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BRIDGING BODY & MACHINE

Doctors and engineers are working together at the intersection of innovative surgery and advanced robotics to develop futuristic prosthetic devices that will realize the dream of making patients whole.

FALL 2023

UCLA Health | David Geffen School of Medicine

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We Want to Hear from You

Dear Reader:

The goal of *U* Magazine is to illuminate the latest scientific and clinical advances in medicine and inform you about what's happening at UCLA Health and the David Geffen School of Medicine at UCLA.

For us to better serve you and make informed editorial choices, it is important to understand your interests and reading habits. To accomplish this, we are utilizing an easy-to-use survey tool developed by the Council for Advancement and Support of Education and successfully implemented by more than 100 of its affiliated college and university publications.

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Thank you.
David Greenwald
Editor, *U* Magazine

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Patients, or the families of patients, quoted and/or photographed or pictured in this publication have given their consent to have their names and/or images used and their stories told.

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Our Journey Forward

The greatest achievements rarely spring from one individual. More often than not, they are the result of a team effort.

UCLA HEALTH

After serving for nearly two years as interim dean, I have now begun my first year as dean of the David Geffen School of Medicine at UCLA, whose renowned faculty have effectively prepared many students for careers in medical care and science. Teamwork is the cornerstone of our mission in the medical school and is central to its future. My commitment to this principle is informed by my 35 years of experience as a physician, educator and researcher at UCLA.

In academic medicine, as in many other arenas, awards are often given to a single individual, without acknowledgement of the many people who contribute their skills and knowledge to the accomplishments that are being recognized. At the David Geffen School of Medicine, we will continue to emphasize the importance of collaboration and teamwork to all our students, trainees, faculty and staff.

I first became interested in medicine as a 7-year-old, following my father as he made house calls. As my father took care of the patient in one room, I would stay in another with the family, who tried to keep me entertained with cookies and candies. Thus, my first impression of a medical career was that it involved a roving feast of sweets throughout the neighborhood. Later, I realized how extraordinarily grateful these families were for my father's attention to their needs. Still later, I recognized that much of what he had to offer wasn't actually in his doctor's bag; it was his personal connection with his patients. At UCLA, we strive to advance academic medicine by matching technological innovation in the treatment of complex diseases with an ethos of compassionate care.

Community engagement and advocacy, too, are central to our mission. One of our goals is to improve health outcomes for our diverse communities. Here, in Los Angeles, we have many challenges, but also opportunities to address the social determinants of health for transformative impact. We are combining our expertise in clinical care and research with data science in order to make predictions, move beyond only treating illness and promote health. We are committed to building and maintaining an inclusive learning environment that prepares a diverse workforce, attuned to ensuring health equity and ready to serve our Los Angeles community.

By capitalizing on the power of multidisciplinary teams, we bring a vast expertise to bear on the most important problems in research, education, clinical care and community engagement. This was the defining feature of my fellowship training in pulmonology, in which basic immunology lab investigators, medical oncologists, pathologists, pulmonologists and surgeons all participated in the development of tumor-infiltrating lymphocyte therapy for patients with cancer — a collaboration that led to a novel therapy with encouraging results. Among the most significant and rewarding aspects of my career since joining the faculty at UCLA has been the continued opportunities for dynamic teamwork leading to clinical benefit.

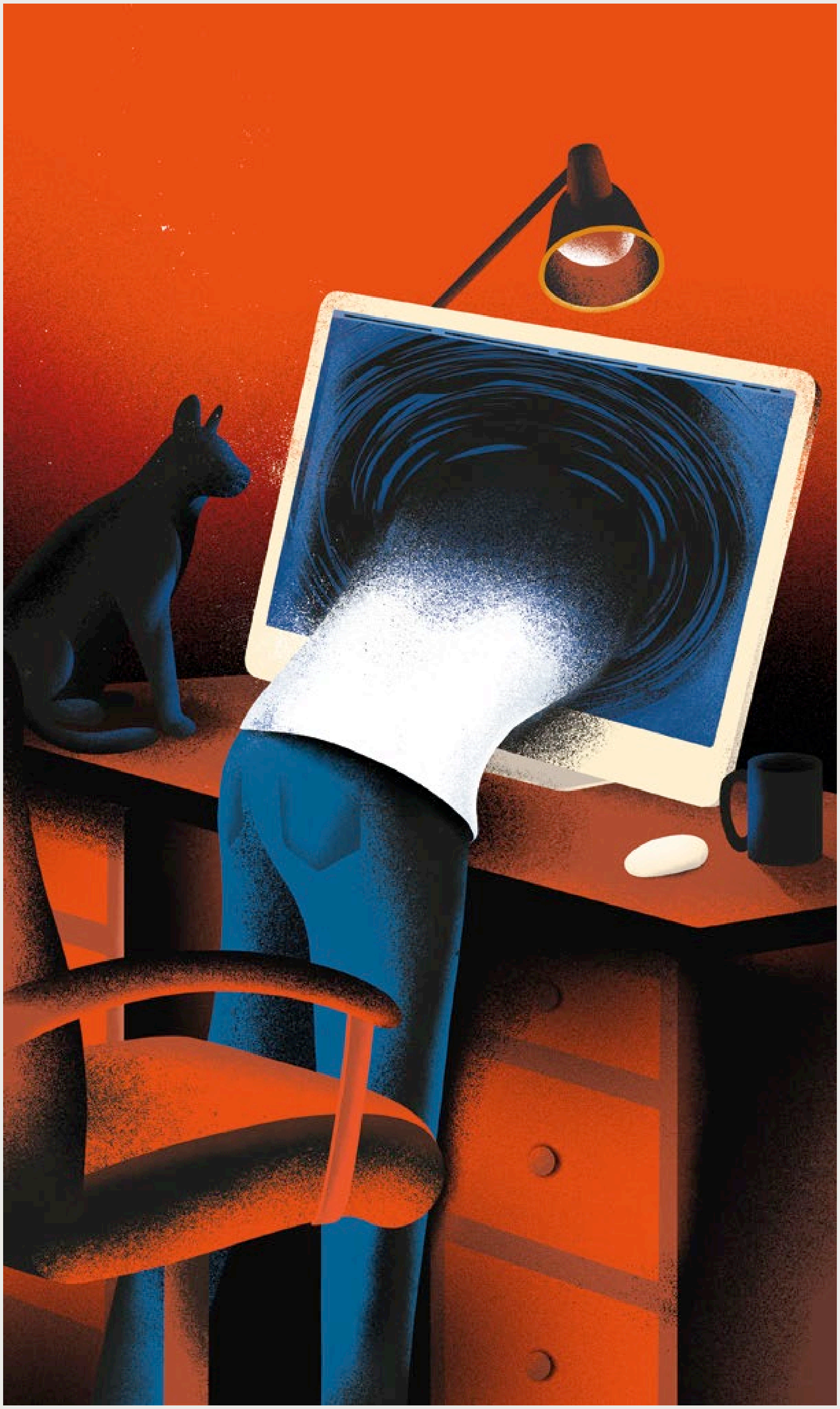
Today, we are educating the next generation of leaders. It is our mission not only to train expert clinicians, but also to translate discoveries in order to directly benefit patients and health care delivery. We are proud of the many accomplishments of our trainees, who are now leaders in clinical care, research and community engagement. They are both advancing knowledge and bettering the lives of patients, as well as our community, which is the ultimate value of what we do in the UCLA Health System and at the David Geffen School of Medicine. This is our vision for the future of UCLA Health.

Steven Dubinett

Steven M. Dubinett, MD (RES '84)
Dean, David Geffen School of Medicine at UCLA
Associate Vice Chancellor for Research

DOWN THE RABBIT HOLE

By Aparna Sridhar, MD (FEL ’13)



SÉBASTIENTHIBAULT

I REMEMBER THE FIRST PATIENT I EVER saw as a resident training in women’s health. She was a poised, middle-aged woman of genuine warmth, but she had significant anxiety related to her symptoms. I felt such a sense of accomplishment being able to explain her diagnosis to her in understandable language and lay out a thorough treatment plan. Armed with science-based, factual information and a clear idea of how we would move forward, she became calmer.

Like my first patient, the thousands who have followed often are anxious about their health. Health anxiety, I have come to realize, is embedded in almost all patient encounters, and to allay the concerns of patients, I must be as much an educator and counselor as a doctor.

Then came the explosion of health information available online. When I got my first smart phone, there were a handful of apps and websites that provided some health-related information. But it didn’t take long for the number of apps and sites to grow exponentially.

I have always considered technology to be a strong ally. Good web-based information tools have helped to shorten the time necessary for counseling and have been a means to decrease health-related anxiety by providing patients with easily accessible information.

However, I came to see another side.

One day, in a busy clinic, it struck me that many of the patients with whom I spoke were using phrases similar to “going down the internet rabbit hole.” There is good information out there in the online universe — apps and websites that offer a combination of expertise, evidence-based information, reputational credibility, transparency and trustworthiness — but there’s also a lot that is confusing and inaccurate, and often it is difficult for a lay person to distinguish one from the other. I started paying closer attention, and I soon realized that many of my patient interactions were taking longer than usual because I had to “rescue” them from those rabbit holes they’d tumbled down. Now, in addition to providing sound, fact-based information, I also had to understand the misinformation my patients had absorbed and talk to them about why it wasn’t true.

Not only were patients receiving inaccurate information online, but the information they were getting was escalating the health anxiety of some to new heights.

“WHILE RELIABLE, EVIDENCE-BASED, CURATED HEALTH INFORMATION ON THE INTERNET CAN CERTAINLY HELP BY REDUCING A PATIENT’S HEALTH ANXIETY, INDIVIDUALIZED OPINIONS AND MISINFORMATION CAN WORSEN THE WHOLE PROCESS OF HEALING.”

I started to look into the role of this internet-generated health anxiety and found a number of studies of the phenomenon and the coining of a new term: “cyberchondria.” According to the entry in dictionary.com, cyberchondria is “unfounded anxiety concerning the state of one’s health brought on by visiting health and medical websites.” In an article in *Psychiatry Research*, it is further defined as “a clinical phenomenon in which repeated internet searches regarding medical information result in excessive concerns about physical health. Cyberchondria is positively associated with symptoms of health anxiety.”

As an obstetrician, I see cyberchondria with some regularity in my first-time moms. So many of the websites, apps and Instagram accounts they follow give them such conflicting and scary information that the joy of being a first-time mom is rapidly replaced by fear of all sorts of rare complications. For those who are prone to anxiety and depression, cyberchondria can amplify every sensation of pregnancy. A simple hiccup of the baby can lead to online searches and end up in an obstetrical emergency unit with a panic attack.

I also see its effects in women who are not pregnant. Misinformation online is, for example, a source of irrational fear about hormonal birth control methods. The female menstrual cycle and the interplay of reproductive hormones is a complex physiological phenomenon, and it takes a detailed curriculum and knowledge of basic science to understand the prescription and management of hormones. Unintended pregnancy due to misinformation and cyberchondria can have lifelong consequences.

Which brings us to the question, why does cyberchondria have such an impact on the behavior of patients? Most theories about health behavior focus on three main aspects. Health behavior is primarily mediated by cognition (how one thinks about a health condition), knowledge (what one understands about a health condition) and perception (how one views the risks associated with a health condition).

