complex systems, like our climate.

But before the quantum computer can truly take off, scientists must overcome the problem of decoherence, which results in the loss of quantum information to the environment. Qubits are extremely sensitive to their surroundings and even the slightest perturbation will interrupt their “quantumness” – those behaviors brought on by the wavy nature of matter – including superposition and entanglement. Much effort is put toward isolating quantum bits away from the environment, and at near

absolute zero temperatures, to maintain, for example, a lossless state of superconductivity.

Isolation isn’t the only way to maintain quantumness. Stephen Wilson, a materials scientist and co-principal investigator at UC Santa Barbara’s National Science Foundation-supported Quantum Foundry, is developing materials from the molecule up – materials that could generate and maintain quantum coherence over long periods of time, and at higher temperatures.

“One way to think about coherence is a sort of time scale over which the quantum information that you’re reading – either the wavelength or the phase – remains well defined,” Wilson says.

Imagine a waveform – a line gently meandering up and down across a horizontal axis. Now add a second waveform along the same axis. If each part of one waveform remains fixed or constant

to the corresponding part of the other wave, congratulations – you now have coherence, and a state in which a wave function from one object can split into two states that can interfere with itself is possible. The general tendency of quantum coherence is to be fleeting, but if materials can be made that can enhance or extend this ability, they will be to quantum computing what silicon and transistors have become to classical computers.



The Quantum Foundry is where quantum materials get their start. In this place, akin to an iron foundry where metals are mixed and shaped into functional forms, Wilson and his team seek to merge elements whose molecular structures could give rise to useful

quantum behaviors. In one room, they grind and mix material together under vacuum conditions to minimize impurities and unwanted interactions with air, material they then cook at high temperatures to meld together. In another room, a futuristic forge heats elements to 3,000 degrees Fahrenheit – one third the heat of the sun’s surface – to create compounds that would otherwise never be seen on Earth.

One goal for the foundry is to develop new types of superconductors, materials that can conduct, at near room temperatures, with zero resistance. By using the superconducting state for information, qubits can be made that retain their coherence, but special types of superconductors must first be discovered in real materials – a hurdle for those who want to enable wide use of quantum computers.

Steven Gomez
WILSON GROUP (Left)



Wilson and his crew are already scratching the surface of this holy grail of quantum materials, however. Recently, they developed a kagome (KAH-go-meh) superconductor whose electrons self-organize in such a way that a new electronic state of matter emerges that can potentially host quantum information for extended periods of time.

“These types of superconductors are predicted to host anyons,” Wilson says, referring to the electronic states that are of interest to those pursuing topological quantum computing – a branch of quantum computing in which information can be distributed over the surface of the material in “braids,” as opposed to more conventional, trapped quantum particles. This type of logic is thought to make the system more robust to errors and perturbations and could potentially be the key to fault-tolerant quantum computing.

“Another weird thing about this superconductor is that it may actually not be a pairing of two electrons; it may be a pairing of four or six electrons, which has never been seen before,” says Wilson. “And those would also have potential uses in quantum information and perhaps quantum sensing.”

Characterizing Qubits

Physicist Ania Bleszynski Jayich’s qubit of choice: a point defect in diamond called the nitrogen-vacancy (NV) center. The NV center is created when one of two missing adjacent carbon atoms in a diamond’s carbon lattice is replaced with a nitrogen atom, resulting in a nitrogen atom next to an empty spot, a vacancy. It’s a system that has given physicists the kind of control needed to peer into the tiny aspects of the quantum world.

Importantly, this atomic-scale object makes an excellent sensor of magnetic fields. By subjecting the NV center to the tiny magnetic fields emitted by other atoms in a material, for instance, Jayich can gain information about the identity of the atoms in question, as well as their local environment. She does so by exciting the center with a laser and noting how much light it emits. It’s essentially the same method that MRIs use to create images of the body, only now, due to the individual addressability of the NV center, MRI can be done on length scales 1,000 times smaller, approaching nanometer-scale.

“The NV center as a defect can do that same type of imaging, and with elemental specificity,” she says. “It can image different atoms and molecules, and with really high spatial resolution.”

One quantum property that this highly sensitive qubit exploits is superposition, in which the state of the NV center is a result of multiple possible states – imagine the ripples from two stones dropped into a pond when they meet. The quantumness of a qubit arises from this property: While a classical bit is binary – either zero or one – a quantum bit can be zero and one, with a mathematical description called a wave function that encodes the many possibilities of this NV center qubit, and in the case of sensing, what it is interacting with.

“So I put my little qubit in a superposition of zero and one, and I expose it to the field I want to sense,” explains Jayich. “Then as time evolves, there will be some probability amplitude for the qubit to be in the zero state and some probability amplitude to be in the one state, and those two probabilities respond differently in a magnetic field.” To find out how “zero” or how “one” the qubit is, Jayich fires a green laser at it and counts the number of fluorescing photons, which will tell her what field the qubit felt. From there she can derive the characteristics of the material.



Part of Jayich’s job as a co-principal investigator of the Quantum Foundry, a collaboration of 25 members of the UCSB faculty, is to characterize the never-before-seen compounds being forged there using the uncertainty of superposition to interact with the mysterious substances. But she’s also working to improve the properties of the quantum sensor itself, to enable its interaction

with ever more complex targets, like proteins, or new states of matter and emergent properties, such as superconductivity.

One way to achieve even higher sensitivities, according to Jayich, would be to entangle qubits, another purely quantum phenomenon in which two quantum particles are so intimately connected that their properties automatically correlate with each other; they share the same wave function. Astonishingly, this can happen over any distance, prompting Albert Einstein’s description of entanglement as “spooky action at a distance.”

Mastery over quantum entanglement is the reason for this year’s Nobel Prize in Physics, and the research has

powerful implications for quantum computing and quantum cryptography. Imagine being able to send information from one point to another instantaneously, while any attempt to intercept the information destroys it.

For Jayich's purposes, entangled qubits would mean a supercharged solid-state sensor. Theoretically (only because this behavior has not yet been demonstrated in solid-state sensor systems), entangled sensors would have a performance vastly improved over separate quantum sensors working together.

"Let's say I have a hundred sensors and I'm trying to detect a field," she says. "One hundred sensors will usually do about 10 times better than a single sensor, if they're not entangled. But if they're entangled, I can actually have 100 sensors do 100 times better than one sensor. This is the kind of interesting scaling that can happen."

Of course, Jayich notes, the more entangled and therefore more powerful these sensors can be, the more difficult it will become to control their quantum mechanics. But it is definitely a goal for the Quantum Foundry to reach for in the collaboration's quest to generate new, useful quantum materials.

New Phenomena

David Weld's laboratory is a place of ultracold atoms, photons, lenses, mirrors and lasers – some so strong that people have to shield their eyes when the lasers are on. In this lab, they use lithium and strontium atoms chilled to almost absolute zero, each suspended in standing waves of light to create synthetic solids – ghosts of solids organized in their regular, repeating lattices – that can be poked and hit and shaken with lasers to see how these atoms respond. At this low energy scale, the typically zippy atoms slow down, allowing the researchers a better look at their slow-motion quantum mechanical behaviors.

This level of control allows for investigating predictions and trying to answer questions that were mere thought experiments until recently. In the past few years, Weld and team have witnessed position-space Bloch oscillations – back-and-forth sloshings of quantum particles under a constant force predicted by Felix Bloch in 1929. They also replicated the "quantum boomerang" effect, a strange phenomenon where particles in a disordered system are "kicked" off their locations, only to

return right back to where they came from. While disordered quantum insulators have been understood in broad strokes since the late 1950s, the quantum boomerang effect was first predicted just a few years ago.

