DISCOVERIES

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UC San Diego
HEALTH SCIENCES

DISCOVERIES

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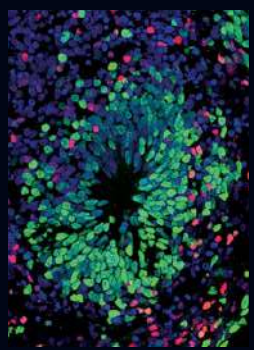
UC San Diego Health Sciences comprises the region's only academic health system, one of the nation's top research intensive schools of medicine, the Herbert Wertheim School of Public Health and Human Longevity Science, the Skaggs School of Pharmacy and Pharmaceutical Sciences and numerous institutes and centers.



ON THE COVER:
Discoveries That Power Our Scientific Community
The cover art represents a human brain organoid derived from pluripotent stem cells in the lab of Alysson Muotri, PhD.

The original image *(shown above)* has been altered on the cover by Artificial Intelligence (AI) software and shows the center of the organoid, revealing a ventricle surrounded by neural progenitor cells (green) that migrate from inside to outside to form the cortex. These cells will mature into cortical neurons (red). The blue represents the nuclei of all cell types.

Researchers at UC San Diego are able to recreate brain cortical organoids thanks to a protocol released by Muotri and colleagues in 2024. The brain replicas have already traveled to the International Space Station, where their activity was studied under conditions of microgravity.

Muotri is a professor at UC San Diego School of Medicine and director of the Integrated Space Stem Cell Orbital Research Center at the university's Sanford Stem Cell Institute.

Over the past 10 years, UC San Diego Health Sciences has reimagined what it means to be a truly great public asset that works to transform the world every day. We collaborate with partners both inside and outside the university and our health system to uphold our responsibility as one of the nation's preeminent land-grant institutions.

We take pride in our connection to community.

In the bustling heart of the UC San Diego Health Sciences enterprise beats a rhythm of purpose and impact, resonating far beyond our campus and clinic walls.

This rhythm, this purpose that propels us forward, is evident in the students, staff and experts who have partnered to develop Willo, a first-of-its-kind app for our UC San Diego community — an app designed *by* students *for* students to better access health and well-being resources.

It is alive in the alumni and faculty who dedicate themselves to advocating for diversity and equity in Science, Technology, Engineering, Math and Medicine (STEMM) education on Capitol Hill, as well as those researchers working closer to campus by developing a unique Living Lab, a partnership with Belmont Village to embed science in a senior living community.

It is driven by our priority of providing exceptional experiences to the patients we care for in all of our hospitals and clinics and by the goal of delivering hands-only CPR training to 1 million San Diegans via a partnership between the UC San Diego Herbert Wertheim School of Public Health and Human Longevity Science and the County of San Diego Emergency Medical Services.

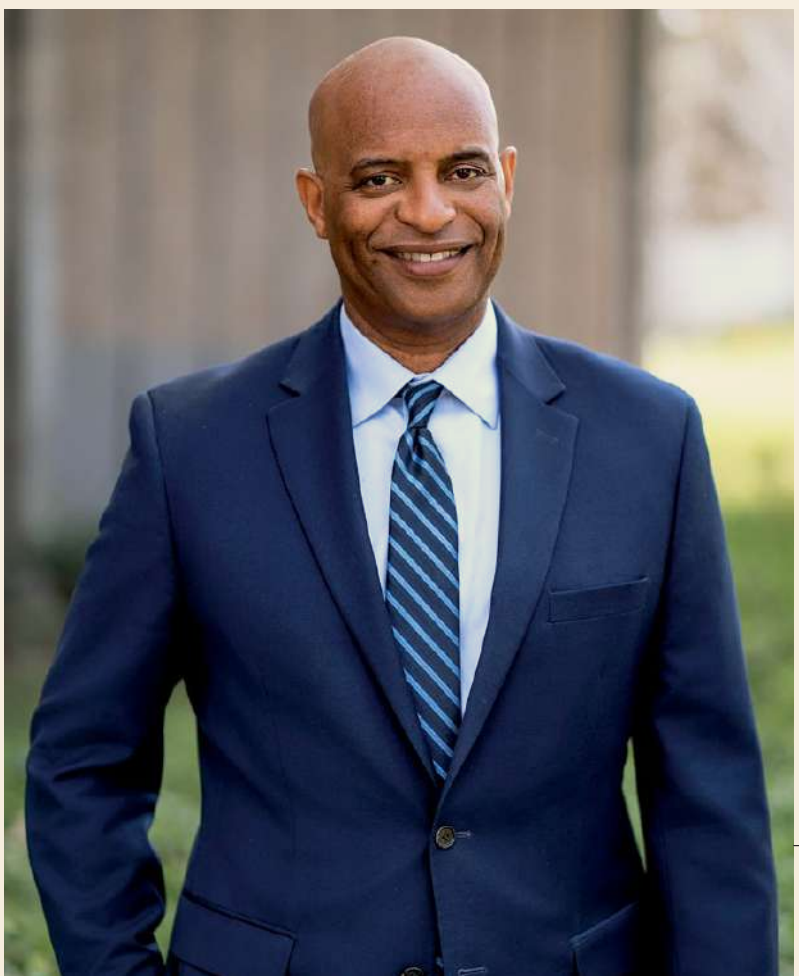
We highlight these initiatives and many more in this issue of *Discoveries* magazine, which explores our "Connection to Community" and the myriad innovations, discoveries and partnerships and collective spirit that define the health sciences' profound impact on the world.

The community we serve includes our internal community — our faculty, staff, students and clinicians — who must thrive in order to advance and fulfill their roles in our tripartite mission of education, research and clinical care.

Beyond our campus, we represent the science of health in San Diego, a unique region of varying topographies — deserts, mountains, coasts and mesas — and one bordered by another nation. San Diego County is the second-most populous county in California and the fifth-most populous in the U.S.

We work with and within this large and diverse regional community to understand the most pressing health needs and drive the expansive growth and discoveries that improve health for individuals and populations.

Time and time again, we witness how academic and clinical excellence with our various communities translates into tangible benefits, transforming ideas into actions that make a lasting difference.



Sincerely,

JOHN M. CARETHERS, MD
Vice Chancellor for Health Sciences
University of California San Diego

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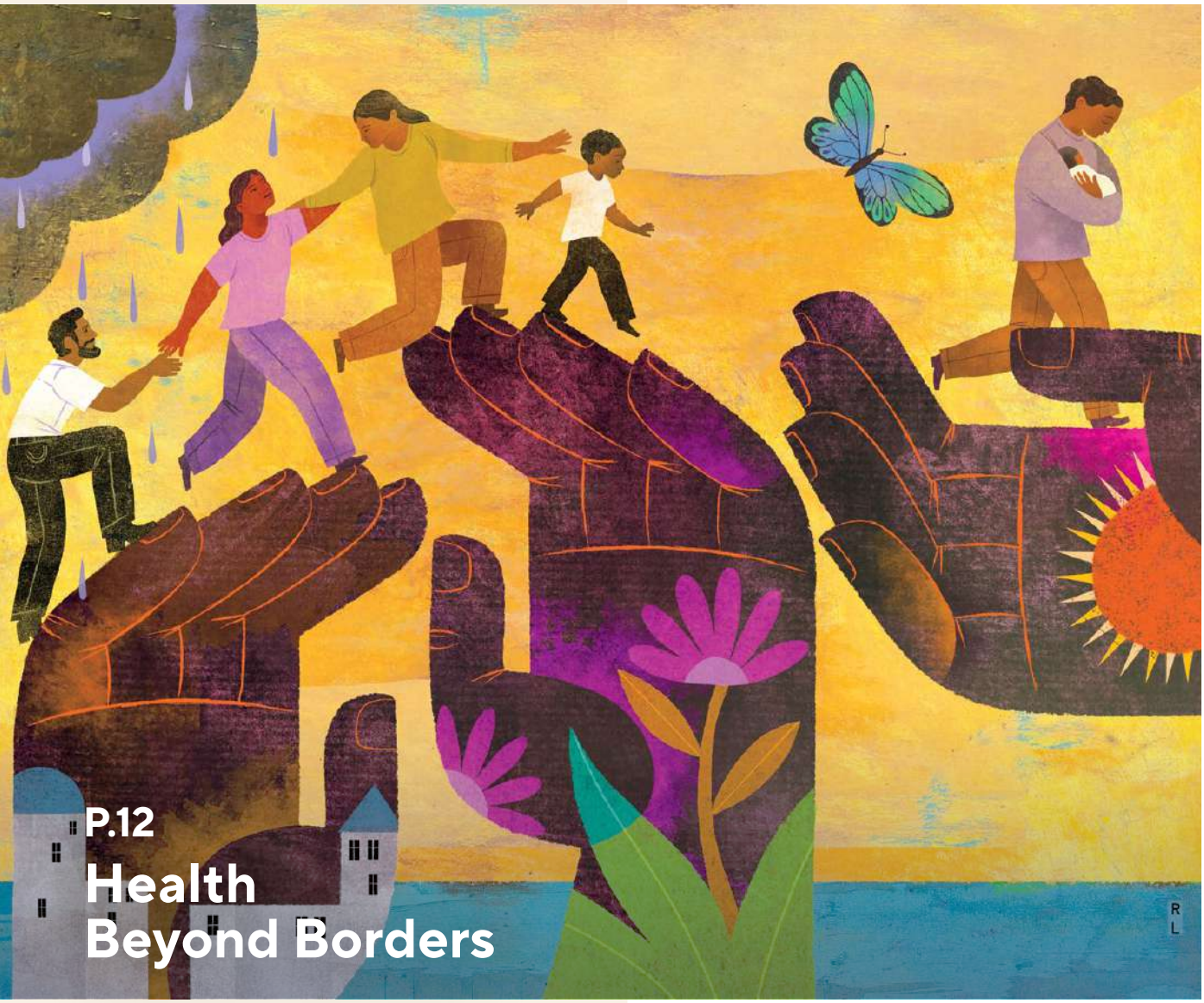

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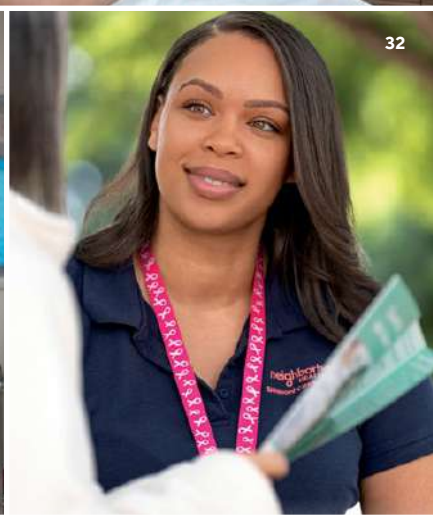


COMMUNITY OF **GIVING**

Philanthropic support is helping improve health outcomes and advance medical discoveries to benefit people near and far.

BY JADE GRIFFIN

WITH THE GENEROSITY of donors and community friends, UC San Diego Health Sciences is at the forefront of providing world-class health care for patients in addition to sparking medical research discoveries that transform lives worldwide.

Private support drives novel research and health care to benefit all.

Honoring Joan Jacobs

In 2024, UC San Diego lost an incredible supporter and friend, JOAN JACOBS. She left a legacy that has a vast, positive impact on the campus, region and around the world. With her husband, IRWIN JACOBS, Joan received the prestigious Chancellor's Medal in 2010 and the inaugural UC San Diego Lifetime Legacy Award in 2020 for their incredible support of the university.

Joan and Irwin Jacobs donated $100 million to establish the Jacobs Medical Center at UC San Diego Health, which opened in 2016. It was there that Joan also established the Joan Klein Jacobs Healing Arts Collection to introduce art and healing throughout the facility.

Advancing the facility even further, Joan and Irwin Jacobs recently donated $22 million for the Center for Health Innovation at UC San Diego Health. The patient care "mission control center" within Jacobs Medical Center serves as a hyper-connected hub to monitor patient health and safety with the goal of developing AI algorithms and models that improve personalized treatment, health equity and patient experience. The couple also established the Jacobs Retina Center at Shiley Eye Institute to drive research into solutions for retina disorders, which affect patients of all ages.

In honor of Joan's memory, Irwin Jacobs recently designated $6 million to establish three endowed chairs in Health Sciences, including the Joan Klein Jacobs Endowed Chair in Surgery, the Joan Klein Jacobs Endowed Chair in Cardiology and the Joan Klein Jacobs Endowed Chair in Neurology.

PICTURED ABOVE: Joan Jacobs, pictured at the Topping Out ceremony for Jacobs Medical Center at UC San Diego Health, which opened in 2016.

Photo by Melissa Jacobs

Photo by Erik Jepsen

Photo by Erik Jepsen

PICTURED ABOVE: From left, Eric Adler, MD, Steven M. Strauss, Lise N. Wilson, Chancellor Pradeep K. Khosla, and Michael M. Madani, MD, at the inaugural Cardiomyopathy Precision Medicine Symposium in May 2024.

PICTURED LEFT: Laurie McGrath, president of the McGrath Family Foundation, signs a beam at the Topping Out ceremony for the new McGrath Family Foundation Outpatient Pavilion in 2023.

McGrath Outpatient Pavilion

The Hillcrest Medical Campus at UC San Diego Health will soon be home to the McGrath Outpatient Pavilion, thanks to a $25 million gift from the McGrath Family Foundation.

Slated to open in summer of 2025, the six-floor, 250,000-square-foot McGrath Outpatient Pavilion will house specialty clinical programs, including oncology, neurosurgery, urology, ear, nose and throat, orthopedics and other specialties, as well as outpatient surgery operating rooms, endoscopy procedure rooms, advanced imaging, infusion and radiation oncology.

"We value the outstanding medical services that UC San Diego provides to the community," said **LAURIE MCGRATH**, president of the McGrath Family Foundation. "We are very excited to be a part of the revitalization of the UC San Diego Medical Center in Hillcrest, which we know will benefit patients and their families throughout the region."

A Match for Cardiomyopathy

Hypertrophic cardiomyopathy is characterized by a thickening of the muscles in the heart and can disrupt the heart's electrical rhythm, causing sudden death. Often undiagnosed, it is estimated that as many as 1 in 200 people in the U.S. have the disease.

With a personal connection to cardiomyopathy, **STEVEN M. STRAUSS** and **LISE N. WILSON** established the region's first dedicated center for the condition, the Steven M. Strauss and Lise N. Wilson Cardiomyopathy Center. The couple donated $3.25 million for the center in 2021 and created a match to raise an additional $1.75 million — which was successfully met in late 2023 — for a total of $5 million for the center.

The center focuses on finding better ways to diagnose and treat cardiomyopathy, led by **ERIC ADLER, MD**, professor of medicine, director of the Strauss Wilson Cardiomyopathy Center and the Czarina and Humberto S. Lopez Chancellor's Endowed Chair in Cardiology at UC San Diego School of Medicine, and section head of heart failure at UC San Diego Health.

Giving Babies the Best Start

The Human Milk Institute (HMI) at UC San Diego is on the forefront of global research dedicated to better understanding the nature, biology and public health implications of breastfeeding and human milk.

A $1 million gift established an endowment to support the annual HMI symposium, which brings together some of the world's leading breastfeeding and human milk experts for knowledge exchange, strategic planning and visioning.