Health anxiety usually is related to disproportionate fear of perceived susceptibility to and perceived severity of an illness. While reliable, evidence-based, curated health information on the internet can certainly help by reducing a patient’s health anxiety, individualized opinions and misinformation can worsen the whole process of healing.

At a time when, according to a recent survey, 33% of Gen Z turned to TikTok before their doctors for information about health, one must question where this is going to take us. As I educate medical students to become the next generation of physicians, I worry that our future doctors will face an increasingly difficult task to counteract cyberchondria and will burn out from the frustration and encroachment on their time that it engenders. In my own practice, I try to discourage patients from going down the rabbit hole to investigate advertisements, non-expert personal opinions or promotions of a particular product, test or treatment. These post are typically about increasing followers, and, unfortunately, patients too often fall for it.

Evidence-based science is where patients ought to be putting their faith, not click-bait on the internet. Cyberchondria is very real. As professional health care providers, we must understand its implications, both for our patients and our practices, and be prepared to address cyberchondria as a part of our educational toolkit for the future. ●

Dr. Aparna Sridhar *is associate clinical professor of obstetrics and gynecology in the David Geffen School of Medicine at UCLA.*

JOANNA GNIADY

RIPPLES

By Sandy Cohen

WE TEND TO THINK OF LEGACY AS SOMETHING WE LEAVE behind at the end — the end of our careers, the end of our lives. But what if, instead, legacy is something to intentionally cultivate early on, so it might serve as a meaningful guide for the life we want to live and the impact we hope to make?

That is the approach taken by Sydney Siegel, a licensed clinical social worker in the Simms/Mann-UCLA Center for Integrative Oncology, with Rippling Reflections, a program she initially created for patients and later adapted for medical students at the David Geffen School of Medicine at UCLA.

"Unlike the dictionary definition of legacy as looking back on the long-lasting impact of events in the past, it can also be about looking forward and empowering students to have agency in shaping their legacies," Siegel says. "They can bring real intention as to who they want to be, not only as physicians, but also as human beings with their own unique histories and their own values."

Rippling Reflections started in 2020 as a program for patients facing cancer diagnoses. Many felt overwhelmed and disempowered when asked to consider their legacy as a way to cope with the existential challenges of their illness, Siegel says. They'd look back on their lives and see all the places they felt they'd come up short or failed to live up to their own expectations.

Siegel devised an intervention to enhance a sense of legacy and counteract what she terms "legacy-related distress." Over a series of one-on-one sessions, she guides patients through a creative process that invites them to explore and define their life's legacy in their own way. Legacy is "conventionally centered around accomplishments, success and contributions to society," Siegel says. "This program takes a different approach in trying to expand the idea of what legacy can be for somebody."

Word of Rippling Reflections spread, and it caught the attention of Richard Pietras, MD '86 (FEL '92), PhD, professor of medicine in the Division of Hematology/Oncology, who asked if the program might be reframed for medical students. "Sydney posed the idea that legacy is something that one can begin to cultivate early in life," Dr. Pietras says. "For doctors in training, it can encourage them to think about the careers they hope to have and to look back and rediscover their underlying motivations and purpose in pursuing a life in the service of those afflicted with illness and disease."

"I was excited when he asked me about it," Siegel says. "It is something that had been on my mind — our legacies as providers and healers, and also how we carry our patients' legacies and their life stories and their experiences and their suffering and their grief and their trauma, and the ripples of impact that we make on them and that they make on us."

Siegel reimagined the program as part of an elective course for fourth-year students, during which she meets with each participant individually, leading them through a two-hour process that includes visualization, music, an exploration of their values and creative expression.

Students have embraced the experience.

"It enriched my life," a recent participant says. "This session was an insightful experience that allowed me to face my potential future self in the mirror and examine the qualities that he has so that I can work toward that vision. It also awarded me more empathy for my patients, highlighting how significant my role is in their lives, and the ripple effect that the way I communicate has."

The legacy-development process goes beyond what Siegel describes as "resume-type goals" and delves more into the human side of working in medicine. Some of the questions participants explore include: What kind of person do I want to be in this field? What kind of role do I want to play in patients' lives? How do I want to make patients feel?

"It really focuses on their central values as a human being and how to integrate those values into their careers," Siegel says. "It's a way to give students the space to explore some of those complex emotional experiences of working in health care and witnessing suffering and grief and how our patients' experiences sometimes blend with our own stories of loss and hardship. The hope is that we can add layers of richness and fulfillment to their experience as students and physicians through contemplation of their legacies as physicians."

One recent participant calls the experience "perhaps the best two hours I've spent so far in my fourth year of medical school. What you're doing is extremely important, as many people in medicine are in real need of inner healing," the student says. "Providing that in a safe, nonjudgmental and creative way not only impacts physicians and trainees, but also their patients for years to come."

From the time she started working at the Simms/Mann Center in 2018, Siegel wanted to incorporate the arts and creativity into the care she provided to patients. Before becoming a social worker, she worked in the film industry, where she saw that many filmmakers processed their grief and trauma through storytelling on screen.

She started thinking about how to bring that kind of healing to other populations.

With Rippling Reflections, for both patients and future physicians, Siegel incorporates writing, drawing, music and imagination to help participants uncover their motivations, concerns and desires as they clarify their legacy. It's an exploration of identity and purpose. For most of the student participants, it's the first time in more than a decade of rigorous academics that they've been invited to pause and consider the purpose behind their hard work.

"The idea is that the session is the first of many reflections about legacy throughout their careers," Siegel says. "And they can keep checking in, coming back, adding to their legacy and editing it — accepting that they're going to make mistakes and have setbacks, but knowing that they can always come back to their core values and these exercises to help guide them like their North Star." ●

"UNLIKE THE DICTIONARY DEFINITION OF LEGACY AS LOOKING BACK ON THE LONG-LASTING IMPACT OF EVENTS IN THE PAST, IT CAN ALSO BE ABOUT LOOKING FORWARD AND EMPOWERING STUDENTS TO HAVE AGENCY IN SHAPING THEIR LEGACIES."

***Sandy Cohen** is a senior writer in UCLA Health Communications and a former national writer for The Associated Press. Her article, "The Price," received the Robert G. Fenley Gold Award for Excellence in Writing and the COVID Pivot Award from the Association of American Medical Colleges.*

For more information about the Simms/Mann-UCLA Center for Integrative Oncology, go to:
simmsmanncenter.ucla.edu

MODEST FINANCIAL INCENTIVES HELP WITH WEIGHT LOSS

By Carla Fried

MORE THAN ONE-THIRD OF U.S. adults grapple with obesity, according to the Centers for Disease Control and Prevention. Beyond the personal cost to individuals — a higher risk for diabetes, heart disease and some cancers, as well as heightened social stigma and workplace bias — our health care system spends more than $175 billion annually to treat obesity-related illness.

Results from a field experiment conducted by researchers in the David Geffen School of Medicine at UCLA, Olive View-UCLA Medical Center and the UCLA Anderson School of Management, along with colleagues in New York and Florida, and published in *JAMA Internal Medicine*, make a case that strategic spending in the form of direct payouts to individuals who have lower incomes and are obese may be an effective way to encourage weight loss.

Participants who were given weight-management resources (such as a Weight Watchers membership) and a series of financial incentives for hitting certain milestones were more likely to have lost 5% of their body weight within six months than participants who received the resources but no cash carrot.

Between November 2017 and March 2020, more than 650 individuals (each lower-income and obese; 80% were women) were enrolled in this study through two New York City hospitals (Bellevue and NYU Langone Health) and Olive View-UCLA Medical Center. A team of 16 researchers then sorted participants into one of three treatment groups.

A control group was given resources to help them focus on weight management. That included a one-year membership to WW Freestyle, the current branding of Weight Watchers. Participants were encouraged to attend a meeting at least two times a month. Participants were also given a digital scale and encouraged to weigh themselves at least three days a week, as well as use an app-based food diary to track what they ate. They also received a Fitbit tracking device and were encouraged to commit to at least 75 minutes (increased to 150 minutes mid-study) per week of moderate to vigorous physical activity.

A second group was given the same resources and a series of financial payouts for hitting certain behavioral goals, but payments were not tied directly to weight loss. The maximum that could be earned was $750 over six months, including $150 for attending at least two of the WW Freestyle meetings in the first month and then $60 for each additional month they also attended two meetings. Participants in this group could also receive payments for keeping a weight-loss diary, recording their weight at least three times a week and hitting exercise milestones.

A third group received the same resources, but their financial incentives — again, a maximum of $750 over six months — were tied to hitting specific weight-loss milestones. Participants in this group would receive $50 if they lost 1.5%-to-2.5% of their starting weight in the first 30 days, or $100 if they lost more than 2.5%. At the two-month and three-month weigh-ins they were eligible for another $50 if their weight loss was 2.5%-to-5% or $100 if their weight loss was more than 5%. In the final three months, the payout for a weight loss of 2.5% up to 5% was increased to $100 each month, and $150 for each month if their weight loss was more than 5%.

> THE RESEARCHERS WERE FOCUSED ON HOW MANY PEOPLE IN EACH GROUP MANAGED TO LOSE AT LEAST 5% OF THEIR STARTING WEIGHT AT THE SIX-MONTH MARK.

The researchers were focused on how many people in each group managed to lose at least 5% of their starting weight at the six-month mark. The researchers chose the six-month focus based on prior research that established it takes that long for a change in behavior to begin to stick as a lifestyle habit. Nearly 500 of the original 688 enrollees were still participating at the six-month mark. That said, participants were followed for a full year and 364 of them stayed active for 12 months.

Results included:

- Among the participants given support and resources but no financial incentive, 22% had lost at least 5% of their weight at six months. After a full year, nearly one-third had lost at least 5%, a significant increase.
- Among participants given financial incentives for reaching behavioral goals, 39% lost at least 5% of their baseline weight after six months. A year out, 42% reached that level, a slight uptick.
- Among those paid for specific weight loss, 49% lost at least 5% of their body weight at six months. At the one-year mark, this group experienced some backsliding, with 41% showing at least a 5% loss of body weight.

The researchers note the limits of the compressed time frame of this study. The encouraging results of financial incentives — especially when tied to behavioral goals — make a case for studying whether or not the same incentives may be able to jump-start weight loss that persists over longer periods. ●

***Carla Fried** is a freelance journalist. Her writing has appeared in* The New York Times, Money, Barron's *and* Consumer Reports. *This article originally was published online in UCLA Anderson Review (anderson-review.ucla. edu). It is reprinted with permission.*

ISTOCK IMAGES

Taking a brain-health approach to addiction treatment

WHAT IF SUBSTANCE USE disorders could be treated more effectively by starting with brain healing? That's the approach UCLA Health addiction psychiatrist Timothy Fong, MD (RES '02, FEL '04), advocated at a recent conference for behavioral health specialists. Rather than immediately diving into addressing addictive behaviors with his patients, Dr. Fong prefers to begin by encouraging basic practices such as sleep and exercise to help heal the brain.