But there is a problem. It's sort of a Mount Everest of quantum physics problem, the kind that is both tantalizing and nearly unsolvable. It's called a quantum many-body problem, and it's actually a class of problems that seek to identify the properties of systems of many interacting quantum particles. When you have particles with multiple, overlapping wave functions and random odd behaviors, what happens when you put them together to bump into and jostle each other?

"It's sort of an evergreen problem in physics," Weld says. "And it's something that is both interesting and important because assemblies of many interacting particles are what a lot of technologies are based on."

The difficulty lies in the sheer multitude of possibilities that grow exponentially with the number of particles in the system. Beyond a few particles, the calculations become unwieldy and they overwhelm even our best computers.

This is where quantum simulation shines. Using the lithium atoms and the fine control his system provides, Weld works with his team to turn the problem of computation into one of control, telling their once neatly separated lithium atoms to jump into the mosh pit. In so doing,

they addressed the question: What emerges when particles in a disordered, chaotic system interact? Apparently, what emerges is a "weird quantum state" that looks suspiciously like order but, when investigated, has the hallmark of quantum chaos – a riddle within a riddle, but an answer in a sea of questions and a basis for better understanding the weird quantum world.

"We have good approximate theories for some of these many-body systems, like metals and superconductors," says Weld, "and less good approximate theories for some others, like high-temperature superconductors." Any advances in quantum chaos and the many-body problem could in the near term, he adds, be helpful in designing new materials. In the bigger picture, they could lead to the coveted link between the quantum and classical worlds.





 Ganesh Pokharel
WILSON GROUP



 Andrea Capa Salinas
WILSON GROUP





 Eber Nolasco-Martinez
WELD GROUP



 Daipeng Yang
JAYICH LAB



 Simon Meynell
JAYICH LAB



The Weight of Water

Dawn Wright makes history 35,000^{FT} under the sea

Written by Shelly Leachman

**Not anxiety.
Not claustrophobia or panic.**

Absolutely not *fear*.

RATHER IT WAS ELATION, recalls Dawn Wright (Ph.D.) '94 of the primary emotion that washed over her when she landed, in the two-person submersible Limiting Factor, at Challenger Deep – otherwise known as the deepest point in the ocean, which also makes it the deepest known place on Earth.

“The feeling really was one of elation,” says Wright, a marine geologist and chief scientist of Esri, one of the world’s leading geographic mapping firms.



It's easy to see why. She not only fulfilled a long-held dream of reaching the world's deepest point, she made history as the first Black person to explore Challenger Deep. In 1996, Wright co-led an expedition to Horizon Deep, the planet's second-deepest point.

"I think it's really significant to be 'the first' as a way to inspire and encourage others," Wright says, "especially for little children and for young people, so that they can see that something like this is possible. Something like this is possible for them, and not off-limits because they are Black. This is something that they can aspire to one day if they so desire."

It was some 30 years ago, as a Ph.D. student at UC Santa Barbara, that Wright took her first trip to the deep ocean, dropping 1.5 miles into the East Pacific Rise in Mexico, in the iconic Alvin submersible.

"Beyond illuminating the oceanographic process I was studying – the connection between plate tectonics, volcanic eruptions and deep-sea vents – that opened my eyes to a larger truth," Wright recalls of the expedition. "Humans are largely blind to this enormous and lively part of the world that covers more than two-thirds of Earth. Scientists know more about Mars, Venus and the dark side of the moon than they know of Earth's ocean depths."

Indeed. More than 70% of the Earth is covered in water, yet barely 25% of our oceans have been adequately mapped. Wright is part of an international effort to fill that gap.

And so it came to be that she descended 35,000 feet below the surface – depths more than six times those of the Grand Canyon – with 16,000 pounds per square inch of pressure bearing down on the submersible, to the darkest reaches of the Mariana Trench in the western Pacific. At her side and at the controls: explorer Victor Vescovo, a retired U.S. Naval commander and return visitor to Challenger Deep.

Their precise destination was the trench's Western Pool, where, thanks to some first-of-its-kind technology, they were able to successfully operate and collect viable imagery data from a side-scan sonar at full-ocean depth. The data they captured – four terabytes in all – will contribute to Seabed 2030, a United

Nations-led initiative to map the entirety of the seafloor to modern technological standards by the end of this decade.

The ultimate goal? To boost scientific understanding of the least-known parts of the planet, the role they play in processes like climate change – and the impact of humans on all of it.

"This research started for me while a graduate student at UCSB," Wright notes. "Challenger Deep is the exact opposite of the tectonic setting that I studied as a student at UCSB. Instead of separating from each other, here two plates are colliding, one diving beneath the other at a subduction zone that is physically expressed as a trench rather than a ridge. So it was fascinating for me to observe the evidence of such a collision zone, especially the vast boulder fields left in its wake. It was also very significant for me to be involved in the broader-scale shipboard bathymetric mapping of the southern part of the Mariana Trench, the Yap Trench, and then the Palau Trench. This will make an important contribution to Seabed 2030."

The broader significance of her journey, says Wright, a fellow of the National Academy of Sciences and the American Academy of Arts & Sciences, struck her even before she made the trip. It continues to do so months afterward.

"I am more convinced than ever that striving to inspire others, to shift attitudes – even among Black people who still think that environmental science or exploring nature are not for them – and ultimately to change the world for racial equity and justice are a long-term process," she says. "I am struck by what Coretta Scott King said: 'Struggle is a never-ending process. Freedom is never really won. You earn it and win it in every generation.'"

"Ultimately," Wright adds, "I do truly hope that this adventure will inspire young people, especially young Black people, as well as early career academics and scientists of all persuasions, to live out their own dreams. Science, the ocean and the Earth will be better for it."



More incredible photos from Dawn Wright's deep sea journey are on our website at
magazine.ucsb.edu

CIRCULAR THINKING

HARRISON TASOFF / MATT PERKO

Humans are great at building things. We're the best the world has ever seen. Heck, we start learning to build as children, piecing together toys on our bedroom floors.

Today, with specialized tools and components, we routinely build sophisticated products – toasters, computers, automobiles ... contraptions inconceivable to our distant ancestors. But our greats had us beat in one clear respect: They recycled and repaired as much as they could. We, on the other hand, are now producing more waste than the planet can process, and it threatens our health, environment and social stability.

From the materials we use to our manufacturing process, the modern supply chain is geared toward a linear economy: We produce new products and throw old ones away. But a new direction is gaining popularity, one in which our consumer waste becomes the feedstock of a circular economy.

Much of the modern world operates on a linear economy, which goes as follows: We extract minerals, oil, wood and other resources, which we process into materials like metals, plastics and paper. We take the materials and turn them into components, and then we turn components into products. Next, we sell; then we buy; then we use; and then finally, we discard.

“It seems to be an awful shame and a terrible waste,” says industrial ecologist Roland Geyer, “taking all of these raw materials, putting so much effort into turning them into very sophisticated things, and then using them only once.”

Even mattresses could be reused or recycled, Geyer says. He’s thinking way beyond packaging.

Turning natural resources into products requires a lot of time, money, energy and intention. “It’s not just the material; it’s all the value added, too,” says Geyer, a professor in the Bren School of Environmental Science & Management. “We lose all that value when we toss things out, rather than recycle. We have to make the next product from scratch.”



BREAKING THE LINEAR CHAIN



The linear economy is a relatively recent phenomenon. In earlier times, when things were harder and more expensive to make, there was incentive to reuse, repair or recycle goods. With mechanical production and mass consumerism developing in the 19th century, the linear supply chain soon prevailed. “By the mid-1950s and ’60s, the linear economy was solidified,” says historian and professor Erika Rappaport, who studies the history of consumption and commodities in the 19th and 20th centuries.