In recognition of the gift, the annual event has been named the Kohlberg Johnson Family Human Milk Institute Symposium. The gift will provide funding, in perpetuity, to help cover costs related to the symposium and to ensure that registration fees remain low and accessible for all those who wish to attend, including interested individuals from the community. ●

Scan here to explore giving opportunities that fuel discovery across UC San Diego Health Sciences.

FROM BASKETBALL CHAMPION TO SURGEON & LEADER

As the new director of the region's only NCI-designated Comprehensive Cancer Center, Diane Simeone, MD, has a clear vision for the future of cancer treatment.

BY MICHELLE BRUBAKER

DIANE SIMEONE, MD, credits her fascination with human biology and dedication as a student athlete with instilling in her a strong sense of curiosity, leadership skills and a set of high standards, which have all punctuated her career path.

The college basketball champion initially studied neuroscience but was later drawn to becoming a physician. Through medical school, Simeone studied pancreatic cancer — one of the most fatal cancers. Through this experience, she learned the true benefits of groundbreaking research and high-quality patient care.

Diane Simeone, MD, director of Moores Cancer Center at UC San Diego, is one of seven female directors among the 57 NCI-designated Comprehensive Cancer Centers in the nation.

Her robust national and international experience as a cancer surgeon and leader led to her current role that, she says, fills her with pride every day. In April 2024, Simeone was named director of Moores Cancer Center at UC San Diego Health and pancreatic surgeon scientist in the Division of Surgical Oncology in the Department of Surgery at UC San Diego School of Medicine.

Simeone is one of seven female directors among the 57 National Cancer Institute (NCI)-designated Comprehensive Cancer Centers in the nation and the first female director of Moores Cancer Center.

In this Q&A, she shares her vision to fight cancer from every angle, including early detection, the development of novel therapeutics and ensuring everyone has access to clinical trials.

Q. What inspired you to go into medicine?

I grew up in a tightly knit family in the seaside town of North Kingstown, Rhode Island, with four other siblings. My father was the chair of economics at Providence College, and my mom was initially a homemaker but later went back to get her degree as a nutritionist. Education was always a priority in our family.

I wanted to pursue a career in medicine from an early age. During adolescence, I loved biology and sports. I helped lead my high school basketball team to winning the state championship and was later inducted into the Rhode Island Heritage Hall of Fame. Being an active participant in sports was important for learning how to work with a team and set high standards for what we wanted to accomplish together.

I continued to play basketball while studying neuroscience at Brown University, but I ultimately knew I wanted to become a physician. Being a doctor is a wonderful marriage of understanding how things work and advancing new treatments and approaches to help people get better.

As a young, energetic physician, I decided to put my focus on studying pancreatic cancer because I learned quickly it needs more attention and investment, and I felt I could make a difference. Pancreatic cancer tends to spread to other organs early — usually before the patient even knows they have cancer. I witnessed how most patients have advanced disease at the time of diagnosis, and the number of patients we could help surgically was low. Early detection is critical.

Photo by Kyle Dykes

Moores Cancer Center is the region's only NCI-designated Comprehensive Cancer Center. It is among the top 4% of approximately 1,500 cancer centers in the U.S.

When I was at New York University [serving as director of the Pancreatic Cancer Center and associate director of translational research at Perlmutter Cancer Center], I founded PRECEDE, the Pancreatic Cancer Early Detection Consortium. The international project aims for a 50% survival rate in the next 10 years through early detection. The effort is thriving, and I expect the learnings from the study will be transformational for the field.

Q. What are your goals as the director of Moores Cancer Center?

I am proud that my career has led me to be the director of Moores Cancer Center at UC San Diego Health. The opportunity to be able to help guide clinical and scientific innovation, increase access to early therapeutics through clinical trials, and train the next generation of clinicians and researchers is a lifetime opportunity.

Moores Cancer Center is a beacon of hope to communities locally and nationally. I am always thinking about how to continue our legacy of exceeding standards for lifesaving, highly specialized care and supporting our patients and their loved ones through their most difficult life challenges.

Our cancer center is among the top 4% of approximately 1,500 cancer centers in the U.S. Patients have access to physicians who provide personalized care and are setting treatment standards nationwide for more than 200 types of cancer.

We are expanding our clinical trial operations to provide faster and better access at multiple sites across our community. We are bringing together physicians and researchers from not only across our system but also from across the nation to work collaboratively to reach better outcomes in a unique and rich scientific environment.

"Innovation is central to all we do. What sets us apart in the region is that we are involved in the design and execution of leading-edge clinical trials that bring promising new treatments directly to our patients."

Diane Simeone, MD, director of Moores Cancer Center at UC San Diego Health

Our cancer services are repeatedly ranked in the top 50 in the nation. My goal is to be in the top 10. We have so many brilliant researchers making discoveries in the lab and talented clinicians delivering state-of-the-art cancer care for our patients. We want to build upon these strengths to treat cancer in the most novel and effective ways.

Q. What excites you about the future of Moores Cancer Center?

I am collaborating with our academic and clinical leaders to rise to the next level of scientific research, education and clinical programs.

Innovation is central to all we do. What sets us apart in the region is that we are involved in the design and execution of leading-edge clinical trials that bring promising new treatments directly to our patients.

Thanks to John M. Carethers, MD, vice chancellor for UC San Diego Health Sciences, and Patty Maysent, chief executive officer of UC San Diego Health, we are extending our cancer services approach and footprint in the community with clinics throughout San Diego County.

The Hillcrest Medical Campus Redevelopment Project is an extraordinary example that represents a reimagining of how academic medicine can better serve our patients and their families.

The first phase of the project includes the opening of the McGrath Outpatient Pavilion, planned for summer 2025. The six-floor, 250,000-square-foot advanced medical facility will house key clinical programs, addressing the region's growing demand for specialized diagnostic, treatment and surgical services, notably in cancer care.

Through a dedicated team, visionary leadership and expertise, we continue to offer the most advanced care and new offerings that will lead this extraordinary cancer center and institution into a bright future. ●

BETTER VISION **THROUGH AI**

A unique collaboration between electrical engineers and ophthalmologists solves clinical, computational challenges.

BY KATHERINE CONNOR | Photos by Kyle Dykes

FOR THE PAST FIVE YEARS, several University of California San Diego electrical engineering graduate students have spent one day a week at the Joan and Irwin Jacobs Retina Center at Shiley Eye Institute. Jacobs Retina Center is the only freestanding retina research center in the country, working to increase the understanding of retinal diseases, such as macular degeneration and diabetes-related blindness, and to conduct clinical trials to develop better treatments for these diseases. But the students aren't there for treatment, and they're not there to see patients.

Through a unique and long-standing collaboration, the electrical engineers are embedded in Jacobs Retina Center to partner with ophthalmologists to: develop better computer vision, artificial intelligence (AI) and image processing tools to help physicians diagnose patients faster and more accurately; predict which drugs will be most successful for specific patients; and even aid in the process of developing new therapeutic treatments for retinal diseases.

Over the course of five years, the engineers and ophthalmologists have collaborated on 21 papers, publishing advances in both clinical and engineering journals.

"We started out with the questions of whether we could help ophthalmologists align images of the retina and whether AI can actually help doctors be faster and more accurate with their detection of disease," said **TRUONG NGUYEN**, professor of electrical and computer engineering at the Jacobs School of Engineering at UC San Diego. "And we have done that. In this collaboration, it has been very critical to have both the expertise on the engineering side, with machine learning, image processing and so on, and the expertise from the clinical side. We have been very successful in terms of getting results and have made a big, broad impact."

The graduate students in Nguyen's lab partnered with **WILLIAM FREEMAN, MD**, Distinguished Professor and vice chair of the Viterbi Family Department of Ophthalmology at UC San Diego School of Medicine and director of Jacobs Retina Center at Shiley Eye Institute. Freeman and Nguyen add that such a longstanding and impactful partnership, benefitting both fields of research, is extremely unique.

"It's exceptionally rare to have weekly discussions where engineers actively engage with patient care, making it easier to understand their work and needs," said Freeman. "Our collaborations aren't just one-offs; even after someone may work with us for two to three years and earns their PhD, the ongoing connection is unique. This sustained effort, bridging medicine and engineering across campus, isn't just about claiming that we use AI — it's a dedicated approach to tackling practical health care challenges through innovation."

PICTURED RIGHT: Engineering students like An Le *(left)* and Bo Wen *(center)* work with Professor Truong Nguyen *(right)* to develop AI tools that enhance the expertise and decision making of ophthalmologists.

PICTURED BELOW: Neurobiology student Sarah Shacterman volunteers to have her retina scanned.

A Speedier Diagnosis

While this collaboration has yielded nearly two dozen scientific publications to date, with more in the pipeline, there are several particularly noteworthy examples of this collaborative research leading to better outcomes for patients. Most recently, the joint team developed an AI tool that was able to predict whether a patient had age-related macular degeneration just by looking at optical coherence tomography (OCT) angiography images of a patient's blood vessels in their eye. These images are noninvasive and taken in several minutes during a standard clinical visit. The AI tool allows ophthalmologists to glean the same information from photos that they would previously have needed to perform a biopsy to assess. And it outperformed human experts with 80% accuracy based on images alone.

Not only was the tool able to help doctors diagnose patients faster and more accurately, but it could also be used to develop better drugs to treat macular degeneration.

In another paper, the team devised a way to synthesize multiple images from different time points to more accurately check if there has been growth in the size of blood vessel damage or a tumor, for example.

"When you're looking at retinal diseases in the retinal periphery, or the outer edges, they are difficult to see," said Freeman. "To track changes over time, typically, you would compare images from the previous and current years to see if it has grown past a specific point, like a blood vessel or marker."

The engineers developed a method to overlap previous images with the current image of a patient's eye so that it's immediately evident whether the object in question has grown or changed from previous years. The AI method localized the spot in question 37% faster than the traditional side-by-side image comparison, and with a 0% error rate, compared to 18% error rate in a side-by-side comparison by ophthalmologists.

The ophthalmologists and engineers have developed deep learning networks to correct eye motion in 3D retinal imaging, quantitatively evaluate morphological changes in vasculature due to age-related macular degeneration using OCTA angiography, corrected distortions between ultra-widefield and narrow-angle retinal images, and created an AI tool to overlay multimodal images from different optical instruments in patients with retinitis pigmentosa, among many other joint advances.

The clinicians are adamant that these algorithms and models are ultimately just tools and are meant to enhance, not replace, the expertise and ethical decision-making of ophthalmologists.

"When you're looking at retinal diseases in the retinal periphery, or the outer edges, they are difficult to see. To track changes over time, typically, you would compare images from the previous and current years to see if it has grown past a specific point, like a blood vessel or marker."

William Freeman, MD, professor and vice chair of the Viterbi Family Department of Ophthalmology

Engineering for the Public Good

BO WEN, an electrical engineering graduate student who is collaborating on these ophthalmology projects, said having such tangible results has been a huge motivator for him and the other electrical engineering students involved.

"If we're not actually helping people, then why are we doing this?" Wen said. "If we are only here to get some papers published, that's too superficial. We want to have our work make an impact in disease diagnosis and treatment."

Nguyen encouraged other faculty and students at UC San Diego to invest the time to develop collaborations across campus. With nearly 4,000 faculty members working on leading-edge research, there are endless opportunities to apply expertise in a new way.

"The real power of this collaboration is that we understand our expertise, we understand our contributions, and we regularly meet with one another to see how we can both leverage that expertise," said Nguyen. "There are many opportunities for engineers to branch out and really serve and make an impact on real problems — that's what I love the most about this." ●

VISIONARY RESEARCH AND CARE

UC San Diego's Vision Research and Patient Care are Coming Together to Cure Blindness

BY JADE GRIFFIN

UC San Diego is a place where patients come from around the globe for world-class care and research to address debilitating eye diseases. Thanks to philanthropic support from generous donors, including DARLENE SHILEY, ANDREW J. VITERBI, HANNA AND MARK GLEIBERMAN, and the NIXON VISIONS FOUNDATION, UC San Diego is aiming to broaden its impact in the field even further.

In 2025, UC San Diego will open the highly anticipated Viterbi Family Vision Research Center, a five-story, 100,000-square-foot facility on the La Jolla Campus at UC San Diego Health, made possible with a $50 million gift from Andrew J. Viterbi, PhD. The center (pictured below) will include experimental laboratories, clinical trials in gene and stem cell therapies and administrative spaces, all designed to further the campus' groundbreaking vision research. Vision scientists currently located throughout campus will move to the center upon its completion.

The Viterbi Family Vision Research Center will also house the Hanna and Mark Gleiberman Center for Glaucoma Research, which was funded by a $20 million gift from the Gleibermans.

Thanks to support from the Nixon Visions Foundation, research on macular dystrophy, a retinal condition that progressively diminishes the ability to see clearly and may eventually result in vision loss, will also take place in the new center.

At the groundbreaking of the Viterbi Family Vision Research Center, ROBERT N. WEINREB, MD, chair and Distinguished Professor of Ophthalmology, director of the Shiley Eye Institute and holder of the Morris Gleich, MD, Chair in Glaucoma, commented on the expansion of UC San Diego's vision research, which is spanning beyond walls.

"We are building bridges with other departments across the university, including neuroscience, data science, bioinformatics, engineering, bioengineering, stem cell biology and gene therapy," Weinreb said. "Our dream is the realization of the impossible. We are going to cure blinding eye diseases."

In addition, the Shiley Eye Institute is in the midst of a significant renovation thanks to a $10 million gift from Darlene Shiley. As the demands for ophthalmology services have expanded markedly, the project is creating an additional floor in the Shiley Eye Institute for patient care. The Shiley Eye Institute was established more than three decades ago with foundational support from Darlene and her late husband, Donald.

Rendering by Rudolph and Sletten Inc.

Health Beyond Borders

San Diego's immigrant and refugee populations are among the largest in the country; at UC San Diego, their health is a priority.

BY MILES MARTIN
Illustrations by Rafael López

WHEN NEUROSURGERY resident **ALEXANDER TENORIO, MD,** felt his pager go off in the Trauma Center at UC San Diego Health, the message he read was short but spoke volumes: "30-year-old male. Unstable spinal fracture after border fall."

Five years into his residency at UC San Diego Health, the plight of patients with traumatic brain injuries after falling off of the U.S.–Mexico border wall had become an all-too-familiar part of Tenorio's reality working in a Level 1 Trauma Center less than 30 miles from the border.

Between 2017 and 2019, the height of the border wall was raised from approximately 8–10 feet to as high as 30 in some sections. The consequences of this change for those attempting to cross the wall are harrowing.

In a 2024 study published in the *Journal of the American Medical Association (JAMA)*, Tenorio and other UC San Diego colleagues reported that between 2018 and 2022, half the patients in the Trauma Center at UC San Diego Health who received treatment for traumatic brain injuries after a fall were injured at the border. Patients who fell at the border required more neurological operations, experienced more neurological deficits at discharge and were less likely to be discharged into another health facility or return for follow-up care.

Border falls are just the tip of the iceberg.