During the conference, Dr. Fong, clinical professor of psychiatry and biobehavioral sciences at the Jane and Terry Semel Institute for Neuroscience and Human Behavior at UCLA, related the story of a patient seeking treatment for disordered use of alcohol and benzodiazepines, as well as anxiety and depression. The patient had a 12-year history of recovery and relapse and had spent more than $300,000 on treatment without sustained success.

> "More and more studies are showing that when you get into recovery, your brain heals."

"I said, 'I'm not going to talk to you about alcohol, pills or any of that stuff,'" Dr. Fong told participants at the Emerging Behavioral Health Conference. "We're only going to talk about brain-health strategies."

For this patient, that included prioritizing sleep, incorporating regular physical activity, following a Mediterranean diet — which emphasizes plant-based foods and healthy fats — and "simplifying her psychiatric medications down to one FDA-approved medication for alcohol use disorder," Dr. Fong said. He noted that this patient now has more than three-and-a-half years of sobriety, has gotten to a healthier weight and is thriving in a full-time career.

Understanding of the effects of addiction on the brain has evolved in recent decades. Scientists now know that the human brain can form and repair neural connections throughout the life span — a concept known as neuroplasticity — which means the brain can generally heal from the damage and dysfunction caused by substance use.

"More and more studies are showing that when you get into recovery, your brain heals," Dr. Fong said.

He suggested three areas of focus when working with individuals with substance use disorders: medication, physical activity and sleep.

Dr. Fong tells patients that the medications he recommends aren't necessarily permanent, but they can help "contain the signs and symptoms of substance use disorder so that you can do the work of recovery."

Physical movement, Dr. Fong said, stimulates production of dopamine, enables the body to release it more efficiently and alters the enzymes that metabolize the neurotransmitter. Something as simple as a one-minute walk can help bring about this kind of brain change.

The "sleep centers" of people with addictive disorders have been damaged not just by the toxicity of the substances they've used, but also by sleep deprivation, Dr. Fong said. During sleep, the brain releases hormones that restore and repair cells.

"We have tremendous amounts of sleep technology that we can add into behavioral health other than, simply, telling people to 'Get more sleep' or 'Try to go to bed earlier,'" Dr. Fong said. "More and more studies are showing that when you get into recovery, your brain heals."

— Sandy Cohen

MIKE ELLIS

Expanded Child Tax Credit led to improved health and nutrition among adults


UNSPLASH/INIGO DE LA MAZA

MONTHLY CASH PAYMENTS TO eligible families under the temporary pandemic-era expansion of the federal Child Tax Credit led to better adult health and food security, UCLA-led research suggests. The policy, which expired at the end of 2021, has not been renewed due to concerns among legislators over the credit being overly generous, particularly to lower-income families with limited tax liability, and the lack of an associated work requirement.

The findings could inform the debate over the policy's future, says Jordan Rook, MD, a fellow in the UCLA National Clinician Scholars Program and a general surgery resident. "Cash-transfer programs like the 2021 Child Tax Credit expansion may be powerful tools in improving the health, well-being and nutrition of families," Dr. Rook says. "Evidence like this can help guide the public, the media and politicians as they advocate for and debate the policy's future.

Currently about one-in-six U.S. families with children lives in poverty, leading to poorer health and shorter life expectancy, according to the research team.

Prior to the pandemic, the Child Tax Credit provided up to $2,000 per child ages 16 or younger for families with eligible incomes. Under the pandemic-era American Rescue Plan, signed into law on March 11, 2021, the credit increased to $3,600 per child ages 5 or younger, and $3,000 per child ages 6-to-17. The credit was fully refundable, meaning that all low-income families with children were eligible to receive the entire credit, regardless of their work status or income. These monthly payments reduced poverty by 40% in households with children, according to the researchers. But the policy, a temporary measure to assist families during the pandemic, expired on December 31, 2021.

> "Evidence like this can help guide the public, the media and politicians as they advocate for and debate the policy's future.

The researchers used data from about 39,500 respondents to the National Health Interview Survey from January 2019 to December 2021. They found that prior to initiation of the monthly payments, 60% of credit-eligible adults reported excellent or very good health and 88% reported having food security — that is, access to sufficient food to meet normal dietary needs. Among ineligible adults, 55% said they had excellent or very good health and 89% reported food security.

The researchers then used a study design known as a "difference-in-differences" technique to compare changes in health and food security between credit-eligible families and credit-ineligible families to estimate the impact of the Child Tax Credit monthly payments. Based on this technique, they estimate that following the start of the payments, eligible adults were 3 percentage points more likely to report excellent or very good health and 1.9 percentage points more likely to report food security than ineligible adults.

"Assuming the conservative estimate of one adult per household, this represents improved health for 1.08 million adults, and newfound food security for 684,000 households," Dr. Rook says. "These changes potentially represent important gains in health and nutrition for hundreds of thousands of U.S. families because of this pandemic-era policy."

The study has some limitations, among them the possibility that job losses and expansions to other social programs such as unemployment and SNAP during the pandemic might have affected the findings.

— Enrique Rivero

"Changes in Self-Reported Adult Health and Household Food Security With the 2021 Expanded Child Tax Credit Monthly Payments," *JAMA Health Forum*, June 4, 2023

When stem cells can’t roll on a bumpy road, muscles break down

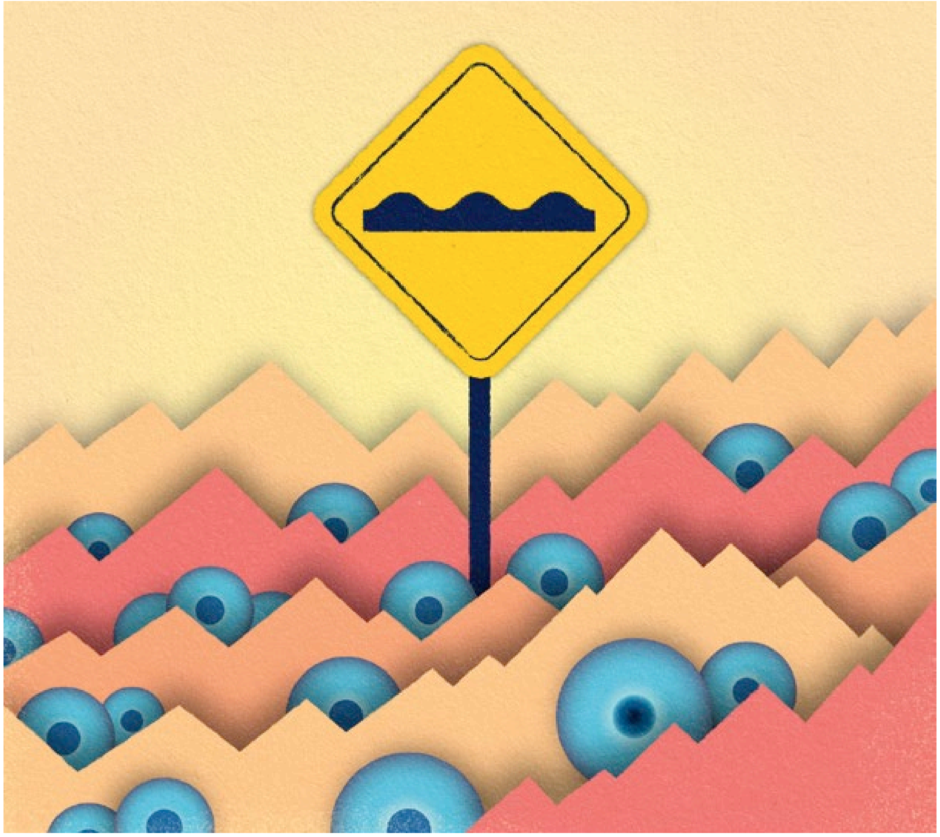
MUSCLES THAT ACHE AFTER A hard workout usually don’t hurt for long, thanks to stem cells that rush to the injured site along “collagen highways” within the muscle and repair the damaged tissue. But if the cells can’t reach their destination, the damaged tissue can’t regenerate. Over time, it breaks down completely and ceases to function.

A group of researchers led by biochemists at UCLA showed for the first time that scarring to the collagen framework that carries these healing cells causes muscles to gradually stop working in Duchenne muscular dystrophy. Duchenne muscular dystrophy is the most common — and one of the most severe — hereditary muscular dystrophies. The muscle-wasting disease, which usually affects boys, begins in childhood and inevitably ends in premature death as the muscles that power the heart, lungs and other vital organs fail.

It is caused by a mutation in the gene for the dystrophin protein, which regulates the organization of muscle cells. In healthy people, dystrophin helps bundles of muscle cells called myofibers attach to the collagen framework — the extracellular matrix that gives muscles their shape, holds them together and provides the “highway” stem cells travel to repair and regenerate damaged tissue.

Rachelle Crosbie, PhD, professor of integrative biology and physiology, suspected that the dysfunction caused by this mutation led to scarring and stiffening of the extracellular matrix, a process known as fibrosis. Using facilities at UCLA’s California NanoSystems Institute, Dr. Crosbie and Kristen Stearns-Reider, PhD, a postdoctoral fellow in Dr. Crosbie’s laboratory, devised a process to “wash” all the cells off the collagen extracellular matrix in healthy mice and those with Duchenne muscular dystrophy.

Under a microscope, the two cell-free matrices, which Dr. Crosbie calls “myoscaffolds,” appeared very different: The healthy one looked like delicate lace, while the Duchenne one looked more like a dense sponge.



MIKE ELLIS

Next, the researchers seeded each myoscaffold with stem cells and watched as the cells tried to grow muscle tissue. Muscle stem cells grew on the myoscaffolds exactly as they would in healthy and diseased muscle. On the healthy myoscaffold, they migrated along the smooth threads and deposited themselves in evenly spaced holes. However, the bumpy, thickened surfaces of the Duchenne myoscaffold made travel difficult and threw up roadblocks that caused the cells to pile up in clumps.

> “The results made it really clear why stem cell therapies have proven challenging for Duchenne muscular dystrophy.”

This is the first time scientists have imaged living cells in a fibrotic myoscaffold, revealing specifically how fibrosis disrupts cell behavior, Dr. Crosbie says. The thin, supple threads of the healthy scaffold also yielded slightly as stem cells attached to them, a deformation critical to the successful development of muscle tissue. The stem cells were unable to deform the thick, stiff fibers of the Duchenne scaffold.