Many countries built up their manufacturing capacity and were producing, or overproducing, supplies for World War II. When the war ended, there was an oversupply of products in need of new consumers.

“Meanwhile, people were desperate to get new things,” Rappaport says. Society was emerging from some 16 years of depression and wartime austerity. Work hours had expanded and more women were in the workforce, further driving the demand for labor-saving devices. Convenience was king.

“The goal was more, faster, cheaper,” Geyer says, so we restructured our supply chain and expanded production, “and this incredible scaling of mass production is a lot easier in a linear economy.”

Meeting current supply demands in a circular economy will require a big pivot for people and industries alike. To be truly circular, we’d need to make some fundamental changes to the things we use, choose and produce, and globally redefine our manufacturing ethos.



RELEARNING RECYCLING

Turns out, for as good as we are at building things, we’re not that great at taking them apart.

“We design products for optimum performance at minimal cost, but we don’t design them to be recycled,” says Distinguished Professor Susannah Scott, whose research lies at the intersection of chemistry and sustainability. “That will require changes in the way that we think about materials.”

Complex, multilayer packages work very well – think chip bags and padded envelopes – but they are exceedingly difficult to disassemble and recycle. So, they end up in the bin, and then the landfill. Eventually, these materials will break down and turn back into crude oil, but that takes geologic timespans. In the meantime, they choke our planet and waste our time, money and resources.

Big chemical companies have started to recover some materials, liquefying them at high temperatures and blending them into the oil refining process. But this is inefficient and has limited use, explains Scott, the Mellichamp Chair in Sustainable Catalysis.

The next step is designing products that can be disassembled into their components, and designing components that can be broken down into their molecular makeup. Time, use and processing all degrade materials. The utility of plastics drops precipitously after recycling. Additives, adhesives and so forth get mixed into the reclaimed material and the result is appropriate for only the most basic of products, like rugs and composite lumber.

“Even if you had absolutely pure polymer, those molecular chains degrade when you reprocess them,” Scott adds. Materials like plastics are highly engineered. Polymer lengths, structure and composition are all tightly controlled to produce specific properties. All of this optimization is lost when plastics are blended together during recycling.



REDUCE, REUSE, REIMAGINE



By reducing materials to their molecular components, we can produce recycled materials with the same properties as their virgin counterparts. Indeed, Scott’s group works on disassembling polymers – specifically polyethylene and polypropylene – into ingredients that can be returned to the supply chain. She’s even found processes where beginning with the recycled plastic is more efficient than starting from crude oil.

Technology alone won’t solve this issue, but it will be critical to our solution. “We need people to reimagine how we make things and how we use them,” Scott says, “but we also need changes in behavior.”

As long as resources are cheap, people will continue producing virgin materials. The standard argument is that circular practices are currently too expensive to compete with a linear supply chain.

“But this is thinking the wrong way around,” Geyer says. “It’s not that reuse and recycling is too expensive; it’s that virgin production is too cheap.”

Not only has society designed the modern supply chain around virgin production, but the prices of products reflect the true cost of these practices. Economists call these indirect impacts “externalities,” and the linear economy is rife with them.

Ironically, Geyer suggests that we shouldn’t focus on incentivizing circular practices. Rather, we need to disincentivize linear practices. You might think this is the same thing, but evidence suggests it isn’t. For instance, instead of discouraging the use of fossil fuels, a lot of governments are promoting renewable energy. “But this could mean that we’re just going to do it all,” Geyer says: “keep our fossil fuels and use a lot of renewable energy as well.”

Similarly, if recycling becomes cheap, we may just use it alongside virgin material. “The green revolution has been a double-edged sword,” he says. “It basically allowed us to not talk about limits and just expand.”

To do less harm, we need to curb our worst practices, not promote our best ones, Geyer argues. Ultimately, this means producing less overall.

Rappaport’s historical perspective leads her to a similar conclusion. Consumption is inexorably linked to people’s working lives. As specialization and work hours expanded, people were left with less time, energy and skills to reduce, repair and recycle. “You have to slow things down,” she says.

“Overall, there’s no one strategy that’s going to solve the whole problem,” Scott adds. “But I think the world is ready to start thinking about this in ways that we weren’t even five years ago.”

Strength ⁱⁿ Numbers

by John Zant | Photo by Jeff Liang

It all adds up to more women in sports.

This year marks the 50th anniversary of the passage of Title IX, the 1972 federal law that banned sex-based discrimination in educational programs, including sports. University athletic programs responded to the landmark education law with a phenomenal increase in women's participation in intercollegiate athletics. The National Collegiate Athletic Association reported that 47% of student-athletes in Division I sports are now female.

UC Santa Barbara does even better, with women filling more than 50% of its athletic rosters. Building an equitable athletics program also requires that women have significant roles within its infrastructure. From the training room to academic mentorship and activism, female leaders in sports are as strong as ever.

THE INTELLECTUAL TRAINER

"We've had a lot of great women athletic trainers," says UC Santa Barbara's head trainer Leroy Heu. Several have moved up in the profession, including Nina Hsieh, who took care of the Gauchos women's basketball team in 2004-08 and 10 years later served as head athletic trainer with the Los Angeles Lakers.

Emma Connelly continues the training tradition. Along with Claire Stovall, a newer addition to the training staff, Connelly has tended to athletes on eight UCSB teams, working tirelessly

Women rise across athletics, from the playing field to the front office

and consistently, during unique times and through injuries beyond the physical. "We were the backbone of managing the COVID process," Heu says, "and mental health has played a greater role."

Connelly has earned the absolute trust of athletes like Ila Lane, an elite women's basketball player, and Gracie Lockwood, a swimmer with cerebral palsy.

"She's beyond an athletic trainer," says Lane, with whom Connelly has worked for four years. "She cares about your well-being, not just physically but mentally, and she cares about your life outside of sports. We share thoughts, meditate, learn to cope with stress. Emma emphasizes you have to be mentally prepared. If you're not in a good place mentally, it affects your performance."

Lockwood says Connelly enables her to compete in swimming, "the only sport I could do without pain." The UCSB sophomore hopes to go to the Paralympic Games in 2024. "Emma is an intellectual trainer," she says. "She has creative agency. She comes up with ideas to make things work. I text her daily. What should I work on? Or sometimes, do you want coffee?"

Connelly's aspirations to be a soccer star in Orange County were eclipsed when she developed a serious spinal condition. "I asked myself, 'How can I be part of sports?'" she says. "I decided I could help athletes get through hard times as a trainer."



Evann Smith

Jessica Goerke

Emma Connelly

“The women in the department have a big impact on where we see ourselves in the future.”

After receiving her master's degree in athletic training at the University of Hawai'i, Connelly stayed on working at the school. "I was the only female on the baseball staff," she says. "There were no women's restrooms in the home locker area. I used a restroom for the coaches and was the only one to lock the door. I got yelled at a lot." Heu, a native of Hawai'i, met Connelly at a meeting of the Far West Athletic Trainers Association and recruited her to UCSB. "She's a great hire," he says.

Connelly says she is inspired by women like Kelly Barsky, who has been running UCSB sports as interim athletic director for the past year.

"Barsky is a badass woman," Connelly says. "How is she able to do all she does? I'm here because of strong women who taught me to be strong."

THE ACADEMIC ROCK STAR

Jessica Goerke filled a special need when, in 2017, she became UCSB's first director of academic services, working out of the athletic director's office. She was encouraged to apply for the position by new men's basketball coach Joe Pasternack, who knew of her work as an academic counselor for athletes at the University of Illinois.