IN another study appearing in the *Journal of Travel Medicine*, Tenorio and his colleagues found that the number of deaths due to harsh land conditions along Californian migration routes increased by 760% following the height increase. Another group at UC San Diego reported in *JAMA* that drowning deaths of migrants in the Pacific Ocean off the coast of San Diego increased by 3,200% in the four years after the height increase.

For Tenorio, who grew up in an impoverished community in South Los Angeles and is himself the child of Mexican immigrants, these statistics are more than just a sad reality of his job; they're a decisive call to action.

"I hear the same stories from my patients about why they left as I remember hearing from my neighbors and family at home," he said. "This has gone far beyond a problem just within health systems. It's a humanitarian crisis that needs to be rectified, starting with a comprehensive, integrated data system that can accurately track the injuries that result from migration."

Tenorio has advocated for such a system on the witness stand in congressional hearings and has briefed local and federal legislators on the issue. However, this type of systemic change takes substantial time and political momentum to achieve.

For now, Tenorio remains a fierce advocate for patients and is also committed to diversifying the physician workforce.

"Only 5% of neurosurgeons are Hispanic, which makes it harder to provide care for Hispanic immigrants," he said. "These patients are often hesitant to reach out and trust health care providers, so we need more physicians who look like them and speak their language."

The California Border Health Research Group

WITH ITS CLOSE PROXIMITY to the border, UC San Diego has been committed to addressing disparities faced by immigrants for decades. For example, the Center for U.S./Mexico studies was founded in 1980 to study the social and political relationships between the United States and Mexico. UC San Diego is also home to the U.S. Immigration Policy Center (USIPC), which supports research on a wide range of topics related to immigration, including immigrant health.

The California Border Health Research Group (CBHRG), which includes Tenorio and is contained within the USIPC, is a group of medical, public health and policy experts united in their mission to address challenges faced by people who suffer from injuries or other trauma along the U.S.-Mexico border. While some members of the CBHRG, like Tenorio, are early in their careers, others, like LINDA HILL, MD, MPH, UC San Diego Herbert Wertheim School of Public Health and Human Longevity Science Distinguished Professor, have decades of experience in the field.

LINDA HILL

A Career of Compassion and Service

HILL CAME TO UC San Diego in the early 1980s to complete her residency in preventive medicine. In addition to being a regular research collaborator with Tenorio and other members of the CBHRG, she estimates that about 90% of the patients she sees in her clinical practice with San Diego Family Care are immigrants or refugees, a legal status given to a very small subset of immigrants coming to the U.S.

Hill's work with immigrant and refugee communities also extends beyond San Diego Family Care. From 2004–2020, she served as the medical director for the California Department of Health's Refugee Health Assessment Program, which was operated in collaboration with local resettlement agencies, including Jewish Family Services and Catholic Charities Diocese. At that time, San Diego was the largest receiver of refugees in the nation. Hill and her team completed standardized medical screenings to identify and treat health conditions of immediate concern

upon refugees' arrival. These national standards are recommended by the Centers for Disease Control and Prevention (CDC) and are essential for settling refugees into the community. They include providing initial prenatal care for women and vaccinations for children, as well as screening for anemia, lead exposure, growth and nutrition.

In the late 2010s, Hill was approached by San Diego County to help address a new crisis: a massive influx in asylum seekers crossing the border after changes to immigration policy during the first Trump administration. Unlike refugees, who are protected under international law, asylum-seekers have entered the country but are waiting to be granted legal asylee status. This process can take years, and it is extremely difficult for asylum-seekers to access health care and other services in the meantime.

"Families with children, pregnant women and others were coming in droves and gathering in southern San Ysidro, not knowing where to go or what to do," said Hill. "It quickly became a very urgent situation."

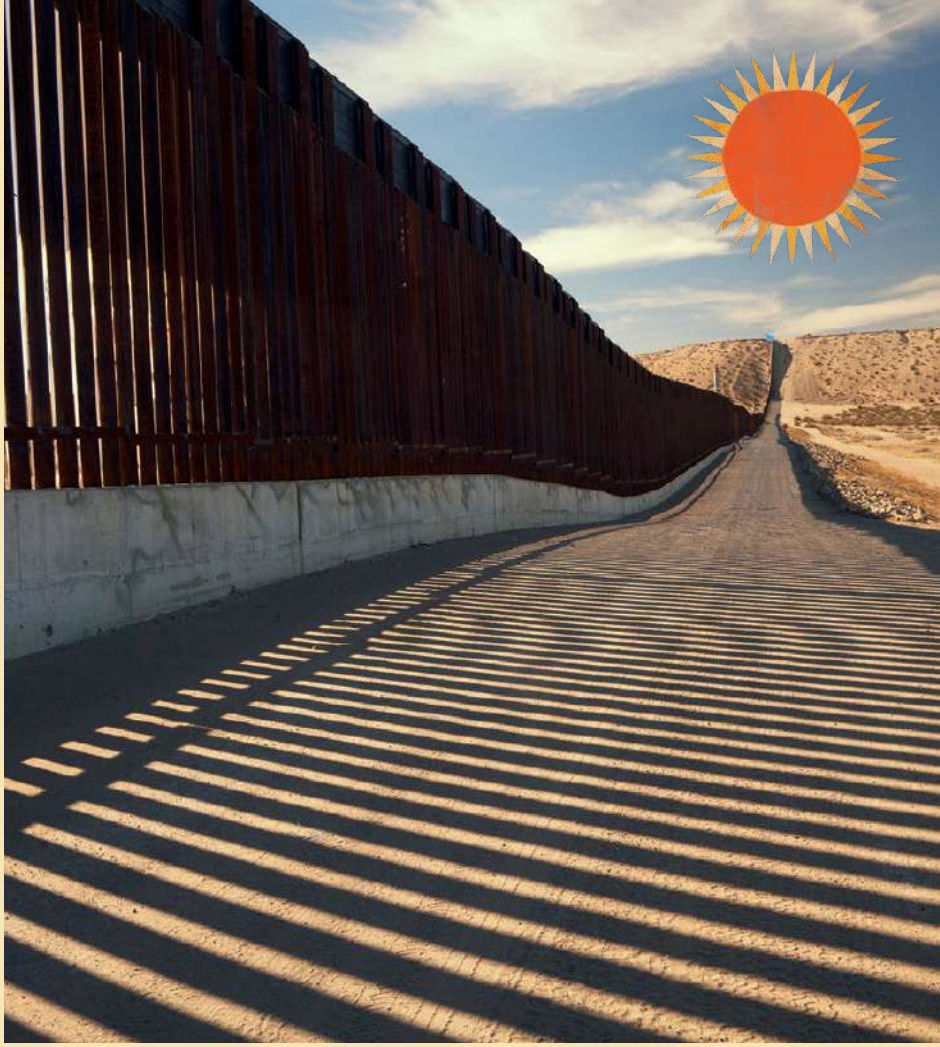
Hill helped establish the UC San Diego Asylum Seeker Medical Screening and Stabilization Program, which, in addition to seasoned clinicians, is also staffed by resident physicians at UC San Diego and other medical schools as well as students in UC San Diego's Global Health Program. The program first conducted health screenings for asylum seekers at a shelter in Imperial Beach, and then later in San Diego.

Hill still conducts screenings there to this day.

"Working with people from different countries has enriched my life in ways I never could have imagined," she said. "Every day is a learning experience, and I've been able to feel like part of the solution to the significant disparities faced by these groups."

"Working with people from different countries has enriched my life in ways I never could have imagined. Every day is a learning experience, and I've been able to feel like part of the solution to the significant disparities faced by these groups."

— Linda Hill, MD, MPH



PICTURED ABOVE: For many immigrants attempting to enter the United States, climbing the U.S.–Mexico border wall is the most feasible route.

FACING PAGE: Alexander Tenorio, MD, has worked extensively to increase awareness of the rise of neurological traumatic injuries at the border.

JANINE YOUNG

Amplifying Voices

WHILE SOME IMMIGRANTS can access care from providers like Tenorio and Hill, others, such as unaccompanied minors, are not as fortunate. Children who are apprehended alone at the border have not had proper access to medical care. They are placed in detention centers immediately upon apprehension or, when space isn't available, forced to wait in open-air encampments until there's room. Once in custody, medical protocols for immigrant children are inconsistently applied and frequently fail to diagnose both physical and mental health conditions.

To address these issues, **JANINE YOUNG, MD**, professor and division chief of Academic General Pediatrics, Newborn Medicine and Developmental-Behavioral Pediatrics at UC San Diego School of Medicine, recently published recommendations in the *American Journal of Public Health* for the federal government to improve the health and safety of unaccompanied immigrant children, including strategies to better diagnose and treat common health conditions and guidelines for how to better support immigrant children upon release to U.S. sponsors. Young is a member of the CBHRG alongside Tenorio and Hill.

"We need to figure out how to take care of patients who are newcomers, especially children, in an evidence-based and trauma-informed way," she said. "No matter who the person is, they're a human being and deserve to be cared for."

In addition to advocating for better access to health care for immigrant children, Young has also spearheaded initiatives to help immigrants of all ages have equitable access to medical interpreters, which she asserts is critical to providing the best care possible.

"It is essential to communicate with patients in their own language, or at least try," said Young, who is fluent in three languages. For widely spoken languages, health systems can bridge the language gaps between doctor and patient with trained medical interpreters. However, for rare languages, an interpreter may not be available.

"I've been in situations where the patient is from Guinea Bissau and speaks Pulaar and I have a 6-year-old interpreting for me because there's nobody else available who speaks that language," said Young.

Young is working with the CDC's National Healthcare Safety Network to develop new hospital system requirements for patients' primary language to be entered into electronic health records, even for rare languages that are often relegated to an "other" category — if language is recorded at all. This would help hospitals plan in advance for patients who require a rare language interpreter. Young also helped create the first abridged language dictionary for hospitals to use in their data collection, which contains hundreds of languages and will be rolled out by electronic health record vendors starting in 2025.

"You can't be competent in every language and every culture," said Young. "But we have plenty of opportunities to make our health care systems more sensitive and supportive."

TALA AL-ROUSAN, MD, MPH

The Displacement and Health Research Center

WHILE THE CBHRG has a local focus due to the proximity of UC San Diego to the U.S.–Mexico border, displaced populations all over the world experience health disparities. The Displacement and Health Research Center, founded and led by **TALA AL-ROUSAN, MD, MPH**, assistant professor at the Herbert Wertheim School of Public Health, seeks to understand the impacts of global displacement on all aspects of human health. The center also focuses on mentoring the next generation of displacement health researchers, with a current cohort of 55 trainees, including undergraduate, medical and public health graduate students.

> "Our work is causing the NIH to rethink how they approach refugee health, and that's a huge win for us. I also love encouraging more researchers to enter the field, which is a great ripple effect as well."
>
> —TALA AL-ROUSAN, MD, MPH

To Al-Rousan, who grew up in a small border town in Jordan, this mission is not just an academic exercise, but a personal imperative.

"We see displacement as a human experience, not something limited to any particular group," she said. "It's also been severely neglected in terms of evidence production."

The role of climate as a driver of displacement and its associated negative health outcomes is an area of particular interest for Al-Rousan and the other researchers at the center, many of whom are immigrants themselves. Climate change exacerbates existing health disparities and also creates new ones, such as injuries and fatalities from extreme weather events and negative effects on psychosocial health and well-being.

To explore these factors, Al-Rousan and her colleagues are using Google Earth data to reveal links between climate hazards and health outcomes for Syrian refugees resettled in San Diego. One of their recent studies identified extreme heat and cold, exposure to dust and exposure to political conflict as drivers of hypertension, as well as other adverse health outcomes such as poor mental health and illness from contaminated water.

"We're showing how with a concerted effort and, equally importantly, adequate funding, we can begin to quantify the direct impact of climate change on the health of those displaced by it," added Al-Rousan.

This call for funding is not just an abstract wish; it's a concrete need demonstrated by the center's research. One of the most impactful studies to come out of the center, according to Al-Rousan, is an analysis, published in *JAMA*, of NIH funding for refugee health research between 2000 and 2020. The researchers found that despite the fact that the U.S. has historically settled more refugees than any other country, only 78 of the 1.7 million grants funded during the study period were for refugee health projects.

Since this study was published, it has been used within NIH to guide new policies and practices to increase the number of refugee health grants awarded, including soliciting this type of research directly in calls for funding.

"Our work is causing the NIH to rethink how they approach refugee health, and that's a huge win for us," said Al-Rousan. "I also love encouraging more researchers to enter the field, which is a great ripple effect as well." ●

The Refugee Health Unit

The Refugee Health Unit (RHU), founded in 2017 and contained within the Center for Community Health at UC San Diego Altman Clinical and Translational Research Institute, is a prime example of supporting immigrant and refugee health through direct community engagement.

"Our communities come here traumatized by experiences in their home countries and then have to learn to navigate a very complex health system," said AMINA SHEIK MOHAMED, MPH, founder and director of the RHU, who is herself a refugee from Somalia. "Our goal is to make this process easier by working with organizations trusted by the community."

The RHU partners directly with local ethnic community-based organizations to promote health and well-being in the community from the inside out. One cornerstone of the RHU's work is the San Diego Refugee Communities Coalition (SDRCC), an alliance of 12 organizations representing diverse ethnic groups from across the world. The RHU acts as a liaison, helping the individual member groups put initiatives into action, including identifying funding opportunities and building long-term capacities to help these organizations become more self-reliant.

"Small nonprofits can't compete with larger organizations when it comes to resources, which has a detrimental effect on what they're able to accomplish," said Sheik Mohamed. "Funders hear us better when we speak together as a collective."

Building on its successes in San Diego, the RHU secured over $20 million in funding from the California Department of Social Services, leveraging federal resources from the Office of Refugee Resettlement. This funding supports the replication of the SDRCC model statewide. Through the Afghan Refugee School Impact (ARSI) and Afghan Youth Mentoring (AYM) programs, RHU oversees the implementation of four regional coalitions across California, engaging 56 ethnic-led community-based organization partners. These coalitions provide culturally responsive academic and social services to improve access to resources and well-being for more than 10,000 Afghan youth, parents and family members. Additionally, RHU has conducted over 370 training sessions, consultations and workshops to support program delivery and enhance the organizational capacity of its partners."We respond to the needs of the community as they emerge, so we're always making sure what we do works for the community we support," added Sheik Mohamed.

The RHU is now looking forward to expanding the scope of their capabilities, which they'll be able to do with the support of an unrestricted $350,000 award given by the James Irvine Foundation to both Mohamed and her colleague, Blanca Meléndrez, MA, executive director of the Center for Community Health. The SDRCC model established through the RHU is already being replicated in three additional regions across the state through the ARSI/AYM program. With this additional funding, they hope to establish a replicable framework for the RHU's activities to further expand their reach.

"The Refugee Health Unit is the result of 30 years of slowly built trust from the community, and it epitomizes the idea that communities possess the inherent power to transform their health outcomes, provided they have the resources and support necessary to do so," said Meléndrez. "What we've done so far is just the beginning of what we're hoping to accomplish."

Photo provided by Amina Sheik Mohamed

By working closely with local ethnic community-based organizations (ECBOs), the Refugee Health Unit is focused on helping refugee communities overcome health inequities. The Refugee Health Unit team is (from left to right) Reem Zubaidi, Segen Zeray, Ruth Tadesse, Amina Sheik Mohamed, Blanca Meléndrez, Reba Meigs, Sarah Vicente and Asmaa Deiranieh.