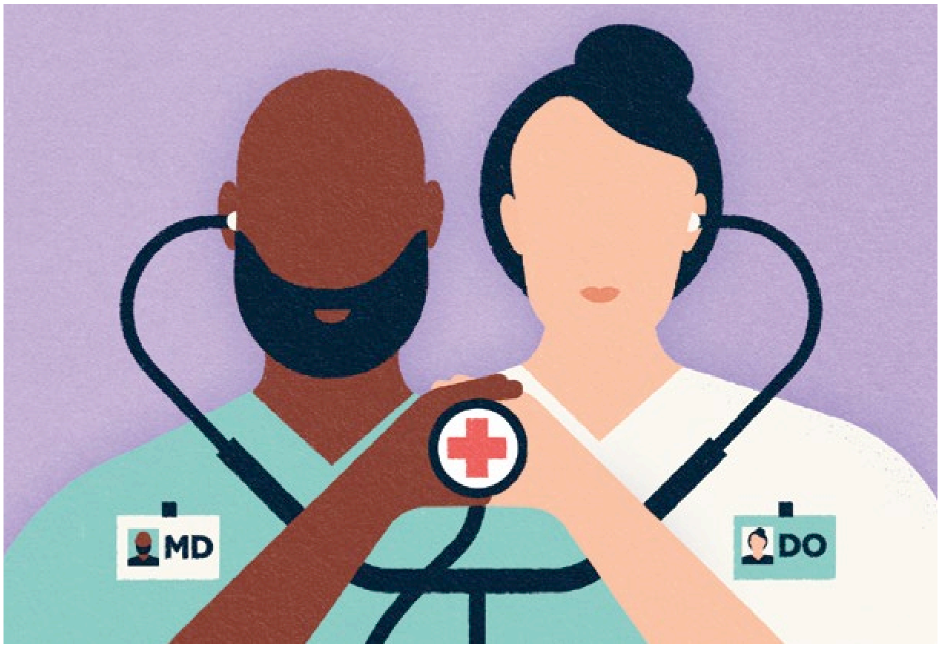
The research team then tested cell behavior on a Duchenne myoscaffold that was created using a therapeutic protein called sarcospan, which is known to stabilize the extracellular matrix. Stem cell function improved once sarcospan had minimized the formation of fibrotic scars.

“The results made it really clear why stem cell therapies have proven challenging for Duchenne muscular dystrophy,” Dr. Crosbie says. “Finding ways to prevent or reduce scarring on the extracellular matrix could make them more effective.”

— Holly Ober

“Myoscaffolds Reveal Laminin Scarring is Detrimental for Stem Cell Function while Sarcospan Induces Compensatory Fbrosis,” *npj Regenerative Medicine*, March 15, 2023

Research suggests MDs and DOs deliver comparable care



MIKE ELLIS

NEW UCLA-LED RESEARCH SUGGESTS that patient mortality rates, length of hospital stay, readmissions and health care spending are virtually identical for elderly hospitalized patients who are treated by physicians with Doctor of Medicine (MD) or Doctor of Osteopathic Medicine (DO) degrees.

While both traditional, or allopathic, medical schools and osteopathic medical schools provide the same rigorous health education, osteopathic training adds a more holistic, hands-on component involving manipulation of the musculoskeletal system — for instance, the use of stretching and massage to reduce pain or improve mobility. “These findings offer reassurance to patients by demonstrating that they can expect high-quality care regardless of whether their physicians received their training from allopathic or osteopathic medical schools,” says Yusuke Tsugawa, MD, PhD, MPH, associate professor of medicine and health services research at the David Geffen School of Medicine at UCLA and associate professor of health policy and management at the UCLA Fielding School of Public Health.

Both MD and DO physicians are licensed in every state to practice medicine. Currently, about 90% of practicing physicians hold MD degrees and 10% have DO degrees. The latter group is rapidly growing due to an increasing number of osteopathic medical schools, with their numbers having swelled by 72% between 2010 and 2020, compared with a 16% increase in MDs during the same period. Their ranks are expected to continue expanding. In addition, osteopathic physicians are more likely than their MD counterparts to serve patients in rural and underserved areas.

The researchers relied on four data sources: a 20% sample of Medicare fee-for-service beneficiaries, amounting to about 329,500 people aged 65 years and older who were hospitalized between January 1, 2016 and December 31, 2019; Medicare Data on Provider Practice and Specialty; a comprehensive physician database assembled by Doximity; and the American Hospital Association’s annual survey on hospital characteristics. Of the patients, 77% were treated by MDs and 23% were treated by DOs.

The researchers found that patient mortality rates were 9.4% among MDs vs. 9.5% among DOs, patient readmission rates were 15.7% vs. 15.6% respectively, health care spending was $1,004 vs. $1,003 and lengths-of-stay were 4.5 days for both.

The results are similar because both types of medical schools deliver rigorous, standardized medical education and comply with comparable accreditation standards, including four-year curricula mixing science and clinical rotations, Dr. Tsugawa says.

The study does have some limitations, the researchers write, primarily the fact that they focused on elderly Medicare beneficiaries who were hospitalized with medical conditions, so the results may not apply to other population groups. In addition, the researchers limited outcomes to specific measures of care quality and resource use, so these findings may not generalize to other outcomes.

But the findings “should be reassuring for policymakers, medical educators and patients, because they suggest that any differences between allopathic and osteopathic medical schools, either in terms of educational approach or students who enroll, are not associated with differences in quality or costs of care, at least in the inpatient setting,” the researchers write.

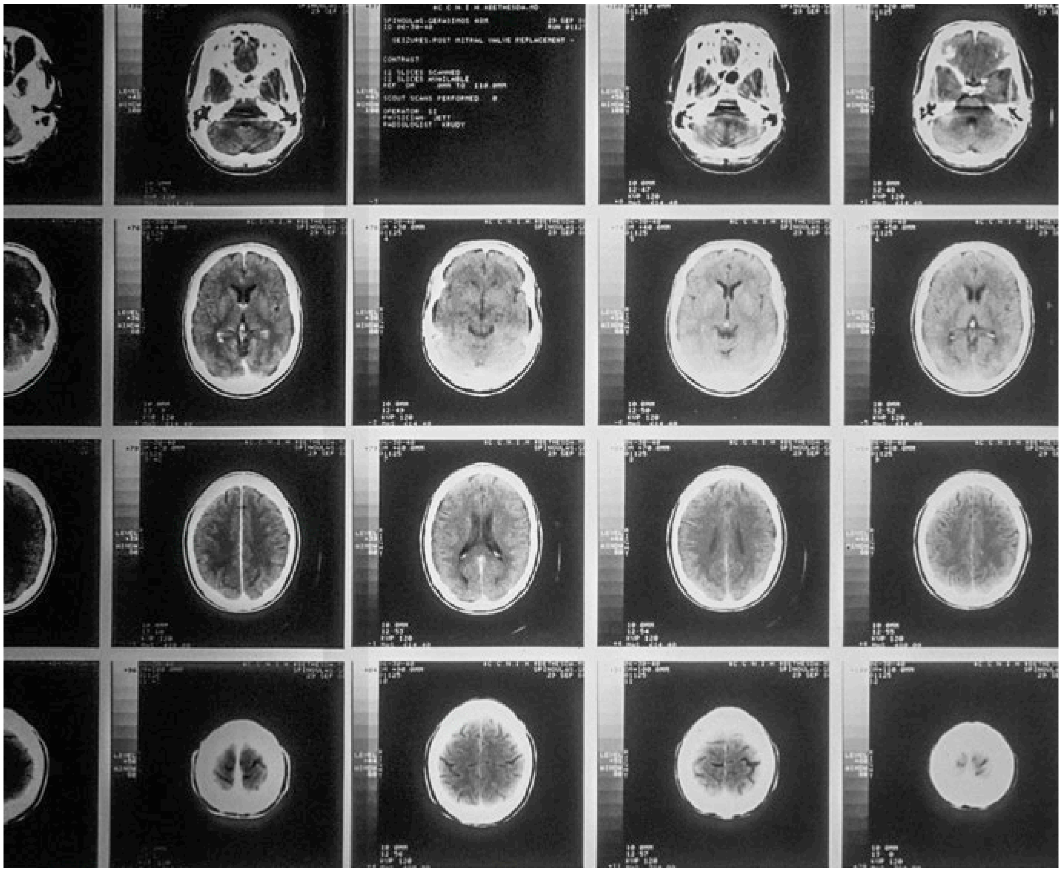
— Enrique Rivero

> “These findings offer reassurance to patients by demonstrating that they can expect high-quality care regardless of whether their physicians received their training from allopathic or osteopathic medical schools.”

“Comparison of Hospital Outcomes for Patients Treated by Allopathic Versus Osteopathic Hospitalists,” *Annals of Internal Medicine*, May 30, 2023

New drug delays progression of a deadly brain cancer

IN AN INTERNATIONAL study co-led by UCLA Health, scientists have shown that a new targeted-therapy drug can extend the time people with a subtype of glioma are on treatment without their cancer worsening. The finding suggests a possible new treatment option for people with the slow-growing but deadly brain tumor.



UNSPLASH/NATIONAL CANCER INSTITUTE

The team found the drug vorasidenib more than doubled progression-free survival in people with recurrent grade 2 glioma with IDH1 and IDH2 mutations, delaying the need for chemotherapy and radiation.

The type of glioma studied in the paper, recurrent grade 2 glioma with IDH1 and IDH2 mutations, tends to affect younger people, often those in their 30s. The current standard treatment, a combination of radiation and chemotherapy, can cause neurological deficits.

Timothy Cloughesy, MD (RES ’91, FEL ’92), professor of neuro-oncology and a member of the UCLA Jonsson Comprehensive Cancer Center, says the availability of a treatment that enables patients to go for longer periods of time between chemotherapy and radiation treatments could have a major impact. “We’re always concerned about the delayed effects of radiation. Having the ability to hold off on getting radiation therapy to the brain with an effective therapy is really critical and very meaningful to this population of patients,” he says.

Vorasidenib is classified as a dual inhibitor of mutant IDH1/2, meaning that it prevents the formation and accumulation of the onco-metabolite 2-Hydroxyglutarate, or 2-HG, that occurs when genetically altered versions of two enzymes, IDH1 and IDH2, are present in a tumor. 2-HG is thought to be responsible for the formation and maintenance of IDH-mutant gliomas.

> “This is the first targeted treatment that shows unequivocal efficacy in this population.”

The study is the first clinical trial to analyze a targeted therapy drug specifically developed to treat brain cancer. Development of targeted therapies for brain tumors has been especially challenging because of the difficulty of getting through the blood-brain barrier. Vorasidenib is a brain-penetrant inhibitor, which means that it has the ability to cross the blood-brain barrier.

The study involved 331 people aged 12 and older who had been diagnosed with recurrent grade 2 glioma with the IDH1 and IDH2 mutations and who had undergone brain tumor surgery. The disease progressed in just 28% of people receiving vorasidenib, compared to 54% of those receiving placebos. And as of September 2022, which was 30 months after the study began, 72% of patients who were in the vorasidenib group were still taking the drug and their disease had not progressed.

For patients who were originally in the placebo group whose cancer began to progress during the study, doctors permitted a switch to vorasidenib. The researchers observed limited adverse side effects from vorasidenib. “This is the first targeted treatment that shows unequivocal efficacy in this population,” Dr. Cloughesy says.

— Denise Heady

Vorasidenib in IDH1- or IDH2-Mutant Low-Grade Glioma,” *New England Journal of Medicine*, June 4, 2023

Information empowers patients

WHEN PRESENTING A PATIENT with a diagnosis of a serious illness, such as cancer, physicians must weigh ethical concerns that straddle the line between their duty to tell the patient the truth and their oath to "do no harm." However, research increasingly has shown the less one knows about their illness, the more daunting it can be and the more distress it can cause, says Aditi Wahi-Singh, LCSW, clinical oncology social worker with the Simms/Mann-UCLA Center for Integrative Oncology. "There are always exceptions, but in general, research suggests it's helpful for patients to have information about their treatment and future progression of disease, if possible," she says.