"One of the most significant upgrades we needed was academic support," Pasternack says. "A couple (men's players) were ineligible the year before I started. Jessica was the first staff member I pursued – before an assistant coach. She's been an incredible help to basketball and the entire athletic department. Our team GPA the last five years is over 3.0. That's unprecedented in men's college basketball."

Goerke said she was moved by Barsky, then the senior women's administrator in athletics. "Kelly completely sold me on the institution," she says. "I saw what UCSB could become. I wanted to be part of that."

Goerke has since been promoted to deputy athletic director and interim senior women's administrator, and at the beginning of this school year she was appointed to the NCAA Division I Committee on Academics. "UCSB is on the map," Goerke declared after the national organization called her name.

"It's a huge distinction," Barsky says. "Jessica is a rock star. From the time I first met her, she has displayed her commitment to service and her ability to work with anybody."

Women's basketball coach Bonnie Henrickson agrees, calling Goerke "a great resource for athletes and coaches."

Goerke's own college experience was confined to the classroom. "I was not a student-athlete," she says. "I'm not coordinated. Give me any athletic object and I'll fumble it." But when the Illinois native was working toward a master's at Akron, she had an opportunity to work in academic support for athletes. "Once I got a taste of athletics, I just loved it," she says. "I liked the camaraderie."

She developed her chops as an adviser to the Georgia Tech football program in 2012-13 and spent the next four years as academic counselor for men's basketball and women's track and field at Illinois. Then UCSB came calling.

“We sell the quality of people in our department,” Henrickson says. “It’s not just shiny buildings. It’s the people in those buildings.”

As she looks at her life beyond basketball, Lane, for one, has been affected by those people.

“I’m studying to be a therapist,” the two-time All-Big West forward says. “The women in the department have a big impact on where we see ourselves in the future. Jessica and Emma set great examples of how I want to be, to break boundaries and be a person looked up to.”

THE ACTIVIST ATHLETE

Evann Smith stands tall between the pipes as senior goalkeeper on the Gauchos women’s soccer team. The 6-footer from Valencia can be counted on to keep UCSB within striking distance of any opponent. She had three “clean sheets” – shutouts – in a stretch of four Big West games this fall, preventing a pair of losses in 0-0 deadlocks. Many times, she flings her body heedlessly to parry a shot.

“She is a leader,” teammate Elise Ziem says. “She is so brave.”

“I like making fearless plays,” acknowledges Smith, whose gumption is also noteworthy in her active student life.

When she was a sophomore, inspired by the killing of George Floyd by Minneapolis police, Smith helped start a GoFundMe account that raised nearly \$80,000 for the Black Lives Matter movement. The Big West Conference named her as vice chair of a newly formed diversity, equity and inclusion (DEI) committee. If she sees injustice, she speaks out.

It was troubling but not surprising to Smith, she says, that a recent report by former deputy Attorney General Sally Q. Yates uncovered widespread instances of sexual misconduct, harassment and bullying in the National Women’s Soccer League.

“Women’s soccer is a male-dominated sport when it comes to the power dynamic,” Smith says. “The reason abuse doesn’t come out is there’s fear. The majority of coaches are male. They’re taking advantage of the system. In women’s sports it’s: ‘You should be grateful for what you have. I can treat you any way I want.’ There’s a line that shouldn’t be crossed.”

Smith affirms there are no such issues with UCSB’s coaching staff. She says she is grateful that her mother, a health administrator, steered her to Santa Barbara instead of continuing to try to impress more high-powered programs and fret about her performance.

“My mother wanted me to go to a good school and not be stressed out about recruiting,” she says. “I got an offer my first visit. My worth is not tied up in the sport. My worth is tied up in what school I’m going to. I’m Evann Smith, the DEI counselor, a friend, econ-accounting major – not just Evann Smith, the goalkeeper.”

That’s not to discount her athletic career. “Soccer is a great sport,” she says. “Seeing the level of play change for the better is inspirational. It can be applied to every aspect of life.”

UCSB’s acting athletic director offers high praise for Smith. “She epitomizes the student-athlete journey,” Barsky says. “She engages, jumps in, connects with others. She uses her voice to speak out and build relationships. She’s a connector. I’ve learned from her.”

Research Highlights

Cacao About That?

Said to be a gift from the gods, cacao for the ancient Maya was considered sacred, used not only as currency but in special ceremonies and religious rituals. The prevailing belief has been that cacao was more available to, even controlled by, the society's upper echelons – royalty. Past efforts to identify cacao in ceramics focused on highly decorative vessels associated with elite ceremonial contexts – think ornate drinking vases – leading to assumptions about how cacao was distributed and who could access it.

What about the farmers who grew cacao and the communities of people who lived amongst these orchards? What of the general populace? Anthropologist Anabel Ford and chemist Mattanjah de Vries asked these questions – and answered them – by examining cacao residues from ancient ceramics. Their results, published in the Proceedings of the National Academy of Sciences, demonstrate that cacao was, in fact, accessible to the general populace and was used in celebrations at all levels of society.



Cacao (*Theobroma cacao* L.): fruiting and flowering branch with separate numbered sections of flowers, fruit and seed. Chromolithograph by P. Depannemaeker, c.1885, after B. Hoola van Nooten.

Excavating Land Histories

"Race, Precarity, and Privilege: Migration in a Global Context," a Mellon Sawyer Seminar Initiative, explored race and immigration by way of research, with particular attention to California, France and South Korea. Led by professors and principal investigators Kim Yasuda (art), Lisa Parks (film and media studies), John S.W. Park (Asian American studies), France Winddance Twine (sociology) and Jean Beaman (sociology), the seminar invited expert speakers from diverse fields to explore dominant migration narratives such as the "American Dream" and the "California Dream." Seminar participants were guided in reflecting on and situating their families' migration histories within the cultural history of other groups in California.

The initiative culminated in a podcast, "The Deferred Dream," published on Buzzsprout, and an exhibition, "Unsettling California," which brought together diverse contemporary artists from across the state, including UC Santa Barbara faculty and graduate students, whose work questioned the persistent presence of colonial ideologies, structures and policies.





PHOTO BY BERSERKUR, WIKIMEDIA

People on the slopes of Fagradalsfjall, watching the Geldingadalir eruption.

Subterranean Serendipity

Earth scientist Matthew Jackson just so happened to be in Iceland to witness the birth of Fagradalsfjall, a fissure in the country's southwest lowlands that split and exploded with magma in March 2021. Scientists and visitors flocked to see the newest section of the Earth's crust form. Subsequently sampling magma from Fagradalsfjall, Jackson and his collaborators uncovered a process far more dynamic than anyone had assumed in the two centuries scientists have been studying volcanoes. Their findings, published in the journal *Nature*, included rapid, extreme changes in magma composition at a plume-fed hotspot that had never before been observed in near real-time.

The project allowed researchers to see for the first time a phenomenon that was thought to be possible but had never been witnessed directly. For the scientists, this result presents a “key constraint” in how models of volcanoes around the world will be built.

Pioneer Women

Popular culture still typecasts women in STEM fields, pitting femininity and appearance against intelligence and seriousness, and casting doubt on women's competence. Add to that a dearth in representations of diversity, and there's a connection to be made between stereotypes, a lack of role models and the gender disparity in the U.S. STEM workforce. According to the National Science Board, women make up almost half of the employed U.S. population, but only about a third of the STEM workforce.