THE LIVING LAB: RIGHT AT HOME

Science in the community, for the community.

BY MILES MARTIN | Photos by Kyle Dykes

JUST TWO DAYS AFTER moving into Belmont Village Senior Living in La Jolla in early 2024, Ron Safren was given a unique opportunity, one not available in most senior living communities: the chance to participate in innovative research without having to leave home. The research project, evaluating the benefits of a new fall-prevention program that can be delivered remotely, is one of the recent undertakings from researchers at the Living Lab, a one-of-a-kind partnership between Belmont Village and UC San Diego's Sam and Rose Stein Institute for Research on Aging.

The Living Lab is unlike most research labs. There are no petri dishes, microscopes or any of the usual accoutrements usually associated with laboratories. Instead, it is a dedicated studio apartment on the sixth floor of Belmont Village that provides a physical space for UC San Diego researchers to work closely with older adults to develop and test new interventions aimed at improving health, well-being and longevity. Within the Living Lab, the researchers are able to conduct interviews with Belmont residents, complete cognitive/physical/sensory assessments and even collect blood and other biological samples to be analyzed back at the university; the Living Lab is indeed alive.

For Safren and other residents at Belmont Village, the Living Lab provides an outlet for direct participation in academic research, including the chance to have a say in what research is prioritized.

"I have a hip implant because of a fall injury, so the fall-prevention program was something important to me and to a lot of the people who live here," said Safren. "These types of partnerships benefit both sides, and there's also a benefit to society from the research that comes out of it."

A Revolutionary Research Model

The direct and ongoing relationship between research staff and residents cultivated by the Living Lab is unprecedented in a senior living community, according to JAMES ARP, executive director of Belmont's La Jolla location.

"This is a new and revolutionary idea," he said. "In other communities I've worked, researchers would just do their research and leave. There was no ongoing relationship to help the scientists really come to know and learn from older adults, who have so much to offer in terms of the experiences they've had."

This innovative research collaboration, which launched in 2022, is the

As part of a 12-week fall prevention curriculum developed by UC San Diego researchers, residents at Belmont Village complete exercises to improve strength and balance.

PICTURED ABOVE: Resident Ron Safren works with team member Isabel Mancilla in the Living Lab space at Belmont Village.

PICTURED LEFT: UC San Diego's Stein Institute for Research on Aging is led by Executive Director Danielle K. Glorioso *(left)*, Director Alison Moore, MD, MPH *(center)*, and Scientific Director Anthony Molina, PhD *(right)*.

culmination of a longstanding partnership between UC San Diego and Belmont Village. It all started with the successful Raise Your Resilience program, developed at UC San Diego and designed to help older adults develop greater resilience and self-compassion in response to the stressors that come with aging.

"Belmont Village has been an incredible partner for us," said **DANIELLE GLORIOSO**, executive director of the Stein Institute and creator of the Raise Your Resilience program. "For years, we have been looking for ways to work more closely with older adults right where they live, but Belmont helped us make it a reality."

Raise Your Resilience was initially tested with a small group of residents in 2019 at Belmont's locations in Cardiff by the Sea and Sabre Springs. It has since been implemented in senior living communities and other settings across the country, demonstrating one of the key strengths of the Living Lab's approach: the ability to pilot potentially life-changing interventions in a smaller population before implementing them more widely.

"We want our research to be community-driven in every sense of the word," said Stein Institute scientific director **ANTHONY MOLINA, PHD**, who oversees the Living Lab. "Our ultimate goal is for the ideas we test here to impact the broader community of older adults, regardless of where they live."

Ongoing Science

While Raise Your Resilience has long since outgrown the walls of Belmont Village, the Living Lab is currently supporting several newer pilot projects. One example is the Strong Foundations program, a 12-week fall-prevention curriculum developed by UC San Diego associate clinical professor of medicine and primary care physician **RYAN MORAN, MD**, that aims to improve strength, posture and balance in older adults. By working closely with Belmont Village residents and staff, Moran and his team have been able to refine the program and make it more effective. They also have plans to expand access to their program, which, unlike the majority of fall-prevention programs, can be delivered remotely.

"Fall prevention is not a new concept, but our approach is unique," said Moran. "The biggest limitation of fall-prevention programs is that they're not scalable, and this is what we're trying to change. Having the Living Lab to pilot the program has been invaluable, but we also want to make it as accessible to as many people as possible."

Another project at the Living Lab, still in the early phases, is looking at a different challenge facing older adults: cognitive decline. Molina is working closely with **FADEL ZEIDAN, PHD**, professor of anesthesiology and Endowed Professor in Empathy and Compassion Research at UC San Diego Sanford Institute for Empathy and Compassion, to implement a meditation-based intervention designed to improve cognition and stave off age-related cognitive decline.

In addition to measuring the cognitive benefits of meditation through standard tests, the researchers will also use biomarkers in the blood, discovered by Molina's team, to directly quantify how meditation can influence the physiological effects of aging on the brain.

"Your chronological age is relatively distinct from your cells' biological age," said Zeidan. "We know that physical training can alter the biological indicators of aging, and we have converging evidence that mental training should be able to as well."

Expanding the Impact

To further expand the reach of the Living Lab, **ALISON MOORE, MD, MPH**, professor of medicine, Stein Institute director and Larry L. Hillblom chair in geriatric medicine, envisions a future in which the Living Lab model is adapted and reimplemented in other communities, particularly those that may not have access to a facility like Belmont.

One idea to bring this vision to fruition is creating a mobile version of the Living Lab. Currently in the planning phase, this mobile Living Lab could be used to better engage different communities across the county in aging and longevity research, particularly marginalized populations who have been historically underrepresented in clinical research.

"A community partnership has to work for both parties, so if you want to work with a community, one evidence-based approach to facilitate engagement is to go to them," said Moore. "Our partnership with Belmont is really just the beginning in terms of the communities we hope to reach."

In the meantime, the Living Lab will continue to be an active and vital part of the San Diego research ecosystem and an important source of connection with the people most impacted by research on aging: older adults themselves.

"The Living Lab really changes the lives of the residents here, and it's one of the most unique things about this community," added Arp. "We're honored to continue to support the Living Lab as they grow and expand their influence outward." ●

GROWING WITH THE **COMMUNITY**

Driven by UC San Diego Health, the future of health care is expanding today and tomorrow.

BY NELL GLADSON | Photos by Kyle Dykes

AT A TIME OF UNPRECEDENTED demand for primary and specialty care, UC San Diego Health's commitment to serving the community with world-class care has never been stronger. We spoke with CEO Patty Maysent about her 10-year vision for combining academic medicine with accessible community health.

Q. What are some key factors driving the need for growth and expansion for UC San Diego Health?

Population growth, changing health care needs, demand for destination medicine and service line closures at other hospitals make growth at UC San Diego Health imperative for the entire region.

The population of San Diego County has increased by nearly half a million people over the past 20 years. In the next eight years, the number of older adults (65+) living in the county will increase by 80%. A larger senior population that is living longer multiplies demand for more complex and acute care.

The COVID-19 pandemic interrupted or postponed preventive care. Lesser health concerns left untreated over time increase in complexity. Today, there are more seriously ill patients who need the capabilities inherent only in academic medicine. They need synergies that occur at the confluence of disease research, medical training and clinical trials.

This focus on advancing medicine for all has established several destination care programs — most notably in cancer, cardiovascular, neurosurgery and organ transplant. People from around the region and across the world seek our renowned experts to treat serious conditions such as acoustic neuroma, chronic thromboembolic pulmonary hypertension and cancer, to name a few. As our reputation grows, so too does demand.

Community hospitals in and around our region have shuttered vital services such as labor and delivery and behavioral health. The community looks to UC San Diego Health to fill the gap. We provide care to underserved communities and those with inadequate health insurance to advance health equity and fulfill our responsibility as a public institution.

Q. What has UC San Diego Health done recently to expand access to academic medicine in the community?

Our health system has grown 15% annually since 2017. Our clinically integrated network — a group of affiliated health care providers outside our faculty — has grown from 349 members in 2018 to 935 in 2024. More providers seeking affiliation has led to greater access to academic medicine.

We've opened 460,000 square feet of clinic space, including the Koman Outpatient Pavilion in La Jolla and new

PICTURED RIGHT: The McGrath Outpatient Pavillion opens mid-2025, creating the future of health care in central San Diego and beyond.

FACING PAGE: CEO Patty Maysent is leading UC San Diego Health to top 10 national recognition through enhanced quality, safety and patient experience.

primary, specialty, urgent and express care clinics across San Diego, Imperial and Riverside counties.

In 2023, we acquired Alvarado Medical Center near Lake Murray, La Mesa and El Cajon. Now called East Campus Medical Center, our first acute care community hospital added 302 beds — including 30 behavioral health beds, 20 emergency department bays, eight operating rooms, three GI suites and two catheterization labs — to our health system.

Q. When you look ahead to the next 10 years, what will UC San Diego Health's physical and service footprint look like?

We are upgrading and expanding our medical campuses in La Jolla and Hillcrest.

At Hillcrest, the first phase of our comprehensive redevelopment plan is nearly complete. Thanks to a generous gift from the McGrath Family Foundation, the McGrath Outpatient Pavilion is scheduled to open this summer, housing women's health services, outpatient surgery, advanced imaging and greatly expanded cancer care. Co-locating related multidisciplinary care with infusion, radiation oncology and clinical trials in conjunction with the most advanced radiation therapies such as brachytherapy and LINAC creates our first comprehensive cancer center outside of Moores Cancer Center in La Jolla. Those in south and central San Diego will find the care they need in a comfortable space closer to home.

We will soon break ground on a multiuse building, allowing us to relocate existing services and make space for a replacement Hillcrest hospital. This hospital will increase access to core and critical programs, including our Level 1 Trauma Center, Regional Burn Center and Comprehensive Stroke Center, while expanding destination medicine programs.

At La Jolla, plans are underway for a new outpatient pavilion and inpatient tower. These two projects will expand inpatient capacity and meet the growing demand for outpatient cancer care and other specialty procedures and services.

Q. What role will AI play in expanding access to care at UC San Diego Health?

The Joan and Irwin Jacobs Center for Health Innovation, launched in 2021, is already using AI and predictive analytics to improve patient flow and care delivery. Our "Mission Control Center" uses real-time data to manage care resources efficiently. For example, knowing how many patients are being discharged at any given time allows us to admit new patients faster, improving patient flow and enabling us to serve more people. Our goal is to return patients to optimal health as safely and efficiently as possible so they can resume fulfilling lives.

Q. What's the strategy to connect more patients to novel treatments offered at the region's only academic medical system?

Our strategy is to create as many community entry points as possible. In addition to new facilities, such as the 150,000-square-foot Rancho Bernardo care hub opening in 2027, we are expanding our network of affiliated hospitals and providers throughout the region.

In Imperial Valley, UC San Diego Health stepped in to help stabilize El Centro Regional Medical Center after the COVID-19 pandemic. We are now expanding our partnership to include Pioneers Memorial Hospital in Brawley and the Heffernan Healthcare District in Calexico. Managed by UC San Diego Health, this new unified Imperial Valley Healthcare District will provide comprehensive care close to home while offering direct access to our advanced care when needed.

Q. What is your promise to our community about the future of UC San Diego Health?

UC San Diego Health is a vital public asset that serves the regional community. We are committed to improving health outcomes throughout our community, expanding care locations, enhancing patient safety and experience and advancing medicine. Our balanced growth strategy will improve access to world-class care for everyone who needs it. ●

Skaggs School of Pharmacy and Pharmaceutical Sciences Dean Brookie Best, PharmD, discusses the recent sterile saline shortage in the U.S. with Chief Pharmacy Officer Charles E. Daniels, PhD.

NO SHORTAGE **OF SOLUTIONS**

UC San Diego is an international leader in shaping policy and developing a long-term response to the drug shortage crisis.

BY SUSANNE CLARA BARD | Photos by Kyle Dykes

IMAGINE A PATIENT RUSHED to the hospital during a heart attack. While performing CPR, the emergency medical team reaches for a ready-to-use epinephrine pen to restart the heart. But due to a shortage of the lifesaving pens, the provider has to grab a vial of epinephrine instead, remove the cap, swab it with alcohol and draw the medication out with a syringe before injecting it, wasting valuable seconds that could make a difference in the outcome.

The problem extends far beyond epinephrine. On any given day, more than 200 medications from all drug classes are in short supply in the U.S., according to the American Society of Health-System Pharmacists. These include everything from simple antibiotics such as amoxicillin for children's ear infections to the life-saving chemotherapy drug vinblastine, which, in combination with other therapies, can cure Hodgkin's lymphoma.

"Shortages of critical medicines have increased tremendously in the last several years — it's a global crisis," said **BROOKIE BEST, PHARMD**, dean of the Skaggs School of Pharmacy and Pharmaceutical Sciences at UC San Diego. "Drug shortages can damage the health of patients and force clinicians to make gut-wrenching decisions."

In response to the drug shortage crisis, pharmacists throughout UC San Diego Health are working tirelessly to head off shortages by making strategic drug purchases and by formulating alternatives to take care of patients, says Best. Spearheading this effort is **CHARLES E. DANIELS, PHD**, chief pharmacy officer at UC San Diego Health and a clinical professor at the Skaggs School of Pharmacy.

Daniels says the shortage of brand-name drugs like glucagon-like peptide-1 (GLP-1) medications to treat diabetes and obesity have made the news recently. But the majority of drugs in short supply in

the U.S. are actually generics, including sterile saline, a hospital staple used to keep people hydrated.

Also in short supply over the past decade have been the key components of parenteral nutrition, given via IV to premature infants.

"Having to give less than what they need may affect these babies for the rest of their lives, not to mention drastically increasing their costs of health care over their lifetime," said Best.

According to Daniels, one reason for the shortages is that after drugs come off patent, the manufacturing of generic ingredients frequently shifts overseas, which adds complexity to the supply chain. Natural disasters can also destabilize supplies. For example, in fall 2024, Hurricane Helene pummeled the Eastern Seaboard, disabling a major supplier of IV fluids in the U.S. This caused hospitals to conserve supplies and at times delay procedures.

Shaping Policy

In addition to strategically preparing for shortages, UC San Diego has emerged as an international leader in shaping policy to build a more resilient drug supply chain.

"Insufficient financial incentives are the root cause of many drug shortages," according to **INMACULADA HERNANDEZ, PHD**, professor of clinical pharmacy at the Skaggs School of Pharmacy. "Some drugs create so little profit that manufacturers do not have enough incentive to produce them." When this happens, the supply chain suffers, endangering public health.

In December 2023, Hernandez testified before the U.S. Senate Finance Committee that the generic drug reimbursement model needs reform because it currently does not provide financial incentives for manufacturers to invest in resilient supply chains. Hernandez also recommended that the government rebuild the generic drug manufacturing infrastructure in the U.S.

In addition, Daniels has urged Congress to create incentives to support nonprofit drug manufacturers and to create a strategic reserve of generic drugs.

An International Priority

In 2024, the White House called upon UC San Diego to host the inaugural summit of the Bio-5 Coalition on drug shortages. Global pharmaceutical industry leaders and government representatives gathered to address the growing crisis.