Wahi-Singh, who previously conducted research on illness uncertainty in pediatric oncology patients and their families, notes that uncertainty about one's illness and treatment puts them at risk for diminished quality of life manifested by stress, emotional discomfort and a sense of losing control.

Studies have shown that preparing patients for surgical procedures — giving them concrete information about what it will feel like, how long it will take and the things they can and cannot do post-surgery — goes a long way toward giving patients a sense of control over their illness, Wahi-Singh says.

Similarly, with diagnosis, some patients want to know the prognosis. The problem for many doctors, however, is a lot of times they don't have a clear answer. "Even if that cannot be answered definitively, perhaps there is other information that could be shared. For example, information regarding treatment expectations, common side effects most people experience, discussions around the physical support they may need during and after treatments, etc.," Wahi-Singh says. "Sharing whatever information is available has been shown to be helpful for many patients. It's a way of giving patients a sense of control when things seem out of their control."

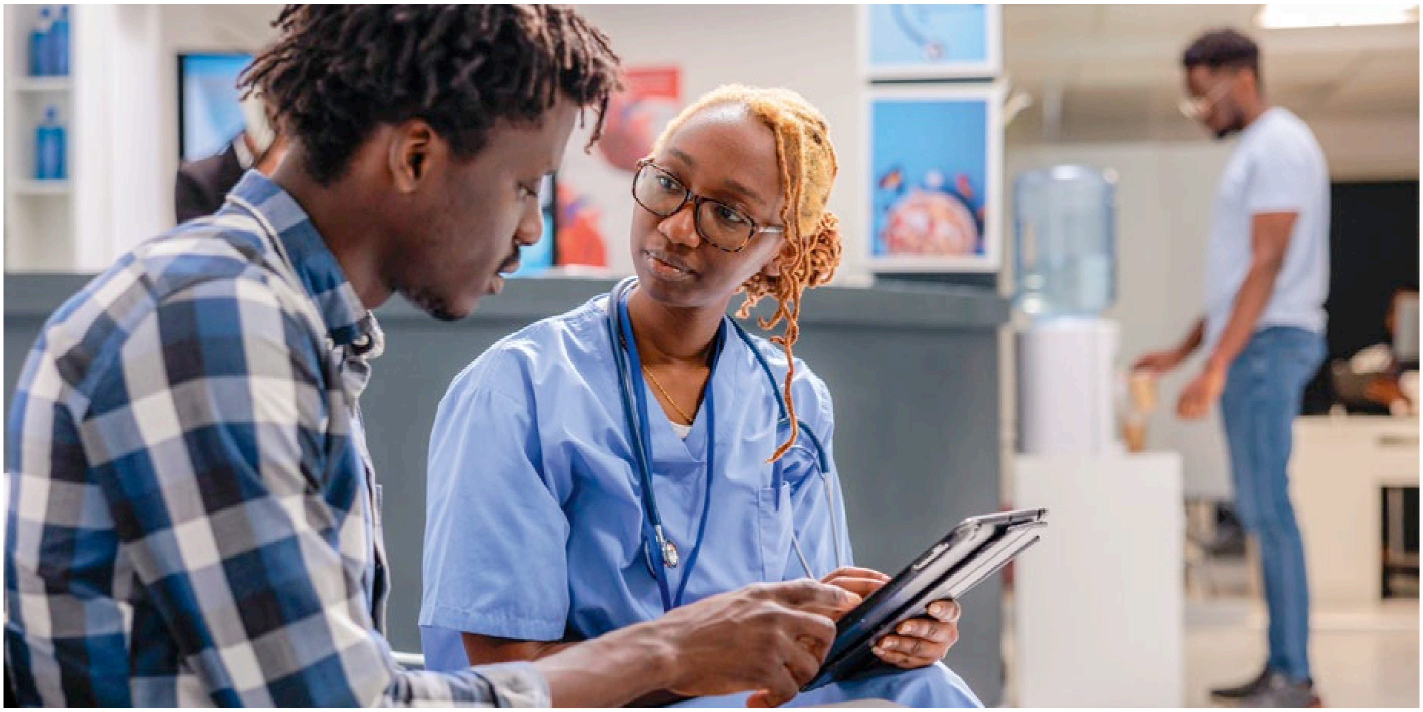
> "The less one knows about their illness, the more daunting it can be and the more distress it can cause."

In 2021, researchers at the University of North Carolina at Chapel Hill conducted a systematic literature review of illness uncertainty management interventions for cancer patients and their family caregivers. The results, published by the National Institutes of Health, showed that over 26 studies of patients with cancer, the majority (65%) found that illness uncertainty management-related interventions had positive effects on outcomes.

The key to helping patients with cancer and their family caregivers manage uncertainty, the report found, is providing informational and educational support. When combined with emotional, social and daily-living support (such as cooking meals or doing laundry for the patient), illness uncertainty was further reduced.

Furthermore, the report found that providing such support also may empower patients to develop positive coping mechanisms. "The idea is that patients will feel a greater sense of agency, preparedness, and better ability to cope," Wahi-Singh says.

— Jennifer Karmarkar



ISTOCK IMAGES

Researchers identify 10 pesticides toxic to neurons involved in Parkinson's

UNSPLASH/YUN CHO BAORWTOIA

RESEARCHERS AT UCLA HEALTH and Harvard have identified 10 pesticides that significantly damaged neurons implicated in the development of Parkinson's disease, providing new clues about environmental toxins' role in the disease.

While environmental factors such as pesticide exposure have long been linked to Parkinson's, it has been more difficult to pinpoint which pesticides may raise risk for the neurodegenerative disorder. Just in California, the nation's largest agricultural producer and exporter, there are nearly 14,000 pesticide products with more than 1,000 active ingredients registered for use.

Through a novel pairing of epidemiology and toxicity screening that leveraged California's extensive pesticide-use database, UCLA Health and Harvard researchers were able to identify 10 pesticides that were directly toxic to dopaminergic neurons. The neurons play a key role in voluntary movement, and the death of these neurons is a hallmark of Parkinson's. Further, the researchers found that co-exposure of pesticides that are typically used in combinations in cotton farming was more toxic than any of the 10 pesticides alone.

For this study, researchers examined exposure history going back decades for 288 pesticides among patients from the Central Valley with Parkinson's disease who had participated in previous studies. The researchers were able to determine long-term exposure for each person and then, using what they labeled a pesticide-wide association analysis, tested each pesticide individually for association with Parkinson's.

> "We were able to implicate individual agents more than any other study has before."

From this untargeted screen, researchers identified 53 pesticides that appeared to be implicated in Parkinson's — most of which had not been previously studied for a potential link and are still in use. Those results were shared for lab analysis led by a researcher at Harvard, who tested the toxicity of most of those pesticides in dopaminergic neurons that had been derived from Parkinson's patients through what's known as induced pluripotent stem cells, which are a type of "blank slate" cell that can be reprogrammed into neurons that closely resemble those lost in Parkinson's disease.

The 10 pesticides identified as directly toxic to these neurons included: four insecticides (dicofol, endosulfan, naled, propargite), three herbicides (diquat, endothall, trifluralin) and three fungicides (copper sulfate [basic and pentahydrate] and folpet). Most of the pesticides are still in use today in the United States.

Researchers also tested the toxicity of multiple pesticides that are commonly applied in cotton fields around the same time, according to California's pesticide database. Combinations involving trifluralin, one of the most commonly used herbicides in California, produced the most toxicity.

Kimberly Paul, PhD, assistant professor of neurology, says the study demonstrated their approach could broadly screen for pesticides implicated in Parkinson's and better our understanding of the strength of these associations. "We were able to implicate individual agents more than any other study has before, and it was done in a completely agnostic manner," Dr. Paul says. "When you bring together this type of agnostic screening with a field-to-bench paradigm, you can pinpoint pesticides that look like they're quite important in the disease."

— Jason Millman

"A Pesticide and iPSC Dopaminergic Neuron Screen Identifies and Classifies Parkinson-Relevant Pesticides," *Nature Communications*, May 16, 2023

UCLA scientists engineer resistance-proof CAR T cells

A FORM OF GENE THERAPY, chimeric antigen receptor (CAR) T-cell treatments, in which immune system cells are collected and modified to bind to tumor-specific proteins, harnesses a patient's own immune system to kill cancer.

But a serious side effect of the therapy is that the modified immune cells can overload the bloodstream with cytokines. Cytokines help moderate inflammation, and an overload can lead to high fevers and drops in blood pressure — a response called cytokine release syndrome (CRS). Because of the high risk of CRS, many patients require the concurrent use of the immunosuppressant drug tocilizumab while on CAR T-cell therapy.

The treatment can also lead to immune effector cell-associated neurotoxicity syndrome (ICANS), which occurs when cytokines disrupt the blood-brain barrier. It can be deadly, says hematologist/oncologist Sarah Larson, MD (FEL '13), associate clinical professor of medicine and a member of the UCLA Jonsson Comprehensive Cancer Center.

Moreover, patients can develop resistance to CAR T-cell therapy once the modified immune cells lose either some or all of their target antigen expression — a phenomenon called antigen escape. "It's one of the major ways that patients relapse," Dr. Larson says.

To overcome this, Yvonne Chen, PhD, associate professor of microbiology, immunology and molecular genetics and co-director of the Jonsson Comprehensive Cancer Center Tumor Immunology Program, designed a type of "bispecific" CAR that can recognize two different tumor markers in patients with non-Hodgkin's lymphoma: CD19 and CD20. By targeting two different antigens, the risk of antigen escape is lowered, and patients remain in remission longer.

In a Phase 1, first-in-human clinical trial led by Dr. Chen and Dr. Larson, researchers treated 11 patients with relapsed/refractory non-Hodgkin's lymphoma with autologous-naive and memory T cells engineered to express a bispecific anti-CD19/CD20 CAR. As of March 2023, 10 of the 11 patients responded to the treatment, and eight of 11 achieved a complete response, according to findings presented at the American Association for Cancer Research annual meeting. The median progression-free survival was 18.2 months.

"With such a small number of patients, a 73% response rate is really impressive," Dr. Larson says.