All of which inspired geochemist Alexandra Phillips, of UC Santa Barbara's National Center for Ecological Analysis and Synthesis, to start Women Doing Science, an Instagram site



PHOTO BY JEFF LIANG

featuring photos and profiles of female scientists all over the world in labs, in lecture halls and in the field. It exploded in popularity – 100,000 followers and counting – evolving into an international movement. It also resulted in a study, published in the journal *Social Media + Society*, which found, among other things, that representations of diversity are a primary driver of engagement.



Inspiring Gauchos

A note from Interim Executive Director
Samantha Putnam

Alumni

Since 1960, the UC Santa Barbara Alumni Association each year has celebrated our incredible alumni community through the Alumni Awards ceremony, and we did so again this October. It's always such a privilege.

But of course, it's not just annually that we feel this Gaucho pride; we're feeling it all year long.

We recently recruited for our first-ever mentorship program, a pilot effort to unite our alumni community to mentor our current students. Running throughout the academic year via the Gaucho Network (www.gauchonetwork.com), this program helps us achieve a core part of our vision: for our student population to see an alumni family ready to support them and champion their success. The delightful news is we had such a great response from both alumni and students that we now have a waitlist of participants. If you're interested in connecting with other Gauchos and students, be sure to register in Gaucho Network.

In the spirit of celebrating our alumni, tell us about the incredible Gauchos in your community — whether for an alumni spotlight on our website, an interview for this magazine, or a nomination for an alumni award or for our Alumni Board of Directors. I would love to hear from you!

Until then, I hope to see you all at our next All Gaucho Reunion, April 27–30, 2023.

Save the date!



Samantha Putnam

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ALUMNI

HONOR ROLL

Alumni Awards honor remarkable individuals and their achievements

BY CARMiya BASKIN

SINCE 1960, UC Santa Barbara Alumni has presented awards of achievement and recognition to outstanding alumni and friends of the university. Held in person this year at Lagoon Plaza, the event was a celebration of Gaucho spirit and an opportunity to honor four special individuals in the university community.

Yvett Merino '94, the Academy Award-winning producer of "Encanto" and the first Latina to receive the Oscar for best animated feature, was awarded the Distinguished Alumni Award. Alumni Board director and philanthropist Diane (Hilbert '68) Dodds was posthumously awarded the Graver Service to Alma Mater Award, accepted in her honor by her husband, David Reichert. Receiving the Honorary Alumni Award were Lynda Weinman and Bruce Heavin, co-founders of Lynda.com.

The gathering, which took place Friday, Oct. 7, was hosted by Chancellor Henry T. Yang and Michael Citron '10, Alumni Board president. Both paid tribute to an audience filled with elected officials, UC Regents, current and past board members, and students.

"The event marked for us not only a return to celebrating our award recipients in person but a chance to share with our Gaucho community our new vision – for UC Santa Barbara alumni network to be a reason people choose to come to UCSB," said Citron. "Nothing exemplifies that more than our incredible awardees."

Each recipient was presented with a plaque from Chancellor Yang and shared remarks of gratitude and pride. Also addressing the crowd, Regent-designate Joel Raznick '81 acknowledged Regent Sandra Timmons of UC San Diego, Regent-designate Keith Ellis of UC Merced and Regent Emeritus of UC Santa Barbara, Fran Mancia '80.

"There is a motto we say as UC Santa Barbara alumni: Your story continues here," Raznick said. "I am a living testament to this. I have been afforded an incredible honor to represent UC alumni on the Board of Regents."



Journeying On

Tech visionary Pamela Lopker keeps her eyes on the horizon

BY SHELLY LEACHMAN

FOR ALL THE TALK TODAY about the dearth of women in STEM disciplines, imagine how scant their numbers must've been in the 1970s. Pamela Lopker can tell you – at least as far as her university courses were concerned.

"I think there was only one other woman in computer science, and in math maybe two that I can think of," Lopker recalls now. Not that she was daunted. Tenacious by nature, she looked around lecture halls wondering why there weren't more women beside her.

"I never got it, why more women didn't jump on that; tech is a great field for women, with so much opportunity," says Lopker. "For me it was always, 'What can I do in college so that when I get out, I can get a well-paying job, support myself, buy a house and make my own way?' A lot of young people today don't think that way going into college. I don't know what's right or what's wrong but that was my goal – get a job, support myself and live a comfortable life."

A native of Cupertino, where her father was an electrical engineer, Lopker had arrived at UC Santa Barbara determined to depart not only with a degree but with a solid career outlook.

You could say she made good on that.

Two years out of college and working locally as a programmer, Lopker launched QAD Inc., developing business software for manufacturers. Her first client? Her then-boyfriend, Karl Lopker, who hadn't found quite the right software for his nascent sandal company, Deckers. After building Karl a custom program, Lopker decided to try and find a few other customers. That worked out well.

"At the end of the first two years with QAD, I could see that eventually I'd be able to pay myself a living wage, which I did in about five years," she remembers now. "It takes a long time, and it's a journey, but I could see it, so I kept going."

QAD became an industry giant, and Pamela Lopker a rock-star entrepreneur. She made the cover of *Forbes Magazine* – twice – and landed in the Women in Technology Hall of Fame. With Karl, she became a prolific philanthropist, contributing broadly and generously to the university, among many other entities. She retired in 2021, after selling QAD for \$2 billion.

"People say to me now, 'Oh, you're so successful,' and I think, 'Really?' I'm still on that journey," she says. "You just keep focusing on what's next and there's always something next. You're never finished; there's always a next thing."

Next – rather, now – for Lopker is the Lopker Family Foundation, where she has turned her focus to fighting cancer. Karl Lopker died of prostate cancer in 2018, lighting a fire in Pamela to support research that may lead to new complementary therapies for many cancers.

"These are incredible people with amazing minds, and I feel privileged to be able to give them the money to continue their studies," Lopker says. "The people doing this kind of research – they are the real rock stars."



Pamela (Meyer '77) Lopker

Progress Over Perfection

Celine Mol works to stimulate a circular economy by way of resale

BY SHELLY LEACHMAN

IT'S CALLED SLOW FASHION, and it's definitely a thing. A more Earth-first approach to apparel, it emphasizes quality over quantity with a circular supply chain in mind. Well-made goods have longer lives and often – thanks to the growing focus on resale – multiple owners.

That's where Beni comes in.

The Gaucho-grown company makes secondhand shopping easier by partnering with resale, or “re-commerce,” sites – think Poshmark, eBay, The RealReal – and aggregating their inventories on behalf of consumers. It's a one-stop shop for buying previously owned apparel, kind of like Expedia is for traveling.

“While 93% of people want to buy secondhand, only 50% of people actually do; it's too time consuming and they don't want to learn a new way of shopping,” says Celine Mol, Beni's co-founder and chief technical officer. “At Beni, we help give people a space to buy secondhand without having to change the way they shop.”

Dedicated to reducing fashion's burden on the planet, the company's vision, Mol says, is to build a world where resale is the new norm.

“If you see your clothing as assets that have value, and that will retain value if you take care of them, when your style has changed, you can recirculate them back into the universal closet – the closet in the cloud as some people are calling it,” Mol says.

“Simply try to consume less. Ask yourself before you buy something, ‘Do I really need it?’ Better yet, walk away and think about it overnight.”



Celine Mol '17, '19

With two degrees from UC Santa Barbara – a Bachelor of Science in statistics and a master's in environmental science and management – Mol is passionate about applying her technical expertise to environmental challenges.

“For me, it was always about sustainability in general, and using technology to push sustainability efforts,” says Mol, an inaugural member of the UCSB Innovators Circle, a network for entrepreneurs meant to foster connections and inspire philanthropy. “With my background in data science and software engineering, the best tool in my toolbox to do that was software.”