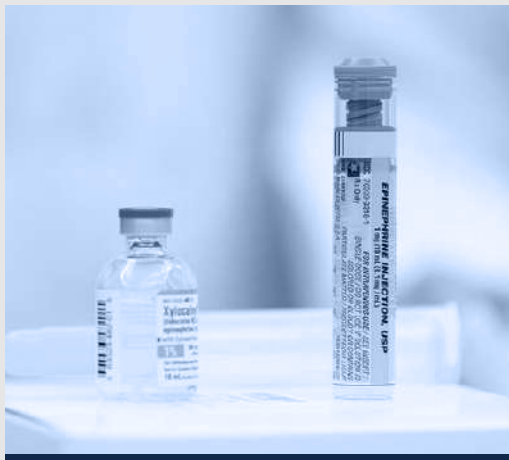
Summit attendees also toured a laboratory at Jacobs School of Engineering that is trailblazing efforts to bioengineer microorganisms that produce the raw materials for hard-to-find drugs and another laboratory that creates 3D bioprinted tissues that can be used to test new drugs.

Local Manufacturing

Another way to shore up the supply chain is to manufacture the drugs closer to home. According to a recent report by the Institute of the Americas, a think tank located on the UC San Diego campus, Southern California's life sciences and pharmaceutical prowess, combined with Baja California's robust manufacturing base and a strong binational relationship make the region ideally situated to produce generic drugs.

"The drug supply chain is incredibly complex," said Best. "With contributions from experts across disciplines, including policy reform, better predictive models, nimbler mitigation strategies, manufacturing innovations and collaboration across stakeholders, UC San Diego is tackling the drug shortage crisis head on." ●

Professor Inmaculada Hernandez, PhD, testified before the U.S. Senate Finance Committee on reforming the generic drug reimbursement model.



DRUG SHORTAGES BY THE NUMBERS

30.4 MILLION

*Number of U.S. adults in 2023 that reported being impacted by a drug shortage**

18.7 MILLION

*Number of U.S. adults in 2023 who reported delaying or stopping use of a medical product because it was not available.**

89%

*Cancer centers reporting shortages of at least one chemotherapy or other treatment in 2024.***

32%

*Pharmacy professionals who reported that drug shortages led to rationing, delaying or canceling treatments or procedures.****

Sources:

* U.S. Department of Health and Human Services Assistant Secretary for Planning and Evaluation

** National Comprehensive Cancer Network

*** American Society of Health-System Pharmacists

Leading the Way *with Care*

From 'sleep menus' to pet therapy, UC San Diego Health is dedicated to transforming patient care with human-centered experiences — at every touch point.

BY ANNIE PIERCE | Photos by Kyle Dykes

ELENA JAVIER was born with a rare congenital heart defect that can ultimately lead to heart failure. Called an Ebstein anomaly, she lived with symptoms of exhaustion and labored breathing for five decades. Her health progressively declined until, at age 53, she received advanced care at UC San Diego Health by way of a new heart and an empowering care team.

Javier, originally from San Francisco and now residing in Encinitas, had seen countless doctors and cardiologists over the years without a concrete solution. She was referred to UC San Diego Health in 2020. That's when a heart transplant was recommended by **LAITH ALSHAWABKEH, MD**, associate professor of cardiovascular medicine at UC San Diego School of Medicine and director of the Adult Congenital Heart program at UC San Diego Health. Her heart was functioning at just 20%.

"To learn that I needed a heart transplant was shocking — I wondered if I could have prevented it by having heart surgery earlier, yet that hadn't been recommended by any of the doctors I had seen over all those years," said Javier, who is now 56. "But my journey with the UC San Diego Health transplant team was nothing short of amazing. From the very beginning of the transplant process, they were an incredible team, explaining everything to me in ways I could understand, and holding my hand every step of the way."

Heart transplant recipient Elena Javier, pictured with her cardiologist, Laith Alshawabkeh, MD, is grateful for the compassionate care she received from the transplant and cardiology teams at UC San Diego Health throughout her journey. Transplant patients look forward to ringing the transplant bell (seen on the wall behind them) to celebrate their discharge from the hospital.


Laith Alshawabkeh, MD, MSCI
Adult Congenital Heart Disease

Elevating patient experiences during the most vulnerable moments of their lives is a guiding principle for the care teams at UC San Diego Health. The human touch, compassion and meaningful interactions can greatly impact patients and their loved ones in our hospitals, according to **LESLEY WILSON**, chief experience officer for UC San Diego Health. Patient interactions and care are driven by a framework called "Leading the Way" at UC San Diego Health, which empowers the entire team to create an environment where everyone feels cared for and belongs.

"We really believe in the importance of intentionally designed experiences combined with the warmth of human-centered hospitality throughout our patients' care journey," Wilson said. "For us, it's about being there to help guide them through their medical situation in the most compassionate way. We know we can't always cure them, but we can always support their healing."

That dedication to empathetic patient care is what kept Javier optimistic throughout her heart transplant process. It also compelled her, after recovery, to volunteer on two UC San Diego Health Patient and Family Advisory Councils, which provide guidance to further enhance patient experiences and evaluate improvement strategies for UC San Diego Health.

"My life was going to end, and that whole team was there for me," Javier remembers. "They made me feel taken care of, educated and just really special. I decided to give back through this volunteer work I'm doing because I want that experience for other patients. I also feel this is a way I can honor my heart donor."

PICTURED ABOVE: Nutritious and delicious meals are a signature patient care feature at UC San Diego Health, along with a commitment to the highest cleanliness standards.

PICTURED RIGHT: Provided sleep kits include aromatherapy, earplugs and a "sleep menu" that helps the care team determine specific ways they can make a patient's time in the hospital quiet and restful.

> "Our team instills confidence and trust, providing patients the assurance that they are in the right hands. We communicate transparently with patients and make it easy for them to ask questions."
>
> **Lesley Wilson,**
> Chief Experience Officer,
> UC San Diego Health

A positive patient experience like Javier's can help speed up recovery and improve health outcomes, according to the National Institutes of Health (NIH) and the Agency for Healthcare Research and Quality (AHRQ), the lead federal agency charged with improving the safety and quality of health care in the U.S. For example, AHRQ studies of patients hospitalized for heart attacks show that those with positive reports about their experiences with care had better health outcomes a year after discharge.

"Our team instills confidence and trust, providing patients the assurance that they are in the right hands. We communicate transparently with patients and make it easy for them to ask questions. Leading the way in patient care and experience is what we are always striving for as an organization," Wilson said.

PICTURED ABOVE: Registered nurse Emma Gankiewicz discusses "sleep menu" options with patients to determine individual preferences for quiet time and rest.

Compassionate Care, Transformational Outcomes

A welcoming hospital atmosphere is essential to improve patient well-being and encourage healing, according to the NIH. Both the physical and social environments play a crucial role in creating a positive patient experience.

LAURA VENTO, a nurse manager at UC San Diego Health, recalls that both of those factors were lacking throughout her father's liver transplant process in 2010 on the East Coast.

"We did not have a great experience. He had a lot of complications, and my mom, who was his primary caregiver, was left with so many unanswered questions. Ever since then, I thought, 'There has to be a better way.'"

Fast forward to the nursing team Vento now leads on the fourth floor of Jacobs Medical Center. Compassionate care is at the core of the "Leading the Way" philosophy at UC San Diego Health. Her team routinely engages with patients to discover what is most important to them and then delivers.

"It might be a clinical milestone they want to meet, a Padres game they hope to watch, having their loved one stay overnight with them or getting their nails painted," Vento said. "Our team goes above and beyond to find creative ways to make as many of those important moments happen as possible. It's inspiring."

She fondly recalls a patient who had been in the intensive care unit for more than three weeks and yearned for some fresh air outside.

"It required the extra effort of the physical therapy team and the lift team to get him to our outdoor terrace, but it just meant everything to him — to feel the air and sun on his face. He cried." Moments like this create meaning and emotion not just for the patients but for the team members who make them happen.

The patient experience is a measure of quality and safety of care that encompasses interactions between patients and the health system. It includes every touch point — care experiences, clinical interactions, the health care environment and essential processes — along with the systems and structures in place to support team members who are caring for patients.

Key areas of focus include creating a comfortable patient environment (which can help reduce patient anxiety), educating and engaging patients to keep them informed and involved in their treatment plan, and making the transition back home as smooth and easy as possible.

AI Innovations Advancing Patient Care

At first glance, artificial intelligence (AI) and patient experience may not appear to go hand in hand. Yet UC San Diego Health has been successfully harnessing AI's capacity to make health care safer and more personal, according to Karandeep Singh, MD, the Joan and Irwin Jacobs Endowed Chair in Digital Health Innovation at UC San Diego School of Medicine and chief health AI officer at UC San Diego Health.

UC San Diego Health is a leader in envisioning a health system-based mission control center, fueled by AI, that will predict patient flow, monitor patient health and identify opportunities to improve quality and safety in real time. Launched in 2021, the Joan and Irwin Jacobs Center for Health Innovation at UC San Diego Health (JCHI) is already using technology to heighten the human experience in health care.

As it grows to its full capacity within the next five years, the digital health hub will monitor patient health and safety through the integration of data streams from bedside monitors, imaging, sensors, electronic health records and wearable devices. The vision is to develop AI algorithms and models that proactively improve personalized treatment, patient experience and health equity.

Since its launch, JCHI has already implemented a novel, multi-modal AI-based sepsis prediction algorithm for people in the hospital who are at greatest risk of developing the deadly infection that can cause organ failure. Patients with chronic diseases are currently using remote telemonitoring, which helps keep them at home and out of the emergency department. UC San Diego Health was also one of the first health systems in the country to pilot the use of generative AI to draft replies to patient messages inside the Epic Systems electronic health record, which has been shown to improve communication quality, efficiency and patient engagement while helping to ease providers' cognitive burden. Importantly, UC San Diego Health was one of the first health systems to transparently disclose the use of this tool to patients.

"When it comes to delivering care, we are finding that AI tools and technology can serve as co-pilots to clinicians," Singh said. "These tools can help us anticipate capacity issues, ease administrative burden and assist in treating patients in a timely manner."

These new tools ensure that patient care decisions are made with the most accurate information. New AI projects on the horizon at UC San Diego Health include identifying barriers to patient discharge, triaging and forecasting hospital capacity issues, and evaluating the use of ambient AI documentation technology to draft and summarize documents typically prepared by hand.

"When patients are feeling heard and valued, and they are engaged in their care plan, it is a key to their recovery," Vento said, remembering a father who was in the hospital during his son's graduation and the nursing team who creatively found a way to live stream the ceremony into his room.

"We promote early mobilization to have better patient outcomes and reduced length of stay, and to do that, it takes the encouragement of our nurses who are both a patient's expert guide and cheerleader to help take their mind off the discomfort and even make it fun."

A Vision for Unifying, Connecting, Seeing and Discovering

The Office of Experience Transformation at UC San Diego Health was launched 10 years ago to empower every team member to design and champion more meaningful patient experiences and care. The academic medical center's "Leading the Way" culture framework is an acronym for UCSD, which centers on:

- **Unifying:** Partnering together as a unified team.
- **Connecting:** Bonding with each other through relationships and interactions.
- **Seeing:** Looking for the good and helping everyone feel seen and heard.
- **Discovering:** Finding new ways to design and improve experiences.

"We want patients to feel that we are working together as a unified team — as partners in their care," Wilson said. "Are we connecting all the important dots? Are we building and nurturing relationships? Are we seeing them for who they are as unique individuals, noticing important details and personalizing their healing journey? And are we taking every opportunity to discover new ways to make their experience the best it can be? That is our intention and goal every day."

EDMUNDO GALVAN, a valued member of UC San Diego Health's facilities and engineering team for the past 18 years, is a pro at spotting issues that require creative fixes. He routinely searches for and remedies door latches and hinges that are making noise and not closing correctly. One quiet night in an empty hallway, he noticed the wheels on a specific type of cart all made a squeaking and clanking noise that he feared was disturbing patients' sleep.

"I like the challenge to figure something out. I discovered the castings on the wheels were old and no longer working correctly," he said, reflecting on all the research he conducted and the four different sets of casters he tried before finding the perfect fit and replacing the squeaky wheels on all the carts.

"It makes me feel good to know that I am helping patients in even the smallest ways because I know the goal is for them to get well and get back home," he said with

> "We really believe in the importance of intentionally designed experiences combined with the warmth of human-centered hospitality throughout our patients' care journey."
>
> **Lesley Wilson,**
> Chief Experience Officer, UC San Diego Health

a smile. "I'm always looking for anything that is making noise or not working quite right." Galvan's passion and determination is the embodiment of the organization's belief that it is often the little details that make the biggest difference.

When Vento and her team do morning rounds at Jacobs Medical Center, she routinely notices the thoughtful touches that have been incorporated throughout the hospital to promote a calming environment. Many of the patient rooms include beautiful photography of outdoor scenes. Patients are greeted by healing music and relaxing images on their TVs. Provided sleep kits include aromatherapy, earplugs and a "sleep menu" that helps the care team determine specific ways they can make a patient's time in the hospital as quiet and restful as it can be.

"I'm very proud to work in a hospital where so much thought goes into creating a healing environment for our patients," Vento said. "Our patient rooms include soothing, natural elements, comfortable spaces for family members to spend time with their loved ones, big windows and even curved walls to make the space less stark. It all makes a huge difference in a patient's outlook."

In addition, care teams round daily to welcome and check in with patients, ensure families feel informed and involved in the process and orchestrate special celebrations for milestones and birthdays. More than 400 patients spend their birthdays at UC San Diego Health each year, and those whose diet allows receive a celebratory birthday cake and card.

"What patients take away from their time with us is how we made them feel in those important moments," Wilson said. "We want to make sure that everything we do contributes to creating a lasting and meaningful memory, fueled by these human connections with our team."

For those whose primary language is not English, interpreter services are provided, enabling patients to feel confident communicating in their own language. In addition, the care team notes spiritual preferences, and the hospital's chaplain team of volunteers from multiple denominations provides patients with spiritual visits. Pet therapy is also offered through volunteers who bring trained dogs into the hospital on occasion to visit patients who yearn for a canine cuddle.

"Creating a meaningful and memorable experience for patients starts first by creating a meaningful and memorable experience for team members," Wilson said. "Through 'Leading the Way,' we prioritize the importance of our culture and team member experience — providing well-being programs, educational sessions, celebration and gratitude gatherings and unique joy events."

"We believe it's important for our team members to reenergize and recharge because when you feel taken care of, you can bring your very best self to caring for our patients."

Throughout Javier's heart transplant process at UC San Diego Health, the compassion and empowerment from each member of her care team enhanced her journey.

"Yes, I had to have a heart transplant, but you know, it was actually an incredible experience," Javier recalls. "I had complete trust in the entire team and knew they were there for me. I am so grateful to each one of them for supporting me throughout my journey at UC San Diego Health." ●

PICTURED BELOW: Dedicated care teams work to extend compassion and transform the health care experience for patients at UC San Diego Health. Bob Barker, a member of the pet therapy team and the beloved family dog of Christopher Longhurst, MD, and wife Emily Longhurst (pictured), routinely visits patients who request his cuddles.