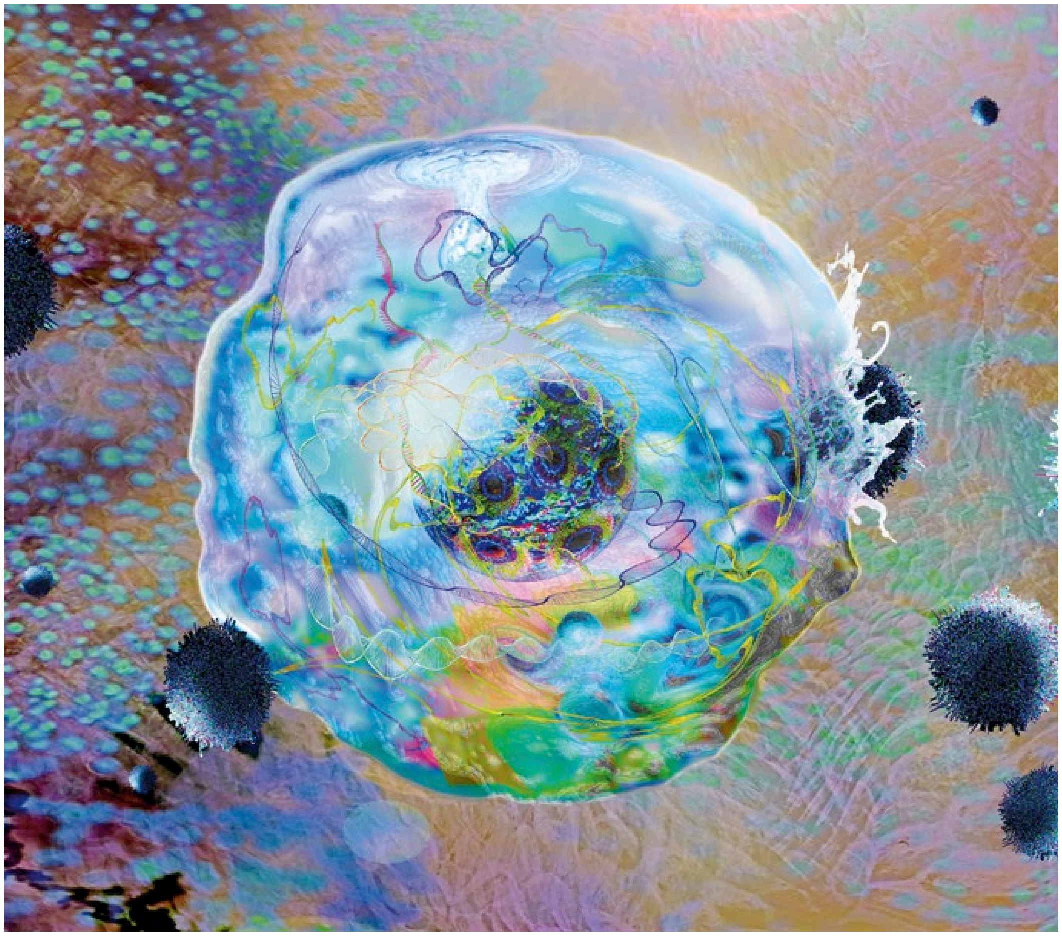
But what was most promising for Dr. Larson and the research team was how safe the treatment turned out to be. None of the patients experienced neurotoxicity, and only one patient required treatment for CRS. Dr. Larson says that the therapy's lack of side effects, despite its strong potency, may be related to the CARs' ability to "debulk," or reduce, the tumor cells early before there is an overwhelming cytokine response.

The trial is ongoing, and the FDA has granted a Fast Track Designation for the therapy, which means that the drug could receive accelerated approval.

Dr. Larson says that the high efficacy and safety of the new treatment could allow medical centers to administer it in an outpatient setting, and patients would not need to take tocilizumab, the immunosuppressing drug.

— Lauren Ingeno

"CD19/CD20 Bispecific Chimeric Antigen Receptor (CAR) in Naive/Memory T Cells for the Treatment of Relapsed or Refractory Non-Hodgkin Lymphoma," *Cancer Discovery*, March 1, 2023



SCIENCE SOURCE

BREAK DOWN *the* BARRIERS

Two UCLA Health researchers take a hard look at the obstacles that hinder many aspiring students from underrepresented racial and ethnic groups from applying to medical school.

Jessica P. Faiz, MD
Assistant Clinical Professor of Emergency Medicine
Core Investigator, VA Center for the Study of Healthcare, Innovation, Implementation and Policy

Utibe R. Essien, MD, MPH
Assistant Professor of Medicine
Health Disparities Researcher, VA Center for the Study of Healthcare, Innovation, Implementation and Policy
Associate Vice Chair, Equity, Diversity and Inclusion, UCLA Health Department of Medicine

When Jessica P. Faiz, MD, and Utibe R. Essien, MD, MPH, were students at the Albert Einstein College of Medicine in the Bronx, New York, and trainees in Boston, they saw first-hand the negative impact of health care inequities on patients from underrepresented and underresourced groups. “As a resident in emergency medicine at Boston Medical Center, which is a county facility, I treated a very diverse patient population and saw the real effects of structural racism on patient outcomes,” Dr. Faiz says. “While I loved being at the bedside, I knew that there was much change that needed to happen.”

Today, Dr. Faiz is assistant clinical professor of emergency medicine in the David Geffen School of Medicine at UCLA and a health-services researcher at the VA Greater Los Angeles Healthcare System. Dr. Essien is assistant professor of medicine in the David Geffen School of Medicine and a health-disparities researcher at the VA Center for the Study of Healthcare Innovation, Implementation and Policy.

This past spring, Drs. Faiz and Essien — in collaboration with Donna L. Washington, MD, MPH, professor of medicine, and Dan P. Ly, MD, MPP, assistant professor of medicine and health-services research — published a study in which they found that Black, Hispanic and Native American students taking the Medical College Admission Test (MCAT) prior to applying to medical school have more financial and educational barriers and face greater discouragement from important advisors compared with their white counterparts. Even though they sat for the test, such obstacles often dissuaded the students from applying to or attending medical school, the researchers concluded.

In addition to diminishing diversity within medical schools, the downstream impact for patients can be profound. “Having a doctor who looks like them makes a patient more likely to accept flu vaccination, to have a colonoscopy, to consider having a more invasive heart procedure,” Dr. Essien says. “We’re not just advocating diversity out of the goodness of our hearts. It literally is about saving lives.”

Drs. Faiz and Essien talked about their study with Natalie J. Perry, PhD, lead for the Cultural North Star Program in the David Geffen School of Medicine at UCLA. Their conversation has been edited for length and clarity.

ADAM AMENGUAL


ADAM AMENGUAL

I am so excited to talk to you today. This is such an important discussion. Why are you engaging with this topic now?

Dr. Faiz: Working as an emergency medicine physician and being on the frontline of care delivery, I've seen the horrendous effects that systemic racism can have on patients and how it can threaten their lives. But I've also seen how excited patients are, and how comfortable they become, when they see a physician who looks like them and who speaks their language. That has made me passionate about looking into the question of why our physician workforce is not as diverse as it should be. That led to our research question and looking at upstream barriers for medical students.

Dr. Essien: For me, it's personal. I am a Black man in medicine. We are 3% of the physician workforce in this country, and that number hasn't really changed since my dad graduated medical school in Nigeria over 40 years ago. So, the work of trying to improve those numbers is super personal and very important to me, both for our patients and for the communities that we grew up in. There have been people talking around the edges of this issue for years, and there are those who want to pretend that it's not about race when, in reality, it is. All we have to do is look at the statistics: 3% Black male physicians, 5.7% Black physicians in general, 7% Hispanic physicians, 1.2% Native American physicians. Compare that to the national averages of 13.6% for the Black population in the United States as a whole, 18.9% for the Hispanic population and 2.9% percent for the Native American population. The underrepresentation is clear.

"Having Black and brown physicians is integral to questioning the status quo in medicine."
— Dr. Utibe R. Essien

Dr. Faiz: There are countless accounts, going back generations, of Black, Latino and Native American people being mistreated in medicine and dying disproportionately, and I think, ultimately, diversifying the physician population is not just about increasing numbers in the workforce; it is literally about improving patient outcomes and saving lives. A recent study showed that for every 10% increase in the number of Black primary care physicians in a county, there was a 31-day higher life expectancy for Black individuals living there.

Dr. Essien: Having Black and brown physicians is integral to questioning the status quo in medicine. These doctors are more likely to spend time listening to minoritized patients, provide guideline-recommended care and understand the health impacts of the racist history of medicine.

By the time someone sits down to take the MCATs, they've demonstrated a determination to become a doctor. What, then, are the barriers to entry into medical school for students from underrepresented and underresourced racial and ethnic communities?

Dr. Faiz: This is what we sought to answer through our study. We looked at a cohort of more than 81,000 students who have gotten to the point where they're taking this very rigorous exam, are very committed, but still experience upstream barriers. That includes things like having attended low-resourced colleges, having parents without a college degree, difficulty affording MCAT-preparation materials and having more pre-medical school debt. These are barriers that decreased their likelihood of applying to and attending medical school.

Dr. Essien: There often is a lot at play in the lives of these students. It's not that they didn't know how to take a test or that they didn't study hard enough during their undergraduate education. It can also be that they were in a family where they had to take a job as an undergraduate to help provide for their family, as well as support themselves and earn money to pay for their tuition. And there also is the issue of mentoring, which is significant. A striking finding in our study was that what we refer to as "underrepresented in medicine examinees" were more likely to report that they had a college pre-health advisor who negatively influenced their journey toward medicine. Taking all these factors together — and having nothing to do with their MCAT scores or their letters of recommendation or their volunteering experiences — we saw that nearly one-in-five Black and Hispanic individuals who experienced these negative upstream effects didn't go on to apply to or attend medical school.

Dr. Faiz: Given the results of our study, there are undoubtedly students from underrepresented backgrounds who are interested in medicine but who are being deterred even before they take the test. If we see that these barriers exist for those who are already taking the MCAT, we can only imagine how many students are falling off before that. And we know that that has to be due to systemic factors.

What do you think needs to be done to address this issue?

Dr. Faiz: I think that to move the needle, education and support needs to happen at every single level in a student's journey. It has to start with the people who are advising and guiding students at the high school and undergraduate levels along the entire pathway toward applying for medical school. This extends, also, to supporting and retaining students once they have gotten into medical school. There needs to be a baseline understanding of how structural barriers have affected them up until this point. We hope that our paper will prompt people who are in advisory positions to recognize the structural barriers that are in place and take the circumstances of students' lives more into account, and to think creatively about how to dismantle existing barriers and not just count a student out if they do poorly in a class or behave in a certain way.

Dr. Essien: Taking a holistic perspective of students who are in these pipeline and pathway programs, and understanding the circumstances of their lives, is critical. As is taking measures to eliminate economic barriers at every step of the pathway to medicine. The Association of American Medical Colleges has proposed solutions that include broadening the benefits for their medical school Fee Assistance Program, removing costly medical school application fees — which can cost up to $150 per school — and continuing virtual interview options to limit travel expenses.

Dr. Essien, you spoke of the negative impact that an advisor can have on the direction of a student's trajectory. Positive mentorship is so important.

Dr. Faiz: It is. As an early-career faculty member, I can't get enough mentorship. And I think that, particularly for young physicians from underrepresented racial and ethnic groups, it is important for retention for them to have that kind of support and to create an environment in which everyone can thrive. I don't think it is ever too early to start mentorship. It can begin in kindergarten to expose young people to what is possible in science and medicine.

Dr. Essien: I was fortunate that my dad was a doctor, and though I spent a lot of years not wanting to go into this field, I ultimately was able to see what this world looked like, and I really was inspired by it. Not everyone will have that kind of opportunity, which is why we need to create spaces for that kind of exposure to happen.

> "I think that to move the needle, education and support needs to happen at every single level in a student's journey."
> — Dr. Jessica P. Faiz

What will be the next step for this research?