Prior to launching Beni, Mol used her tools at Apeel Sciences, another Gaucho-founded company (James Rogers, Ph.D. '12), where she worked on solutions for food waste.

“At Apeel, the value proposition was extending the shelf life of produce,” Mol says. “Beni is focused in the apparel space, but it's the same idea of reducing waste and designing systems to be more circular. My Beni co-founder, Sarah Pinner, always says, ‘Waste is just a design flaw.’”

Her best advice?

“Simply try to consume less,” says Mol. “Ask yourself before you buy something, ‘Do I really need it?’ Better yet, walk away and think about it overnight. If you do buy, buy via resale, or buy high quality, and take good care of your items so they can be resold and given new life. And when you're done with something, donating it is always better than throwing it away.”

First-Gen Mentor

Giovanna Gonzalez helps her peers build wealth

BY CYANNA ROSA

AS A FIRST-GENERATION transfer student from Southern California, Giovanna Gonzalez didn't have a lot of resources to navigate college or start a career. Her experience inspired her to want to help other students like her.

After graduating with a degree in business economics, Gonzalez started building her digital presence, trying to reach her target audience of first-gen students and early career professionals. By offering financial tips on social media, she amassed nearly 200,000 followers and 3.5 million likes on TikTok, more than 14,000 followers on Instagram and roughly 6,000 on LinkedIn. She was named to Fast Company magazine's Creator25 list as one of five up-and-coming creators to watch in 2022.

As a well-known influencer and first-generation wealth builder, Gonzalez shares her tips on living a financially healthy lifestyle.

"In my late 20s, I started gaining interest in personal finance since, personally, I felt like I was not maximizing the money I was earning," Gonzalez says. "Once I immersed myself in learning everything there is to learn about personal finance, I realized that everyone needs this information."

Gonzalez hosts virtual courses and financial literacy workshops for employee groups and at universities, helping other first-generation students understand personal finance – like making a budget, building credit and investing.



Now, she wants to take it to the page. With a \$50,000 TikTok Latinx Creatives Grant – she was one of 10 recipients in 2022 – Gonzalez plans to write a book on personal finance for a first-gen audience.

"I read over 50 personal finance books, and they all had some cultural aspect missing," Gonzalez says. "For example, a go-to tip in these books is to find a sustainable used vehicle. But, coming from a Mexican family, you can get teased if you don't have the newest car in town. My book will be written through the lens of a first-generation wealth builder."

Cause-based Communications

For people and the planet

BY CYANNA ROSA

FRIENDS FROM COLLEGE, Eric Cardenas '98 and David Fortson '97 combined their passion and skill into a powerful cause-based marketing and communications agency with a sister company specializing in blockchain technology. As chief executive officer of LOACOM and chief executive officer of LOA Labs, respectively, Cardenas and Fortson work with changemakers to tell their stories, build movements and better the world.

Twin aims of this pair of companies: environmental justice and social entrepreneurship.

Based in Santa Barbara, the duo has worked with many progressive brands and nonprofit foundations from the region. For the California Native Plant Society, Cardenas and Fortson contributed brand development, a communication strategy and audience mapping to uplift 11 native plant species and spread awareness for drought tolerance and species habitats.

In another major project, they developed a public marketing strategy in Hawaii communicating the toxicity of certain ingredients in sunscreen.

The campaign assisted in a statewide policy to ban toxins in sunscreens known to kill coral reefs, according to Fortson, who credits his time at UC Santa Barbara for his "understanding of environmental studies and ecological principles."

Cardenas and Fortson emphasize that their degrees represent their education, but student organizations are the root of their careers.

"We didn't study business economics," Cardenas says. "We studied organizing."

LOACOM

The Friendship Paddle

Every year, a giving group paddleboards across the Channel, raising funds and spirits for friends in need

BY MATT KETTMANN
(WRITER & PADDLER)

THE SEAS WERE HIGH, and the forecast was grim. The Friendship Paddle's mid-September plan to motor across the Santa Barbara Channel, stay the night off of Santa Cruz Island, then paddle back to the harbor the following day with only our arms as engines was in jeopardy.

That's the traditional route for the annual weekend fundraiser, envisioned back in 2003 when a group supported their sick friend by enduring their own challenge of paddling 24 miles across the tumultuous Pacific Ocean. The mission was so inspiring that the group – many of them alumni, including that first honoree – repeated the feat the next year to honor another unwell friend. Then they did it again, and then again, eventually maturing into a 501c3 nonprofit that now raises more than \$200,000 per paddle.

With 2022 marking the 20th anniversary, the stakes were even higher to make the Saturday crossing happen, so the nearly 40 boats and 200 participants agreed to brave the choppy channel, trying not to turn green as waves slammed the sides of our boats.

Miraculously, paradise awaited at Smugglers Cove on the island's eastern edge. From the old olive groves on the nearby hillsides to the craggy peaks of Anacapa Island, we enjoyed warm water and epic views. On Sunday morning, as bagpipes greeted the dawn from a single boat in the water, the ocean swayed little more than a lake, the sun shone bright but softly, and the waters remained pleasant, even in the deepest stretches. These were magical conditions for a human-powered crossing.

This is not the first time such magic has descended upon The Friendship Paddle. Indeed, the forecast is always grim for each year's honoree – a Santa Barbara resident who is staring down a life-threatening illness – and the paddle's end is always joyous, if tearful. The honoree walks taller, floating atop a high tide of genuine love, camaraderie and monetary donations to ease the course ahead. Most go on to outlive the life expectancy that their doctors first predicted, and many are alive and thriving today, even paddling themselves each year.

The 2022 honoree was Chris Potter '98, a Santa Barbara native and renowned plein air painter. Diagnosed with a rare and aggressive form of cancer around his lungs in November 2021, he battled to breathe for weeks, finally achieving an acceptable level of comfort after months of radiation, chemo and immunotherapy.

On the morning of the paddle, Potter was energized as we gathered in the waters just off of Prisoners Harbor. He was surrounded by close friends like me and new friends he'd met only the day before, those dedicated paddlers who participate every year, including some from that inaugural 2003 event.

One such original paddler was Arick Fuller '93 who spoke to the floating crowd about what happens when someone faces a life-threatening diagnosis. "There comes a fork in the road," says Fuller. Down one path is fear, he explains, but down the other is the choice to fight on.

"Chris Potter rode on," exclaims Fuller, prompting all of us to erupt in cheers, splash the seas high into the sky, and start our trip toward the mainland, two dozen miles away. Seven hours later, we'd land on the beach outside the Santa Barbara Yacht Club, where hundreds more took Potter into their arms and welcomed The Friendship Paddle home.



Chris Potter with his daughter before the paddle.

COURTESY PHOTO

“What we discovered on that first paddle is that the power of friendship – with all of your friends and family supporting you – puts wind in your sails.”



‘The power of friendship ...’

Doug McFadden '86 was a 39-year-old father of young kids when he was diagnosed with an inoperable brain tumor in 2003. When his younger brother John McFadden '93 and about 20 friends decided to honor his challenges by embarking on one of their own – crossing the Santa Barbara Channel on paddleboards – they unwittingly created a meaningful, impactful and beloved annual fundraiser.

“What we discovered on that first paddle is that the power of friendship – with all of your friends and family supporting you – puts wind in your sails,” John says. “It really buoys a lot of people through these times. It was a simple idea that just blossomed.”

Today, The Friendship Paddle is also an umbrella for the Keiki Paddle, which began honoring children fighting grave illnesses in 2008. “There are so many moving parts,” says John McFadden, whose other three brothers also graduated from UC Santa Barbara. “We’re so fortunate to have this volunteer crew of board members and boat captains and everyone else.”