STUDENT-RUN FREE CLINIC PROJECT: 'LIKE FAMILY'

The clinics — with four locations serving the region — enrich the lives of many who visit.

BY JOYCE PRITCHETT
Photos by Erik Jepsen

THE UNIVERSITY OF CALIFORNIA San Diego School of Medicine Student-Run Free Clinic Project is the ultimate win-win environment. In addition to providing critically needed medical, dental and mental health services to its patients, the practical, hands-on experience provided to medical, dental and pharmacy students participating in the clinics' whole-person approach to care is unsurpassed.

"The students' experience at the clinic is transformative," said **EDUARDO FRICOVSKY, PHARMD**, clinical professor of pharmacy at UC San Diego Skaggs School of Pharmacy and Pharmaceutical Sciences and pharmacy director of the Student-Run Free Clinic Project. "Through the clinic, they gain perspectives they would not normally receive. It is a rare model for the students to receive this type of training as part of their core curriculum."

And the numbers confirm students' enthusiasm for the project. For example, though working at the clinic is an elective, more than 80% of first-year medical students choose to be involved.

All first-year pharmacy students complete a one-week rotation at one of the four clinic locations. Beyond the required time, last year, 176 pharmacy students chose to volunteer at the clinic, equaling about 4,500 hours of volunteer service.

"We feel strongly that students shouldn't just show up and expect they can help a community without first learning about the community," said **MICHELLE JOHNSON, MD**, clinical professor of family medicine at UC San Diego School of Medicine and director of the Student-Run Free Clinic

FACTS ABOUT THE CLINIC*

3,350
medical encounters

900+
volunteers

$500,000+
in dental services provided

8,800+
monthly prescriptions filled with a retail value of $1.3 million

*2023 numbers

PICTURED ABOVE: Hannah Manoochehri, a pre-medical student volunteer, checks patient Manuel Rubio-Rodriguez's vitals before his appointment at the UC San Diego Student-Run Free Clinic Project.

FACING PAGE: Assistant Clinical Professor and Associate Pharmacy Director at the Student-Run Free Clinic Project Alex Luli, PharmD, explains medication dosage with Emily Phung, a pre-pharmacy student volunteer, at the clinic.

Project. "More than 300 medical students enroll per year in one of our elective courses, which cover topics such as health equity, working with interpreters, learning from the community, social services and working in a non-hierarchical transdisciplinary model."

It's not just medical and pharmacy students who volunteer at the Student-Run Free Clinic Project. Of the nearly 300 pre-health volunteers, more than 75% identify as underrepresented in medicine. Johnson notes that the hope is that those volunteers will be encouraged and motivated to move on to medical, pharmacy or dental school and other professional programs, which will improve diversity in the health care workforce.

The very heart of the Student-Run Free Clinic Project is providing humanistic and holistic care to those who would not otherwise have access to health care. The clinic provides medical and dental care for chronic issues, as well as support for conditions that can exacerbate those issues, such as food insecurity and mental health concerns.

"The patients of the clinic are so strong and resilient," said Johnson. "They are like family to us, and our goal is to create a safe space that honors their unique journey and creates a sense of community within the clinic."

For nearly 30 years, the Student-Run Free Clinic Project has evolved to meet the community's needs. Changes in health policy that shift the demographics and needs of the uninsured in San Diego are a near-constant occurrence. The clinic is again ready and evolving with the 2024 expansion of Medi-Cal, which has allowed many more people access to much-needed care.

"We have already seen a change at the clinics where patients who have been with us for 10–20 years now have insurance for the first time in their adult lives," said Johnson. "While the expansion of Medi-Cal in 2024 has greatly improved access to care, there is still a clear need for a safety net in San Diego for affordable medical and dental care. We have seen many new patients who are just above the income requirement for Medi-Cal. We will continue to offer free care to uninsured individuals in San Diego, including people who are seeking asylum, refugees and low-income individuals without insurance."

For the patients who receive care at the Student-Run Free Clinic Project, that dedication to providing care assures that they are seen and heard.

"The clinic is an enormous resource for the community in so many ways," said **ESMERALDA MARTINEZ, BSW**, social worker for the Student-Run Free Clinic Project. "Patients can come here regardless of their needs; they are at the center of everything we do. A traditional doctor's visit may only last for approximately five minutes. Here at the clinics, the students can spend up to 30 minutes with a patient just talking to them and getting to know what is going on. We want the patients to know that they always have a place here and are always welcome." ●

Scan here to support the Student-Run Free Clinic Project and to explore other giving opportunities across UC San Diego Health Sciences.

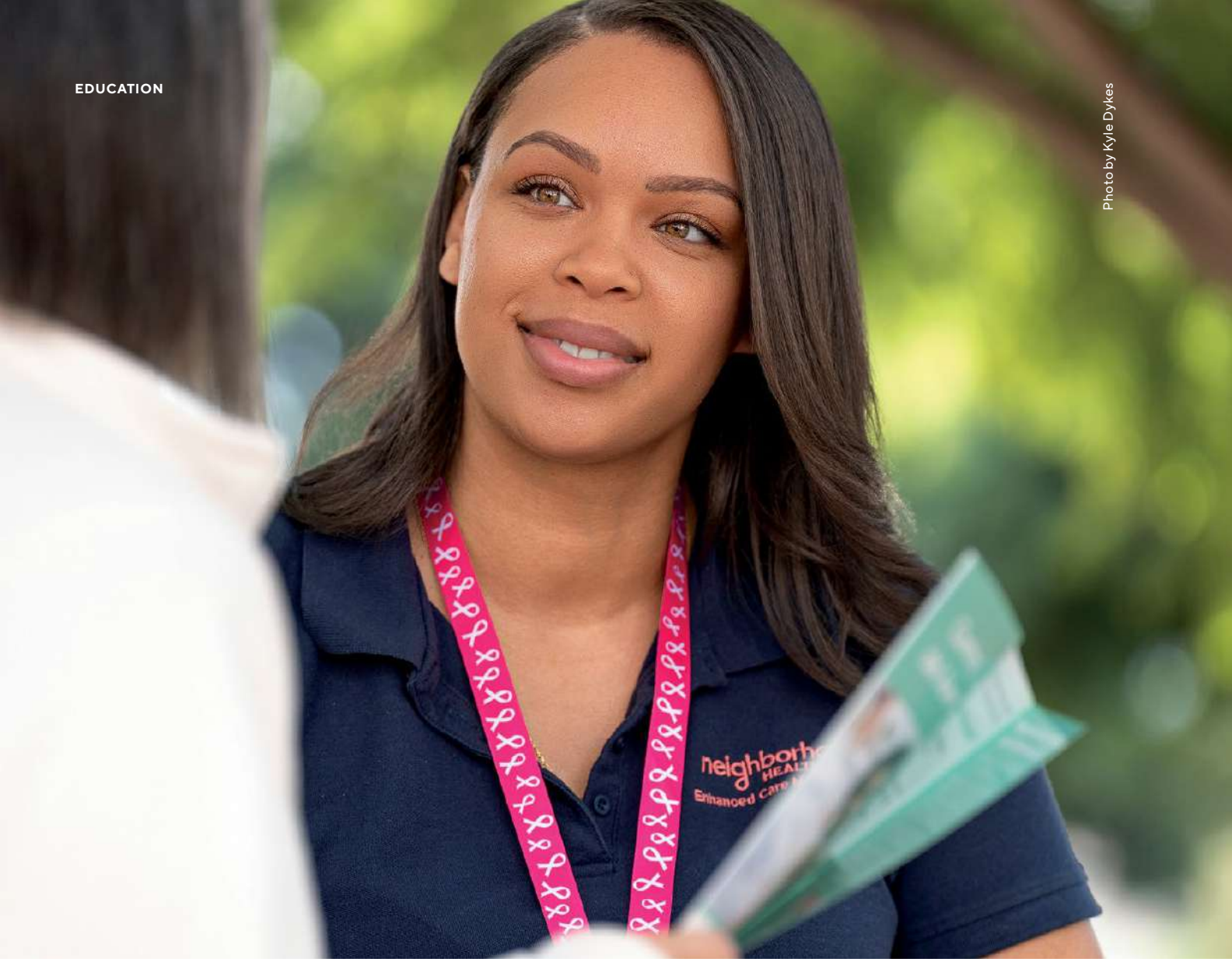


Photo by Kyle Dykes

MEETING COMMUNITY NEEDS

Community-based programs are partnering with diverse populations to improve well-being.

BY YADIRA GALINDO

UC SAN DIEGO is a catalyst for positive change through collaborative partnerships that create innovative solutions tailored to local needs, cultivate the next generation of health professionals and community advocates, and undertake groundbreaking research and initiatives that make a lasting community impact.

Community Health Workers

An interest in health led **BREANA MASON** to leave a decade-long career as a child welfare caseworker. She enrolled in the Community Health Workers for Advancing Public Health Within Immigrant/Refugee and Native American Communities Program (CHWAP), a new academic-community partnership to train 200 individuals from refugee, immigrant and Native American populations living in San Diego County as community health workers.

"There is a need for individuals with culturally and linguistically competent skills to be engaged as community health workers within their own communities to bridge the gap between public health, health care and community needs," said **WAEL AL-DELAIMY, MD, PHD**, professor at Herbert Wertheim School of Public Health and Human Longevity Science and CHWAP director.

The community health worker model has the potential to decrease health care costs and make it more accessible by focusing on prevention and early treatment, he said.

Mason was certified as a community health worker from UC San Diego Division of Extended Studies, which coordinates the coursework of CHWAP, and was employed based on this training by Neighborhood Healthcare.

Breana Mason left a decade-long career to become a certified community health worker with Neighborhood Healthcare.

To help people access the resources they need to live their healthiest lives, Mason coordinates translation services, billing, transportation to clinic appointments and schedules a mobile team to go to patients. Other days she may do welfare checks or hospital visits.

"The program is a great opportunity to obtain certification and work in health care and advocacy," said Mason. "It allows us to address issues within our communities that are not being adequately addressed or are unfair."

CHWAP is a collaboration with community partners, such as the San Diego Refugee Communities Coalition, Somali Family Services, Workforce Development and the County of San Diego.

"Together, we are creating a robust pathway connecting trained community health workers with opportunities for employment and growth. These partnerships ensure trainees are job-ready and supported by a community-driven network committed to reducing health disparities," said **BLANCA MELÉNDREZ, MA**, executive director of the Center for Community Health at UC San Diego Altman Clinical and Translational Research Institute and CHWAP co-director.

Displacement and Health

People who are forcibly displaced from their countries experience unique health disparities, including mental health trauma, interrupted health care access, disease epidemics and deterioration of chronic conditions, while living with the stress of looking for a new and safe home.

Influenced by her lived and global experience as a Doctors Without Borders physician, **TALA AL-ROUSAN, MD, MPH**, assistant professor at Herbert Wertheim School of Public Health, established the Displacement and Health Research Center in 2021. The center aims to study displacement as a social determinant of health, advocate and engage in policymaking and train physicians, public health professionals, academics and social justice advocates.

"This is a first-of-its-kind lab at UC San Diego that is comprised of refugee, first-generation, immigrant and other underrepresented trainees, diversifying scientists in health research," said Al-Rousan.

"Communities benefit from having students who are from the communities that we serve, helping us build trusting relationships. Students feel more supported when their experiences, which are their biggest assets, are celebrated and harnessed. Their passion is to give back to their communities by focusing on refugee health."

In 2014, **RAWNAQ BEHNAM, MPH**, arrived in San Diego as a refugee. Learning a new language and being a first-generation high school and college student and the sole provider for her family made Behnam's secondary and undergraduate education challenging. Joining the displacement lab while pursuing an MPH degree connected Behnam to people with similar backgrounds, making her graduate school experience more meaningful.

"The lab allowed me to implement my skills by designing a whole project, applying for funding and networking locally and internationally. I wish we had more resources to support additional students," said Behnam.

Among the 50 students currently involved with the lab is **ARAZ MAJNOONIAN**, a current student in the Joint Doctoral Program in Public Health, whose family has been displaced three times in the past four generations.

"Seeing how my parents' experiences as refugees impacted their health led me into refugee health," said Majnoonian. "It took a village to get me here. It's important to help them in return by contributing to the wellness of my own community." ●

New Physician Assistant Program: 'What I Love About Medicine'

Since immigrating to the U.S. in 2013, Joe Bolanos — who earned a doctorate in medicine in El Salvador — has engaged in health sciences research.

A yearning to again work with patients led Bolanos to leave the lab and enroll in the new Atkinson Physician Assistant Education Program at UC San Diego School of Medicine.

"Physician assistants build good rapport with patients when physicians cannot. That warmth in the relationship and the community involvement is what I love about medicine," said Bolanos.

The 29-month Master of Advanced Studies in Physician Assistant Studies degree program helps alleviate a worsening primary care physician shortage by providing training for physician assistant students to immediately enter the workforce upon graduation.

"Fewer than 30% of physician assistant programs are embedded within academic health systems. Our students will participate in interprofessional training opportunities alongside medical, pharmacy and public health students," said Elias Villarreal, DMSc, PA-C, associate dean and founding program director for the physician assistant program.

"Our location along the U.S.-Mexico border and our clinical training opportunities at UC San Diego Health locations across San Diego and Imperial counties provide a unique educational environment that prepares students to provide care for some of the most underserved communities in our state."

The inaugural class is diverse, with 43% underrepresented in medicine and an age range of 21 to 37.

Bolanos said the program emphasizes how to deliver compassionate and empathetic person-centered care with cultural humility to diverse communities.

"I have always been an advocate for those that policy and socioeconomics have left behind. My first professional encounter with medicine was working in an orphanage and I fell in love with these populations that cannot really fend for themselves," said Bolanos. "There are many underserved areas, and I want to apply myself to help."

WEALTH OF WE

LLNESS

UC SAN DIEGO LAUNCHES GROUNDBREAKING WILLO APP TO SUPPORT STUDENT WELL-BEING.

BY JEN JORDAN | Photos by Erik Jepsen

A WORLD MAP ADORNED with pushpins hangs on the wall of a workspace in the University of California San Diego's Design and Innovation Building, representing the hometowns of many students who worked on the university's groundbreaking self-care app, Willo. "Our hometowns are spread across the globe," said **MANAS BEDMUTHA**, a third-year PhD student and architect of the app's Artificial Intelligence (AI). "Our upbringing and our way of thinking is diverse. We represent different people on campus to guarantee everyone's voice is heard."

The heart of Willo lies in ensuring the app for enrolled UC San Diego students is built by those who know them best: their peers.

Students collaborated for more than two years with faculty and staff from UC San Diego Student Health and Well-Being and Jacobs Center for Health Innovation (JCHI) at UC San Diego Health to keep Tritons at the forefront of Willo. Through months of interviews, workshops, surveys, focus groups and user testing, the app's design remained student-centered. Its intuitive system aggregator integrates the university's extensive health and well-being services into a user-friendly platform, making this app the first of its kind.

"Willo is a testament to the hard work, dedication and innovative approach of Student Health and Well-Being, Jacobs Center for Health Innovation and our forward-thinking and compassionate UC San Diego students," said **PATTY MAYSENT**, CEO of UC San Diego Health. "I am so inspired by UC San Diego's commitment to student health and well-being and our dedication to providing our communities with greater access to world-class, holistic health care."