Dr. Essien: One question we have is around the intersection of race and sex or race and gender. Appreciating and acknowledging that intersection is really important, and the fact that there are different levels of mentorship and support that a Black man might receive, for example, versus what a Hispanic woman might receive.

You've touched on many barriers to entry for students from underrepresented racial and ethnic groups and discussed the need to dismantle these barriers at a societal or institutional level. What can individuals do at the more grassroots level to help? What is your prescription for change?

Dr. Essien: At a grassroots level, everyone who is engaged with this question at some point along the path of a student's journey can familiarize themselves with the data we've shared and, hopefully, come to understand why diversity in medicine isn't just the right thing to do, it actually is necessary to save lives. For those of us who are involved in the admissions process in any way, it is important to undergo antiracism training to ensure that we are not bringing our own biases into the evaluation process. And, finally, we can continue to use our voices to advocate for the reversal of policies, such as legacy admissions, that systematically disadvantage students of color. ●

"Racial and Ethnic Differences in Barriers Faced by Medical College Admission Test Examinees and Their Association with Medical School Application and Matriculation," *JAMA Health Forum*, April 14, 2023

DR. LUCINA UDDIN

STEPS INTO THE *U* MAGAZINE SPOTLIGHT

While many neuroscientists exploring the human brain focus primarily on discreet areas and functions, Lucina Uddin, PhD, professor-in-residence of psychiatry and biobehavioral sciences in the Jane and Terry Semel Institute for Neuroscience and Human Behavior at UCLA, looks at the big picture, using non-invasive imaging technology to discern how the different parts connect, communicate and develop across the lifespan. A key area of her interest is flexibility — how we adapt from moment to moment in the face of challenges (and the consequences of being unable to do so) — with the goal of contributing to the development of new therapies to benefit people with conditions such as autism spectrum disorder.

WHEN DID YOU FIRST START TO THINK ABOUT SCIENCE?

I was under 10 years old, and I heard that we only use 10% of our brains and thought, that's interesting, so what happens to the other 90%? I guess it stuck with me because when I started as an undergrad at UCLA and was looking through all the different majors and saw neuroscience, I thought, "Oh, that's probably going to tell me about what's going on with the other 90% of the brain. I'll do that!"

WHAT HAS BEEN THE GREATEST CHALLENGE IN YOUR WORK?

The biggest challenge studying the human brain is that we can't cut into it or manipulate it or inject things into it. We can only study it by using noninvasive approaches and observe it using high-tech methods to peer into the functioning brain without causing harm to the human subject. The challenge becomes making inferences from a distance.

WHO IS YOUR SCIENCE HERO?

My graduate advisor, Eran Zaidel. He was a professor of psychology at UCLA and had tremendous curiosity, and he encouraged his students to follow our wildest ideas. I think that's pretty rare, because most people want to do something feasible and something tractable, and they don't want you to go off in some wild direction. But he didn't think any problem was too difficult to tackle.

WHERE ARE YOU HAPPIEST?

Honestly, I'm happiest sitting on my couch under a blanket with a cup of tea and reading a novel. I think reading literature is really how we learn about life. It is where humans do their most creative and enduring work. To me, reading fiction is more liberating than doing science.

WHAT HAS BEEN YOUR BIGGEST "AHA!" MOMENT?

When I first started in this field, thinking about the brain was modular — this region of the brain does language and that region of the brain does emotion. But the more time I spent studying a particular brain region, the clearer it became to me that no one region is specialized for a single, specific action. It's more likely that multiple brain regions work together for a given action. I think that assigning very specific actions to very specific regions of the brain takes away from the beautiful complexity of what it is actually doing. It's more like all these parts are playing together as an orchestra rather than one part playing as a soloist.

WHAT DO YOU CONSIDER TO BE YOUR FINEST ACHIEVEMENT?

In 2010, my group published a model about how the insular cortex is sort of the conductor for largescale network dynamics in the brain. I didn't think at the time it would be anything so impactful, but it's now been cited more than 5,000 times. In psychiatry, for example, researchers are finding that the insular cortex seems to not function well in conditions like autism, anxiety, schizophrenia, depression — that something very subtle is going on that has implications for a wide range of psychiatric conditions. It turns out a lot of researchers are using our network model to better understand their own clinical condition of interest.

WHAT ARE THE QUALITIES OF A GREAT SCIENTIST?

Resilience. Being able to get back up every time you're knocked down, because more often than not, the thing you thought would work out doesn't work out, the grant you thought would be coming in doesn't get funded, the experiment you hoped would shed light sheds nothing.

WHAT CHARACTERISTIC MOST DEFINES YOU?

Someone once called me a force of nature, and I thought that was funny, because isn't that supposed to be a bad thing, like when a tornado or hurricane comes along and busts everything up? But I guess I'll take it.

WHAT IS YOUR GREATEST VIRTUE?

Well, it's not patience. I'm very impatient. Maybe it's stoicism.

WHAT IS YOUR GREATEST FAULT?

See above. You need to be patient in science, but it is hard.

WHAT IS YOUR MOTTO?

Why not?

WHOM DO YOU MOST ADMIRE?

My parents. They made the tough, brave choice to leave the country where we were born — Bangladesh — and come to the United States to make a better life for us. It meant having to put their own lives on hold and investing their hopes in the next generation. It's a selfless act that I'm not sure I would be able to do.

WHEN DO YOU NOT THINK ABOUT SCIENCE?

When I'm doing yoga.

IF NOT A SCIENTIST, WHAT WOULD YOU BE?

I would write sci-fi novels. I don't know that I'd be much good at it, but I'd certainly try.

WHAT IS YOUR MOST TREASURED POSSESSION?

I don't place a lot of meaning on material goods. Don't get me wrong, I love my stuff, but I'd also be okay without it. You're going to lose things throughout your life, so I don't really assign value to things.

WHAT KEEPS YOU UP AT NIGHT?

Nothing. I sleep eight hours a night. I'm very fond of sleep.

WHAT IS THE BEST MOMENT OF YOUR DAY?

It's when I fry up an egg and sit down with a cup of coffee in the morning and don't have to rush through anything. Breakfast is a good moment.

WHAT IS YOUR DEFINITION OF HAPPINESS?

When you realize that you've arrived at where you want to be and where you are valued.

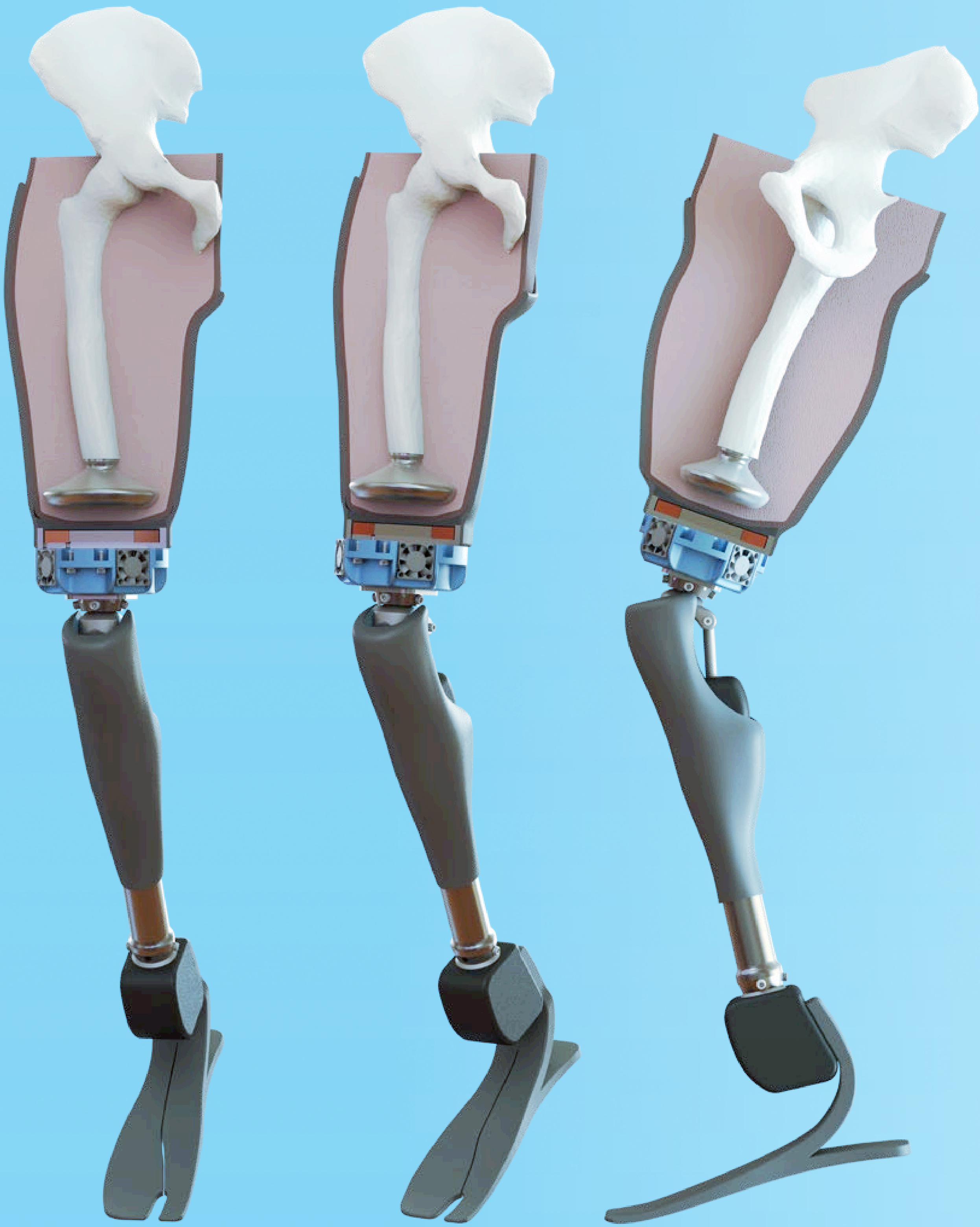
WHAT IS YOUR DEFINITION OF MISERY?

Needless paperwork, red tape or being thwarted in your efforts to achieve something.

WHAT MUSIC DO YOU LISTEN TO WHILE YOU WORK?

At work, it would be some kind of jazz that's not obtrusive. But I don't typically listen to music when I work; it's too distracting. The music that I love and listen to most is hip-hop. That's what I blast in my car on my way to work. ●

OJIMA ABALAKA



WILL FLANAGAN/ANATOMICAL ENGINEERING GROUP

Computer renderings of an implanted magnetic-attachment prosthetic device being developed by Dr. Tyler Clites and his Anatomical Engineering Group in the UCLA Samueli School of Engineering in collaboration with Dr. Nicholas M. Bernthal, chair and executive medical director of orthopaedic surgery.

BRIDGING BODY & MACHINE

Doctors and engineers are working together at the intersection of innovative surgery and advanced robotics to develop futuristic prosthetic devices that will realize the dream of making patients whole.

By Lyndon Stambler

STEP INTO THE LAB OF TYLER R. Clites, PhD, on the second floor of the UCLA Health Outpatient Rehabilitation Services building, and you enter a world of the bionic future — a time when advanced surgical techniques and precision-engineered prosthetic limbs will provide full functionality and sensation without pain and joint replacements will last a lifetime.