Word-of-mouth nominations are quietly vetted, but the honoree is usually someone with a life-threatening illness who has a young family and a connection to Santa Barbara’s coastal culture. “In any given year, there might be a few different people that are deserving,” says current president Chip Blankenhorn. “But we like to focus on one person and put the whole effort of our organization behind them.”

Given his penchant for painting ocean scenes, his deep Santa Barbara roots and his teenage children, Chris Potter was a nearly automatic decision for 2022. The support regime began

in the months prior to the paddle, with a specially crafted lager made in Potter’s honor and sold at multiple breweries and restaurants. The physical work began early as well, with participants practicing their strokes Wednesday mornings off of Miramar Beach.

Potter is just the latest in a line of Gaucho honorees and participants, including Cameron Benson '88 in 2018, Genny Sowers Maxwell '95 in 2017, and Tara (Haaland '95) Ford in 2013. “This has been a very Gaucho type of thing,” says Fuller. “There’s a lot of goodness around everyone. A friend in need is helped; that’s the bottom line at UCSB.”

Despite a brief shark sighting on Sunday, which prompted some hustling out of the water for a short spell, the 2022 paddle proceeded perfectly. Upon hitting the beach, there were tears, but whether they came from elation, exhaustion, sadness or hope – or a bit of each – was hard to tell.

“Cancer is such a lonely disease,” Potter tells me later, echoing what he said to supporters after the paddle. “You’re by yourself when you wake up in the middle of the night. I think about death every day, and I didn’t have to on those days. I got to think about life instead. It was a vacation from cancer for me. As much as it brings it to the surface, it also made it more manageable because I had 150 people supporting me. I got a huge boost of positivity.”



Bren school alumna Heather Allen at the 2022 Friendship Paddle.

PHOTO BY NICK BOBROFF

Plastic Pollution Opponent

BY CYANNA ROSA

Inspired by her mom's commitment to recycling, even as a little kid, Jennie Romer '00 knew caring for the environment was a top priority. Romer went on to become a triple major – environmental studies, zoology and Black studies – at UC Santa Barbara before going to law school.

In 2010, she founded PlasticBagLaws.org, a campaign resource for limiting the use of plastic bags. Nine years later, Romer became the legal associate at the Surfrider Foundation in New York. With her extensive background in environmental studies and public policy, she led Surfrider's plastic pollution initiative, helping to reduce single-use plastic bags and foodware from winding up on the coastline.

"At the Surfrider Foundation, I was the point person for plastic pollution reduction legislation," Romer says. "Surfrider was a leader on bills at the state and local level for almost a decade, but during my tenure, federal plastic legislation really got rolling as well."



Jennie Romer '00

Now an appointee of the Biden-Harris Administration, Romer is a key figure at the Environmental Protection Agency (EPA). She serves as a deputy assistant administrator for pollution prevention in the EPA Office of Chemical Safety and Pollution Prevention.

"In December 2020, I received an email from the Biden-Harris transition team asking whether I was interested in potentially being appointed to the administration," Romer says. "I felt so honored and I almost didn't believe it was real. It turned out to be very real and almost a year later I was sworn in. Now I'm commuting back and forth between Washington, D.C., and New York City. I feel so lucky to get to work on so many exciting projects, including implementing part of the bipartisan infrastructure law that addresses pollution prevention and sustainable procurement."

Championing Filipino Voices

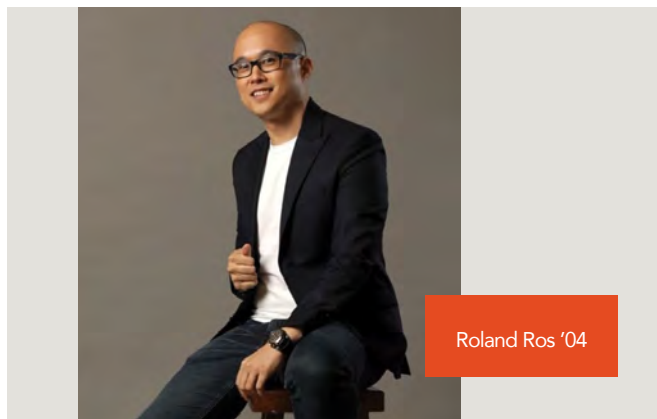
BY CYANNA ROSA

When a trip to the Philippines imbued Roland Ros '04 with a sense of urgency to connect with other Filipinos, a livestreaming app built for Gen Z and millennial Filipinos was born.

Ros founded Kumu with three other Filipino tech entrepreneurs based in the United States. Kumu's online platform, including social TV, virtual gifts and live commerce, has registered over 6 million users since launching in 2018.

As an Asian American studies major at UC Santa Barbara, Ros was a member of Kapatirang Pilipino, a Filipinx-interest organization promoting academic excellence and cultural awareness.

While studying abroad in the Philippines, he met his mentor, the late freedom fighter Susan Quimpo. Quimpo taught Ros about the psychological toll of martial law and how families had been exposed to toxic waste from the Clark Air Force Base.



Roland Ros '04

"This experience forced me to confront the hyphen that defined what it meant to be both Filipino and American," Ros says, noting Quimbo is the "spiritual mother of Kumu," for her recognition of Ros's desire to explore his connection to the Filipino community.

Ros's company helps Filipinos to connect, whether they are living in the Philippines or in the global diaspora. The impact has been notable. Last year, Ros and his Kumu co-founder Rexy Dorado were named Esquire's creators of the year for their Filipino-made live streaming platform.

NOTEWORTHY

Gauchos Making Noise ...

BY VERONICA TORRES

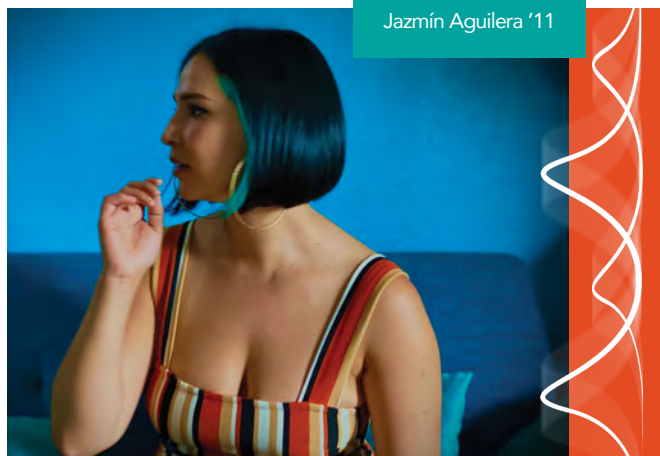
In books

Linda Moore '69 published her debut novel, "Attribution" (She Writes Press, 2022), infusing her passion for art history and Madrid's Prado Museum to the story of a contemporary woman's journey to understand the past and unlock her future. **Ellen Pall '74**, author and frequent contributor to The New Yorker, The New York Times and The New York Review of Books, has published her 13th novel, "Must Read Well" (Bancroft, 2022), a psychological thriller narrated by a millennial graduate student. **David E. Guggenheim '89** has published "The Remarkable Reefs of Cuba: Hopeful Stories from the Ocean Doctor" (Prometheus, 2022). Following more than two decades of his work in Cuba, the book reveals lessons that could help save coral reefs around the world. **Victoria Kastner '89**, Hearst Castle's official historian, has written several books on the estate and its storied inhabitants. Her most recent, "Julia Morgan: An Intimate Biography of the Trailblazing Architect" (Chronicle Books, 2022), focuses on the woman who visualized and built the mansion. **Robert M Geraci, Ph.D. '05** has published his fourth book, "Futures of Artificial Intelligence: Perspectives from India and the United States" (Oxford University Press, 2022), based on research conducted over the course of two Fulbright-Nehru research awards.