Developed by over 100 people with $5 million in funding from the State of California, Willo is the result of more than two years of collaboration with student involvement at every step, including the app's colorful marketing campaign. All photos feature UC San Diego students who worked on the tool's development.

FACING THE RISING TIDE OF MENTAL HEALTH CHALLENGES

Globally, universities are seeing significant increases in mental health-related incidents and an increased demand for access to well-being support, said **ED JUNKINS, MD**, executive director of UC San Diego's Student Health and Well-Being.

To help address the issue, UC San Diego received a $5 million budget appropriation from the state of California with one parameter: create a mental health platform for students. With this funding, a team of over 100 students, faculty and staff began investigating why the campus's vast array of wellness resources weren't being widely used.

"All students pay for mental health services as part of their tuition, and our on-campus counseling is free, yet only 10% of our 43,000 students use our counseling services," said Junkins.

The group cast a wide net: what do the students — the end users — need, what are they currently using and what are they lacking? After months of research, they realized that they had to develop a mobile app with an AI-enabled recommendation engine that simplified access to self-care resources offered by the university in a way that was tailored to students' unique needs. To do that, the app needed to follow a stepped model of care to reach students before they required clinical intervention while easing the pathway to higher and more intensive interventions.

While many think of self-care resources as only those that are overtly related to one's mental health, such as meditation, nutrition or exercise, according to **NICOLE MAY**, JCHI's co-director, well-being is much more.

Willo is organized based on the wellness wheel, a widely used well-being tool defined by eight dimensions of wellness: emotional, environmental, financial, intellectual, occupational, physical, social and spiritual. The Willo team modified the dimensions to serve UC San Diego's students: academic, arts and culture, basic needs, career, communities, mental health and wellness, physical health and spirituality.

"We wanted to connect students with events, resources or services that help them find a well-being balance," May shared. "It was more about uncovering what really impacts their mental health and providing resources. The app needed to address all elements of their lives that could cause stress, anxiety or depression."

Defining What Students Need

In the initial stages of the app's design, the team considered building an aggregator to simply present the university's vast slate of offerings within those eight categories. Like a library with shelves of cataloged books, the app would use a similar approach by presenting users with options to "check out."

By first defining what the users needed from a well-being app rather than building out the technology and waiting for reviews, the design team found that the app had to lessen the user's cognitive burden. Merely presenting an aggregated list of options would not be enough; the app had to provide the user with tailored recommendations.

"Today's generation is very tuned into self-help resources they can drive and customize," Junkins shared. "It's that idea of having what you want, when and how you want it. Mental health and well-being resources are no different."

Student involvement in the app was the driving force behind the final design. "If you asked a group of staff and administrators to develop an app for students, I don't think this is the app we would have," revealed May. "Students today are different than they were even four years ago. We needed to support a sense of belonging and connection within the university, which could go a long way to helping students feel less isolated or stressed."

"JCHI thinks so much with the student in mind and not in place of the student," shared product designer **JARENZ CASTILLO**, a fourth-year cognitive science and interdisciplinary computer and the arts major. "They always listen to what we have to say because at the end of the day, we're the end users."

In addition to being a user-driven platform, the app also endeavored to build a wellness ecosystem for all students — a place that shows everything wellness-related on campus, whether that's Counseling and Psychological Services, Career Center programming, a Recreation Activity Pass, Craft Center classes and workshops, peer counseling or student-centered, identity-based communities.

"Wellness has different types and forms," Bedmutha said. "It can be about your academic and personal growth, it can be about your mental and physical state, or it can be about your sense of social belonging."

FACING PAGE:
Geovaunii White, Class of 2024

Major: Cognitive Science, Design and Interaction

Hometown: Moreno Valley

Favorite exercise: Deadlifts

Favorite sport: Basketball

Building Human-Centered AI for Students, by Students

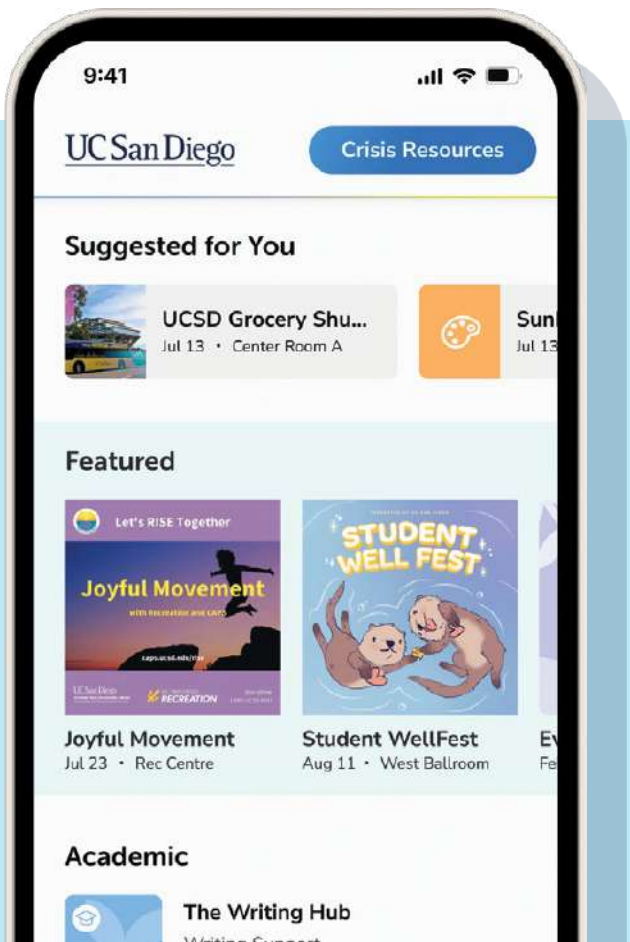
After analyzing their research, the Willo team knew that the app had to guide the user and act more like a librarian, asking detailed questions to get to the heart of the issue and then make tailored recommendations. Willo would provide a space for users to self-select their own needs and interests and then receive recommendations. This is the heart of the app's human-centered design.

"The AI in this app started out as more of a feature but ended up becoming one of the main characters of the story," shared Bedmutha, a member of the Human-centered eXtended Intelligence research lab. "Similar to how Instagram has hashtags, the currency of our 'recommender' system is the tags people choose. Users can just select or follow a few, then the AI provides recommendations that support those tags."

willo

"ALL STUDENTS PAY FOR MENTAL HEALTH SERVICES AS PART OF THEIR TUITION, AND OUR ON-CAMPUS COUNSELING IS FREE, YET ONLY 10% OF OUR 43,000 STUDENTS USE OUR COUNSELING SERVICES."

Ed Junkins, MD,
UC San Diego's Executive Director of Student Health and Well-Being



"THE MORE YOU ENGAGE WITH THE APP, THE MORE IT CAN HELP YOU. IT'S THERE TO HELP YOU AS A STUDENT AND IN THE REAL WORLD. IT'S A VERY MIND-SETTLING APP."

Kyla Bruhn, UC San Diego sophomore UI/UX designer

PICTURED ABOVE: Kyla Bruhn, second-year

Major: Cognitive Science and Public Health

Favorite campus spot: Hammocks by Muir

Favorite sport: Water polo — on the D1 women's team

Willo's human-centered AI also relies on a key point: the willingness of its users to engage with the app. As the app's algorithm collects more information from the user through their interactions, the recommender system becomes more nuanced and tailored to the user.

"As a researcher, I've been trying to understand how willing people are to share information about their well-being," Bedmutha said. "If there is limited willingness because the user prefers to keep that information private, how do we build algorithms that are still effective in providing recommendations or making predictions?"

Respecting the user's willingness to share, the app takes precautions to protect their identity. Designers cannot identify a user by their ID; they can only see their usage history and selected tags. By connecting to the user's MyStudentChart, UC San Diego's health portal, Willo provides a secure HIPAA-protected data environment maintained by the UC San Diego Health system.

Inside the App

So how exactly does the app work?

Students sign in to the app using their campus login credentials and can connect their account to their MyStudentChart. Users then personalize their experience by identifying specific areas of wellness they'd like to explore from a list of options — or "tags" — that are sorted into the eight categories that match the wellness wheel. For example, a user can select options in the "Mental Health and Wellness" category that include "Peer Support," "Yoga," "Athlete Well-being" and "Anxiety Management." The app then provides a list of resources or events suggested for the user within each category based on their responses.

The "tagging" sorts resources or events into categories to capture the full spectrum of offerings. The Willo team did an extensive amount of tagging, which, according to Bedmutha, "is the secret sauce to the app producing the best, most customized recommendation."

Users can also search for resources in the app, explore by category and see Student Health Services appointments. Experiences like athletic games, recreation classes or career fairs are pulled in real time using a direct interface to the systems in which they're housed.

Additionally, crisis resources are prominently featured in the app. For example, users can see locations and find directions to their nearest emergency room or learn what to expect when they call a crisis line.

Over time, Willo's AI monitors likes, shares and time spent on certain resources to understand each user's interests and offer more nuanced selections. The Willo design team also mapped the journey of a student across each quarter, being mindful of their wellness at various points of the academic year, which, in future versions,

will inform recommendations provided by the app.

"Willo can connect you to people and resources you didn't know you needed," said sophomore UI/UX designer **KYLA BRUHN**. "The more you engage with the app, the more it can help you. It's there to help you as a student and in the real world. It's a very mind-settling app."

The Impact of Willo

For Bruhn, a second-year student majoring in human developmental sciences and a member of the water polo team, the opportunity to work on Willo has been incredibly rewarding.

"As an incoming freshman last year, I wish I'd had Willo," she said. "This app has everything a student could want to find about wellness resources across the entire university. It opens a lot of doors, helping us start conversations and ease stress and concerns in ways that students prefer. This app is going to help a lot of people."

A fourth-year student, Castillo noted that, since using the app, he and his classmates have uncovered resources they've always had access to but didn't know about or where to find. "The app really helps promote your individuality," he shared. "It doesn't force you to be any way. It just gives you a little nudge to take that extra step for yourself."

Willo recognizes that students want to take control of their wellness and, through the unwavering passion of those who work on the app, it will continue to evolve in future versions.

"Being involved in Willo has been the perfect way for me to contribute to UC San Diego, which has given me so much in the last three years," said Bedmutha, who has been involved with the app since its beginnings. "We're trying to be a wellness ecosystem and not just another mental health app."

Future versions of the app are expected to offer more nuanced suggestions, push notifications and the ability to connect and share with friends. "The app is only going to get better," Bruhn revealed. "I'm really happy with what's in store."

"A lot of work and input was put into this app," Junkins added. "We're hoping to achieve an overall improved level of student health and wellness. If things go as we predict, this app will impact a lot of people across the entire community."

"Willo is designed specifically to address the mental health needs of our diverse community," said **CHANCELLOR PRADEEP K. KHOSLA**. "This trailblazing app reflects the collaborative nature and innovative ethos of our campus and long history of leadership in AI. By introducing this transformative AI algorithm, we are delivering on our mission to prioritize student health and well-being, with a strong focus on mental health support." ●

INNOVATION AT SCALE WITH IMPACT

Jacobs Center for Health Innovation bridges engineering and medicine to deliver scalable, AI-driven solutions.

SERVING MORE THAN 40,000 students each year, Willo is just one example of how Joan and Irwin Jacobs Center for Health Innovation (JCHI) at UC San Diego lives its mission: creating innovation at scale that has the greatest impact.

Established in 2021, JCHI bridges the Jacobs School of Engineering and UC San Diego Health Jacobs Medical Center. The center selects projects based on a clear set of criteria: addressing real-world problems that can significantly benefit patients at the medical center and can be scaled for broader use. Receiving around a dozen requests weekly, the team focuses on projects with the potential for widespread impact.

The center's inaugural project, Project1,000, has grown into P10,000, a digital health initiative serving individuals with limited health care access. In collaboration with UC San Diego Health's Population Health, P10,000 utilizes Epic-integrated digital health tools — including wearables, texting and passive sensors — to monitor patients. The project builds on Project1,000's success, which demonstrated the effectiveness of remote monitoring for chronic disease management.

One notable innovation emerging from this collaboration is a passive sensor developed by Jacobs School of Engineering students and faculty that detects breathing abnormalities in sleeping patients. Installed under a bed frame, the sensor helps monitor patients with chronic respiratory conditions in their homes.

Building on the momentum from P10,000, JCHI received a $22 million gift from Joan and Irwin Jacobs in 2023. This funding is enabling the development of a first-of-its-kind Mission Control Center at UC San Diego Health. The center offers continuous, real-time patient monitoring across various data streams, allowing health care providers to proactively address potential health issues, even sending medical support to a patient's home when necessary. "We envision proactive, predictive and precision health care, enabled by AI," said Christopher Longhurst, MD, chief clinical and innovation officer at UC San Diego Health and executive director of JCHI. "Mission control is a centralizing tool where we can achieve that."

Data from P10,000 has helped train the AI algorithms used in the Mission Control Center, which identifies critical events and alerts medical staff. The technology platform that powers Willo also supports other mobile apps developed by JCHI, illustrating the interconnectedness of the center's projects.

"Doctors working alongside AI are more effective than those working without it," Longhurst noted. "AI allows us to re-humanize the exam room by enhancing the quality of care."

FROM UC SAN DIEGO **TO CAPITOL HILL**

Advocating for diversity and equity in STEMM education.

BY JOYCE PRITCHETT

Each of us has a unique story. Our family, our history, our journey and our experiences all come together to create the various chapters of that story.

MAYRA MENDIOLA will tell you her story starts with her identity. She is a proud daughter of Mexican immigrants. She is a first-generation, low-income Latina college student interested in a career in STEMM (science, technology, engineering, math and medicine). She is also a Class of 2024 graduate of UC San Diego.

Her parents always encouraged her to study and work hard. She was determined to succeed and attend college to take advantage of an opportunity that her parents never had.

"In high school, I looked around my community and saw the need for equity and diversity in medicine and health care," said Mendiola. "Equity and diversity in STEMM is so important for our families and communities that see us and what we are doing. They see that we are capable of being successful outside of the stereotypical roles society has defined for us. They see that we too can succeed in STEMM, which makes them proud and even more interested in STEMM."

She knew she was capable, but having the means to attend college was a bit of a challenge for Mendiola. A native of San Diego, her journey to UC San Diego was accelerated with the assistance of the university's Pathways to STEM Through the Enhanced Access and Mentorship (PATHS) program. PATHS is a four-year undergraduate scholarship and student support program that provides an annual scholarship, enhanced access to stratified mentorship, campus support, hands-on training and academic preparation support. The program's all-access model for support, empowerment and professional exposure encourages a new, diverse generation of STEMM leaders.

In June, during her last week of undergraduate studies, Mendiola was invited to travel to Washington, D.C., with UC San Diego Chancellor **PRADEEP K. KHOSLA**; **GENTRY PATRICK, PHD**, PATHS faculty director and director of the Sanford Institute's Center for Empathy and Social Justice in Human Health; **ERIC JORDAHL**, graduate student in biology and vice chair of the Biology Undergraduate and Master's Mentorship Program (BUMMP); and **LEIGH ECK**, center strategist and PATHS co-creator.

The central focus of the trip was to spotlight UC San Diego's work to expand career pathways for underrepresented students pursuing opportunities in the STEMM fields and to encourage policymakers to make additional federal investments

Photo by iStock

Photo by Leigh Eck

Leaders from UC San Diego traveled to Washington, D.C., to highlight university efforts to expand STEMM career pathways for underrepresented students and urged policymakers to increase federal investment in programs. *(From left to right)* Eric Jordahl, Melody Gonzales, Chancellor Pradeep K. Khosla, Mayra Mendiola and Gentry Patrick, PhD.

> "Being able to give voice to how important these types of programs are for students who come from underrepresented backgrounds was my way of giving back and acknowledging my experiences."
>
> **Mayra Mendiola,**
> UC San Diego graduate

in programs like PATHS and BUMMP that support the development of a future STEMM workforce that will save lives, drive innovation and deliver economic growth.

"PATHS has done a lot for me personally," said Mendiola. "Traveling to D.C. was a great opportunity for me to give back. Being able to give voice to how important these types of programs are for students who come from underrepresented backgrounds was my way of giving back and acknowledging my experiences."

While in the nation's capital, Mendiola and the rest of the UC San Diego contingent met with key policy advisors for local representatives, including U.S. Representative Juan Vargas and U.S. Senator Alex Padilla, whose previous support led to a congressionally directed funding award totaling $1.65 million for PATHS that was included in the federal government's spending bill.

Acknowledging the national need for these investments, policymakers like Senator Padilla and Representative Vargas have demonstrated steadfast commitment to supporting underrepresented students in STEMM, a partnership that ultimately led to this opportunity to showcase the success of UC San Diego programs like PATHS and BUMMP.

"While there, we discussed the PATHS and BUMMP programs as successful innovative models for holistically supporting diverse students in STEMM education," said Patrick, professor of Neurobiology and the Kavli and Dr. William and Marisa Rastetter Chancellor's Endowed Chair in Neurobiology. "We asked these elected officials to consider legislation that bolstered support for programs like these and discussed the center's research on the science of belonging, which examines how a sense of belonging is a key indicator in students' physical, emotional and psychological well-being, and their academic success — an outcome central to both programs."

They also met with Deputy Secretary of Education Cindy Marten and White House Hispanic Initiative Executive Director Melody Gonzales to discuss belonging as a key program outcome of, and essential metric for, student success in STEMM education.

"A lot of what we did in Washington, D.C., was really just talking," said Mendiola, who graduated *summa cum laude* with a bachelor's degree in human biology and a minor in Chicanx/Latinx studies. "To really support and retain students from underrepresented backgrounds in STEMM, we need policies that reflect the population that those policies will affect. I hope that my story will stick with the leaders in D.C. as they make those policy decisions."

Being invited to speak with national leaders was an honor and privilege for Mendiola and others. U.S. Representative Scott Peters, who represents UC San Diego, and his staff were instrumental in facilitating the meetings.

"We truly appreciate Team Peters' commitment to sharing the message of the public research university and the role universities play in driving innovation and economic growth," said Khosla. "As a world-class public research university and academic health center, UC San Diego is committed to excellence in education, research, health care and community engagement. Our campus is a vibrant hub of innovation, creativity and diversity. It is a place where students, faculty and staff come together and work across disciplines to tackle the complex challenges of our time."

Showcasing UC San Diego's commitment to cultivating underrepresented leaders, Chancellor Khosla noted that over the last 10 years, the university has doubled the number of underrepresented students who are studying on campus. Additionally, in 2022, UC San Diego achieved the U.S. Department of Education's Asian American Native American and Pacific Islander-Serving Institution designation. And with 25% Latinx enrollment, UC San Diego is close to officially achieving the Hispanic-Serving Institution designation.

"Fundamentally, we believe that every single one of our community members deserves equitable opportunities to succeed," said Khosla. "That's why equity, diversity and inclusion is a core pillar of our strategic plan, with a focus on creating a more inclusive and diverse university community. Merging this commitment to equity with our reputation for institutional excellence in the STEMM fields presents unique opportunities to innovate for our campus."

Students who come from underrepresented backgrounds bring unique perspectives in that they know firsthand the challenges and needs in their local communities. They are able to challenge the status quo to make change.

"The diversity of thought that underrepresented students bring to the university fosters innovation that goes beyond traditional approaches, leading to solutions that are inclusive, equitable and impactful on a broader scale," said Patrick. "However, achieving such diverse representation first requires providing equitable opportunities for success. Without this equal opportunity for everyone to succeed, solutions risk excluding entire populations and perpetuating systemic inequities. Diverse representation ensures that solutions are designed with a broader perspective, preventing the continuation of biases and inequalities."

Additionally, Patrick noted that the sooner we can begin to implement these types of policy changes, the better equipped we are to create meaningful reform and show the next generation that they matter and are part of the solution.

"By showing students and professionals that they belong, and their perspectives are valued and essential, we can not only address historical disparities but also enhance the overall effectiveness of STEMM fields in solving complex global issues," said Patrick. "If we get it right for our most vulnerable, we get it right for everyone!"

Now in Baltimore, Mendiola is working in a pediatric oncology lab as a Postbaccalaureate Research Education Program (PREP) scholar at the Johns Hopkins School of Medicine as she determines her next step.

"I am continuing to learn," said Mendiola. "I am here to grow as a scientist and individual, and plan to apply to graduate school. Wherever I end up, my goal is to work at the frontlines of research and medicine to promote equity and diversity in science and health care." ●

Photo by Carl Welliver

Eric Jordahl, graduate student in biology and vice chair of the Biology Undergraduate and Master's Mentorship Program (BUMMP), met with Melody Gonzales, White House Hispanic Initiative Executive Director.

path·way

/ˈpaTHˌwā/ **noun.** A way of achieving a specified result; a course of action.

University of California San Diego Health Sciences supports various pathway programs designed to make tangible differences for students from historically underrepresented communities. Explore a sampling of the many pathway programs currently supported by UC San Diego Health Sciences.

Photo by Kyle Dykes

A Morse High School student works with Matthew Schmitz, MD, clinical professor of orthopedic surgery, at the BONE Academy, which brings orthopedic surgeons and other team members to local high schools.

BONE Academy (School of Medicine)
To encourage underrepresented students to explore the field of orthopedics, the UC San Diego Department of Orthopaedic Surgery created the Building Orthopaedic Networks for Everyone (BONE) Academy. Through hands-on workshops held at local high schools, teams of volunteers highlight all fields within the orthopedic health care team. The students participate in simulated activities, including splinting, sawbones, ultrasound and suturing. Each visit aims to foster relationships: Volunteers share the various paths that brought them to work in medicine.

California Medicine Scholars Program (School of Medicine)
The California Medicine Scholars Program (CMSP) is a premedical pathway in which community college students receive mentorship, skills development and community building to facilitate health care-related opportunities that are not traditionally provided by community colleges. UC San Diego School of Medicine was the first University of California medical school to launch a regional CMSP. Created in 2021, CMSP is the only statewide initiative in the country that aims to leverage the diversity, affordability and reality of premedical student reliance on community colleges to prepare future physicians.

Doc-4-A-Day (School of Medicine)
Twice a year, high school students are invited to Doc-4-A-Day. While the hands-on activities are memorable and interesting, the one-on-one interactions between the high school students and medical students lead to unforgettable moments and spark interest in medical careers.

Research Methodology Training Laboratory Program (Skaggs School of Pharmacy and Pharmaceutical Sciences)
Sometimes just meeting someone who looks and talks like you can change the course of your life. Eduardo Fricovksy, PharmD, clinical professor at Skaggs School of Pharmacy and Pharmaceutical Sciences, knows firsthand how a summer program can leave lasting impacts. Once a participant, he is now leading the Research Methodology Training Laboratory program, which brings together underrepresented junior high and high school students for hands-on lab and clinical skills activities. Additionally, the students receive guidance on how to apply to college, write a personal statement and résumé and tour the UC San Diego campus.

CREATE Program (Moores Cancer Center at UC San Diego Health)
Funded by the National Cancer Institute, the Cancer Research and Education to Advance Health Equity (CREATE) program is a partnership between Moores Cancer Center and San Diego State University focused on addressing cancer health equity. CREATE offers integrated educational and career development opportunities tailored for emerging cancer scientists, particularly those from racial and ethnic groups underrepresented in biomedical sciences. Programs are designed to foster success and promote diversity in the field of cancer research.

CADRE Program (Altman Clinical and Translational Research Center)
San Diego Mesa College students from historically underserved backgrounds can now participate in leading-edge clinical research at UC San Diego, thanks to a new partnership with the Altman Clinical and Translational Research Institute. The Creating Diversity in Science through Research Education (CADRE) program offers students hands-on research experience, financial support, faculty mentorship and a range of organized training activities. Through community engagement and scientific writing, the program aims to inspire participants to pursue advanced education and careers in science.

A PULSE ON **SAN DIEGO**

Community partnership aims to train 1 million people on hands-only CPR.

BY TYLER DELONG

REVIVE & SURVIVE San Diego, an innovative initiative launched in February 2024, aims to save lives by equipping 1 million San Diegans with hands-only cardiopulmonary resuscitation (CPR) training. This collaboration between the UC San Diego Herbert Wertheim School of Public Health and Human Longevity Science and the County of San Diego Emergency Medical Services fosters a robust, county-wide coalition of lifesaving partners, united in their commitment to enhancing public health and emergency preparedness across the San Diego region.

People may think bystander CPR involves a copious amount of support coupled with mouth-to-mouth resuscitation. However, in recent years, CPR training has shifted to a hands-only approach, which is just as effective and involves two simple steps: first, call 911, and second, perform chest compressions on a bare chest at a rate of 100 to 120 beats per minute.

In the first nine months of the initiative, certified trainers from more than 30 partners in the San Diego region taught more than 230,000 San Diegans hands-only CPR and organized more than 7,100 training sessions.

Importance of Hands-Only CPR

In 2021, 48% of people who experienced an out-of-hospital cardiac arrest in San Diego County received CPR before first responders arrived. More lives could be saved if more people received immediate CPR.

"Cardiac arrest continues to be a leading cause of death across the country," said **KRISTI L. KOENIG, MD**, County of San Diego Emergency Medical Services medical director and co-lead of the Revive &

Photo by Tyler DeLong

The student group EMS at UC San Diego participated in a press conference for the Revive & Survive San Diego initiative in February 2024.

Photo by Kyle Dykes

Christian Beÿ, MPH, co-creator of EMS at UC San Diego, demonstrates hands-only CPR. In an emergency, it can be as effective as mouth-to-mouth resuscitation.

Survive San Diego initiative. "No amount of preparedness in a hospital can save a life if the person does not make it into the building. Receiving CPR at the scene will save lives."

Community outreach is crucial to help foster community and help bring communities together. Tendrils of lifesaving education and community-building should impact all regions of San Diego and span cultures, identities and a variety of walks of life.

"Community CPR education will prepare all of us to perform a lifesaving act when someone is having cardiac arrest," said **CHERYL A.M. ANDERSON, PhD, MPH**, dean of the Herbert Wertheim School of Public Health and co-lead of Revive & Survive San Diego. "San Diego is a perfect place for this bold goal of CPR training for 1 million people. No matter where people live, learn, work, play or pray, we want to increase the chances of surviving a cardiac arrest. We invite all organizations to join us in offering life-saving training."

Preparing the Next Generation

The Preuss School UC San Diego is a unique charter middle and high school for low-income scholars who strive to become the first in their families to graduate from college.

In July 2024, 35 sixth-grade scholars and several staff members at The Preuss School received hands-only CPR training from UC San Diego Environment, Health and Safety, UC San Diego Police Department, San Diego Project Heart Beat, and Emergency Medical Services at UC San Diego (EMS at UC San Diego).

CHRISTIAN BEŸ, MPH, co-creator of EMS at UC San Diego — a student group founded in 2016 to establish a community of first-responders, enhance campus safety and advocate for the creation of on-campus opportunities for student emergency medical technicians — serves as the organization's community advisor and as a CPR instructor. He helped train Preuss School scholars.

> "Hosting a hands-only CPR training at The Preuss School was a natural progression for the organization that closely aligned with Revive & Survive San Diego's initiative to increase training rates among school-aged children."
>
> **Christian Beÿ, MPH,**
> co-creator of EMS at UC San Diego

"Hosting a hands-only CPR training at The Preuss School was a natural progression for the organization that closely aligned with Revive & Survive San Diego's initiative to increase training rates among school-aged children," said Beÿ. "The Preuss School's mission to serve underrepresented groups also complemented Revive & Survive San Diego's goal to decrease disparities in CPR rates."

During the training, students were given an introductory lecture describing hands-only CPR and automated external defibrillator use. Students also familiarized themselves with American Heart Association CPR Anytime® inflatable mannikin kits to facilitate continuous practice of CPR skills and promote training others, including their advisory classroom, their friends and their family.

"Training like this is important for The Preuss School, as our scholars are members of the communities who experience vast health disparities," said **HELEN V. GRIFFITH, EdD**, superintendent at The Preuss School. "They are among the ethnic groups who experience higher rates of heart disease and other conditions that increase the chance of cardiac arrest. This training has the potential to empower our scholars to become future life savers." ●

For more information about Revive & Survive San Diego, including opportunities for CPR training, becoming a community partner and supporting the initiative, visit **revivesurvive.ucsd.edu**.

UC San Diego Health Sciences Facts & Figures

2024

UC San Diego Health Sciences Academic and Clinical Enterprises

PROFESSIONAL SCHOOLS

Professional Schools: Medicine, Pharmacy, Public Health	3
Undergraduate and Graduate Degree Programs	22
Faculty Members	1,980
Students, Postdocs, Residents and Fellows	3,741
Members of National Academy of Medicine	29
Members of National Academy of Sciences	13
Nobel Laureates	6

SCHOOL OF MEDICINE

Faculty	1,846
MD Students	573
MD-PhD Students	90
MS Students	59
MD Postdocs, Residents, Fellows	1,577
Departments	20

SKAGGS SCHOOL OF PHARMACY AND PHARMACEUTICAL SCIENCES

Faculty	52
PharmD, Master's Students, Postdocs, Residents	368

HERBERT WERTHEIM SCHOOL OF PUBLIC HEALTH AND HUMAN LONGEVITY SCIENCE

Faculty	82
PhD, Master's Students, Postdocs, Residents	252
BA Students	822

UC SAN DIEGO HEALTH CLINICAL ENTERPRISE

Employees	13,493
Physicians	1,857
Registered Nurses	4,222
Beds	1,101
Annual Operating Budget	$4.4B
Annual Hospital Admissions	36,130
Annual Outpatient Visits & Surgeries	1.29M
Total Clinical Trials (Approx.)	1,800
Patients in Active Clinical Trial Treatment (Approx.)	6,060
Actively Enrolling Trials (Approx.)	1,200
New Trials Annually (Approx.)	245

RESEARCH

Health Sciences Research Awards FY24	$896M
Active Research Awards FY24	3,321
NIH Funding 2023	$460M

U.S. NEWS & WORLD REPORT 2025

Best hospital in San Diego	No. 1
Hospitals in the U.S.	Top 20
Best Medical Schools: Research	Tier 1
Among Pharmacy Schools in the U.S.	No. 12