In law

Genna Promnick '12 joined Downey Brand as an associate attorney practicing family law. She previously served several years as a deputy public defender in Northern California, working for the Solano County Alternate Public Defender's Office and, most recently, for Placer County's Public Defender's Office. During her tenure as a public defender, she litigated numerous misdemeanors and felonies, including DUIs, domestic violence actions and juvenile cases. **Candace R. DesBaillets '07** has joined Fox Rothschild LLP in Seattle as an associate in the Labor & Employment Department. DesBaillets defends employers in individual and class action litigation, including against claims involving discrimination, disability accommodations, harassment, retaliation, and wage and hour violations.

In media



Jazmín Aguilera '11 is head of audio at the Los Angeles Times. Previously, she hosted and produced "The Cut" at New York Magazine, and developed and produced podcasts for Vogue and Pitchfork magazines as interim executive and senior producer at Conde Nast. She also worked at the New York Times, making episodes for "The Daily," and at "Snap Judgment," as a producer. She is a two-time Third Coast Audio Festival competition winner and an International Women's Media Fund Grant winner, and she has earned top rankings for her podcast episodes from IndieWire and Spotify. Gevirtz School alumni **Levi C. Maaia '18** (director and producer) and **Stephanie Couch '11** (executive producer) took home awards in four categories at the Los Angeles Independent Film Festival for their film "Pathways to Invention." The film, which explores the tools and traits of successful invention and entrepreneurship, features Lemelson-MIT Student Prize-winning invention teams in seven cities across the U.S. and narrative from David Moinina Sengeh, education minister and chief innovation officer for Sierra Leone's directorate of science, technology and innovation.

QUIZ

1: C) Shuji Nakamura; 2: B) Nanofabrication Facility, Electrical and Computer Engineering; 3: B) Hawkins National Laboratory; 4: A) \$241.5 million; 5: D) All of the above

SOCIAL SNIPPETS

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#ProfsAtThePub

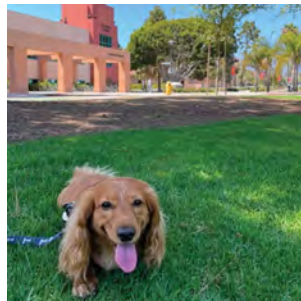
We were so thrilled to be back in person yesterday for Profs at the Pub! Thank you for coming out and enjoying Dr. Dan Conroy-Beam's discussion. We learned that computer simulations shed light on how people choose their romantic partners and how these models can help people form happier relationships.



#UCSBForever #UCSBAlumni

A UCSB alumni reunion made its way to this group of friends! Thank you to @angie650 for sharing these moments with us!

Share your images using our hashtags or DM us for a chance to be featured!



#Dog #GauchoPets

A nice walk around campus this summer! @ramsaythedoxie had a great time exploring the university. Thank you Ortensia '13 for these lovely shots!



#GauchosGiveBack #DayOfService

We are grateful to those who participated this year, bringing together the UCSB community through acts of service. From beach clean-ups to meal preparation, we showed our communities how Gauchos give back!



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How's that for international reach?



Six graduate students, three faculty members and one staff member received Fulbright Awards from the U.S. Department of State and the Fulbright Foreign Scholarship Board to conduct research and/or teach abroad in the 2022-2023 academic year. The highly competitive fellowship is designed to increase mutual understanding between the people of the U.S. and the people of other countries — and Gauchos feature regularly in their ranks.

Professor Paul Amar
Global Studies

**Establishing an
Innovative Program for
Interdisciplinary Global
Studies in Brazil**

(Brazil)

Professor Paul Leonardi
Technology Mangement

**Ethics in Artificial Intelligence
and its Effect on Organizations**
(Austria)

Felicity Stone-Richards
Political Science

**The Search for
Acknowledgment: Anti-Racist
and Pro-Immigration Praxis
in Japan**
(Japan)

Sabra Harris
East Asian Language and
Cultural Studies

**Emergent
Indigeneities
within Public-
Facing Ainu
Performance**
(Japan)

Clara Bailey, Chemistry and Biochemistry
**Engineered Microbiomes for
Soil Pollutant Remediation**
(Switzerland)

**Regional Advisor
Megan Pankratz**
Education Abroad Program

**International
Education
Administrators
Program**
(Korea)

Jackson Stephenson
Religious Studies

**The Afterlife of
Indian Esoteric
Buddhist Poetry**
(India)

Kira Weiss
Music

**A Contested
Symbol with a
Dynamic Voice: The
Cello and Egyptian
Cultural Policy**
(Egypt)

Jo Palazuelos-Krukowski
Theater and Dance

**Spectral Frequencies:
Recovering the Lost
History of Australian
Horror Radio**
(Australia)



GOOD WORKS

A Community of Grace

Grace Fisher '22 brings music and art to young people with disabilities

BY SHELLY LEACHMAN

You're struck first by her smile, with the warmth of three suns. You're awed by her spirit; surely it could hold up the sky. You're humbled by her perspective, which quickly changes yours.

It's not that you don't see her wheelchair – it's that you don't see it as a limitation. And why should you? She doesn't.

This is Grace Fisher, and extraordinary isn't quite the word.

"We're all dealing with something," she says. "My disability is something very physical – you can see it – but there are so many things out there that you can't see. I think that for anyone facing any type of challenge, our only limitation will be in our imagination.

"I have been given so many gifts, in spite of this happening," adds Fisher, a College of Creative Studies music composition grad. "I don't want that to sound overly positive, but it's really the truth. My family, my community – I get my strength from the people around me."

Fisher grew up in Santa Barbara excelling in music. Paralyzed from the neck down since the age of 17, she was struck with a rare and acute neurological disease just months away from finishing high school. So instead of moving to Boston to attend Berklee School of Music – she'd auditioned before

she got sick – she spent months in a Colorado rehabilitation hospital. Her body didn't respond the way she wanted, but her creative mind came alive in new ways thanks to music therapy and adaptive art.

Fisher left Colorado with a wheelchair, yes, but also with the ability to play piano and paint using her mouth. She got back to Santa Barbara with a new passion for composing music, and with a wish: to help other children with disabilities through art and music. She's been doing so since 2016 through her Grace Fisher Foundation.

"They're just as deserving as anyone else to have music and art in their lives," Fisher says. "Arts in general are a great barrier breaker. It doesn't matter what you 'can' and 'can't' do. You're creating something and there is pleasure in that for everyone."

Dance classes, drum circles, social programs. The impending opening of a dedicated storefront and program space at La Cumbre Plaza. A major fundraising concert – her fifth annual – upcoming at the Granada Theatre in Santa Barbara. Fisher's foundation has a lot going on, with a lot more to come.

"There are so many more people I feel like I can touch through my foundation," Fisher says. "I also am committed to normalizing the whole idea of disability. We all learn differently, move differently, communicate differently. Different isn't any worse, it's just different. The more we can expose the typical population to disability, I think it's going to make the world a much more inclusive space for everyone."

This is Grace Fisher, and calling her extraordinary, while absolutely true, doesn't reflect the many ways in which she is like most twentysomethings and new college graduates: excited about her future, full of ideas, energy and optimism.



"I'm never going to give up on the idea that I might walk again, that there could be a cure someday, but I'm not going to let that affect my life now," she says. "I have to do the best with what I have today, and there's still so much I can do."

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Alumni



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