Showing a visitor around the lab, Dr. Clites, assistant professor of mechanical and aerospace engineering at UCLA's Henry Samueli School of Engineering and Applied Sciences and orthopaedic surgery at the David Geffen School of Medicine at UCLA, opens a door with a sign ominously warning "Biohazard." "This," he says, "is the KUKA Room."

The KUKA — a brutish orange industrial robot with a hefty articulated arm — stands in the room's center. Typically used on an auto-assembly line, the KUKA in Dr. Clites' lab has been reprogrammed to test the effect of various forces on the joints of cadaveric human body parts — arms, thumbs, knees, ankles — as well as on an array of prosthetic devices. "It can produce enough force to rip a knee apart or tear an ACL," Dr. Clites says. "That's what we use it for."

Next door, the Surgical Innovation Suite and an adjoining Biomechanics Room complete this warren of creativity, a multidisciplinary space where UCLA bioengineers, orthopaedic surgeons and medical and graduate engineering students work together to imagine and develop new prosthetic devices and implants. Since arriving at UCLA a few months into the COVID-19 pandemic, Dr. Clites has forged collaborations with a dozen orthopaedic surgeons on nine projects. These include ankle and thumb implants, a novel attachment using an electromagnet for leg and arm prostheses and an implant to prevent anterior cruciate ligament (ACL) injuries.

It is a field blending engineering and medical science that Dr. Clites has dubbed "anatomics." As described on the website for Dr. Clites' Anatomical Engineering Group, anatomics explores the "bionic possibilities at the intersection of innovative surgery and advanced robotics." It envisions a future in which, Dr. Clites says, "efforts of surgeons and mechatronic engineers [who combine mechanics, electronics and computing] are synchronized in the co-development of body and machine in pursuit of bionic performance that is superior to what is possible with mechatronics alone."

"This is no longer the stuff of science fiction," Dr. Clites says. "Already, humanity has built incredible exoskeletons and prostheses that restore locomotion to persons with physical disability, and even augment able-bodied performance. By combining surgical and mechanical design to co-engineer body and machine, our long-term goal is to transform the field of human rehabilitation and augmentation by making anatomics a fundamental tenet of bionic development."

It is, says orthopaedic and plastic surgeon Kodi Azari, MD (FEL '04), chief of reconstructive transplantation, and one of Dr. Clites' surgical collaborators, an exciting and hopeful future. "The technology is advancing at such a pace that now we can become really creative and try to think about what we can do to get a person as close as possible to where they were before the loss," he says.

BACK IN THE KUKA ROOM, DR. Clites holds a broken black-plastic prototype of a 3D-printed device that was imagined to replace the function of the talus bone in the ankle. Breaking the talus, a small bone located between the lower leg bones and the heel that has a critical role in supporting a person's weight and movement, is a serious injury, and patients often face a difficult choice: either fuse the bones and limit functional mobility or amputate the foot. Dr. Clites and Nelson F. SooHoo, MD (FEL '02), a specialist in foot and ankle surgery, have been collaborating on this "compliant" support device — a flexible mechanism that closely mimics the motions of the natural world by bending rather than rubbing, sliding or rolling. They hope their device will not only save the limb, but also, because it is frictionless and does not wear, last a patient's lifespan.

But first, it must be tested.

"We push them to failure," Dr. Clites says of the prototypes that are arrayed around the KUKA Room. "They're supposed to fail. The question is when do they fail, and how."

Through their failures and successes, Dr. Clites and his UCLA Health collaborators foresee a new era in prostheses and implants, a time in which amputations are no longer considered failures. Rather, they are performed with exquisite care to preserve nerves, muscles, function and sensation as engineers like Dr. Clites develop advanced prostheses "with the patient in mind, leveraging new body structures to create the next generation of bionic technologies."

"These patients are complex, amazing, incredible human beings, with deeply held passions and hopes and dreams," Dr. Clites says. "We're trying to help them have access to whatever they want by tearing down some of the barriers that exist systemically around them."

Nicholas M. Bernthal, MD (RES '12), chair and executive medical director of the Department of Orthopaedic Surgery, is one of the UCLA Health surgeons working closely with Dr. Clites to improve outcomes for patients who have undergone an amputation. "He is every surgeon's dream," Dr. Bernthal says of Dr. Clites. "He is a guy who wants to solve problems."

> **"WE PUSH THEM TO FAILURE. THEY'RE SUPPOSED TO FAIL. THE QUESTION IS WHEN DO THEY FAIL, AND HOW."**

Dr. Bernthal and Dr. Clites, as well as Alexandra I. Stavrakis, MD '10 (RES '16), an orthopaedic surgeon specializing in the hip and knee, have been working to improve how prostheses attach to the body. "One of the big issues following amputation is the socket pulling on the stump," Dr. Bernthal explains. "The socket squeezes all of the tissue between the socket and the bone. That creates a pistoning motion, back and forth and up and down with every step. That's a very painful experience over the course of a million steps a year."

Together, the investigators theorized that implanting a piece of steel coated with titanium nitrate in the residual stump and placing an electromagnet in the socket of the prosthesis would improve both fit and control. With a pair of grants from the National Science Foundation and the U.S. Department of Defense totaling $1 million, they developed such a device. "The goal is to have the energy expenditure of walking with a prosthesis be no more than walking without an amputation," Dr. Bernthal says.

Development of the device did not come without its own friction. "He [Dr. Clites] wants the magnet to be as big as possible," Dr. Bernthal says. "The stronger the magnet, the more he can do with it. That's an engineer's perspective. A surgeon's perspective, on the other hand, is that I need the magnet as small as possible. If it irritates the soft tissue, that's a non-starter."

The magic of such collaborations, Dr. Clites says, "is that we seek out a sweet spot within this tension where this solution can have the most impact."

In the lab, the researchers use motion-capture cameras to track the movement of their designs in 3D space. The results lead to further adjustments and new design iterations that are followed by more testing, all contributing to the unfolding evolution of the device. "The joy of working collaboratively together on something like this," Dr. Bernthal says, "is being able to sit down, draw something on a piece of paper and take it all the way to a human clinical trial and improve the lives of patients."

AN IMPORTANT FOCUS FOR DR. Clites is to make the promise of anatomics accessible to the broadest-possible population of patients. As the equity, diversity and inclusion officer for his department in the Samueli School, he is keenly aware of past inequities that have prevented many patients — particularly those from underrepresented and underserved communities — from accessing appropriate care.

As an example, he notes that "a Black person with diabetes in the U.S. is four times as likely to have an amputation as a white person. That is a staggering disparity. There is nothing inherent to race to explain it; it's about access to food and appropriate medical care," he says.

"Awareness of issues around diversity, equity and inclusion must permeate all the research that we do. If I'm building a new prosthetic device, and I know that diabetic amputation is the most common type of amputation, but that it also is more likely to affect Black Americans than white Americans, then I must make sure that anything I design is going to be accessible to people with diabetic amputations," Dr. Clites says. "The people least likely to be able to afford this care are the same folks who are most likely to need it, and that has to be at the forefront of our thinking when we are designing these devices."

MILO MITCHELL

Dr. Nelson F. SooHoo, a specialist in foot and ankle surgery, is collaborating with Dr. Clites on a prosthetic device to replace a critical bone in the ankle to preserve the limb.

MILO MITCHELL

Anatomics is "no longer the stuff of science fiction," says Dr. Tyler Clites.

Following an amputation, prosthetic care and socket fitting is time and resource intensive, and patients can incur thousands of dollars in out-of-pocket expenses. “Often, the socket has to be replaced or remade because people’s limbs change shape and size. If a patient can’t afford it, they run what may be an even more profound risk of developing skin lesions that can knock them off their feet, which itself can further exacerbate the financial strain, or even lead to further amputation,” Dr. Clites says.

“To make a device that targets issues in post-amputation care, my focus needs to be on improving socket fit and reducing the need for adjustment in the clinic, because those are costly issues currently affecting people in underresourced communities. If we can design a device that is adaptive to changes in limb shape and size — which our magnetic-attachment approach does — then a lot of that cost can be avoided. Understanding these factors is essential in developing technology that will benefit underserved populations.”

“THE PEOPLE LEAST LIKELY TO BE ABLE TO AFFORD THIS CARE ARE THE SAME FOLKS WHO ARE MOST LIKELY TO NEED IT.”


MILO MITCHELL

Amin Khatibi, a graduate student in mechanical engineering, works with Dr. Clites on the design of an advanced prosthetic device.

THE EARLIEST-KNOWN PROSTHEsis is a wooden big toe, attached with leather straps to the body of a mummified Egyptian noblewoman. It dates back 3,000 years. Centuries later, prosthetic limbs made from wood and metal were found amid the remnants of the Roman Empire and the Middle Ages. Although Ahab, the fictional captain of the Pequod that Herman Melville wrote of in *Moby-Dick*, sported a prosthetic leg fashioned from a whale bone, the standard prosthesis of the mid-1800s was a peg carved from wood.

Needless to say, the field has evolved. Battlefield injuries from two world wars in the 20th century spurred accelerated development of artificial limbs, and increased interest from the defense department further speeded up work in functional prostheses.

But it was not until the turn of the current century that work in the field really exploded, with an array of futuristic (at the time) devices: implanted biocompatible electrodes, osseointegrated implants embedded directly into the bone, robotic prosthetic limbs and devices controlled by signals emitted from muscles and nerves. “It’s a great time to be in the field,” Dr. Clites says. “All of these pieces were developed in isolation and are now being integrated into full-stack bionic systems.”

However, for a patient to fully benefit from these bionic systems, surgical techniques for amputation must progress, as well. While techniques have advanced to the point that the majority of damaged limbs can now be salvaged rather than amputated, results for the remaining patients for whom amputation is the treatment of last resort can be less than optimal, often leaving patients with painful neuromas and phantom limb pain. “A patient is giving up a limb for some reason — a blast wound, cancer, a crushing injury — and in return we must bring every bit of our best intellectual and engineering and surgical brainpower and knowhow to enable them to get back to a normal life,” Dr. Bernthal says.

Amputation, Dr. Clites adds, “should not be seen as a clinical failure, but instead as another type of limb-salvage procedure.”

In 2021, Dr. Clites published a paper in which he and his co-authors urge the medical community to adopt new techniques such as targeted muscle/sensory reinnervation (TMR) and regenerative peripheral nerve interface (RPNI) as standard of care.

At UCLA Health, orthopaedic surgeon Lauren E. Wessel, MD (FEL ’22), and plastic and reconstructive surgeon Michael R. DeLong, MD (RES ’21), have established a specialized clinic to standardize these procedures. “Amputee care is complex, both from a psycho-social perspective and from a reconstructive perspective,” Dr. Wessel says. “Neuropathic pain after amputation has been well documented in this population and has not been adequately addressed. By using surgical techniques like TMR and RPNI, we can people who somehow transcend their field, and he is one of them."


FARANAK EMAMI/UCLA SAMUELI SCHOOL OF ENGINEERING

Model of a metal ankle-hindfoot prosthesis developed by the UCLA Anatomical Engineering Group.

reduce the amount of opioid medication a patient must take to control their pain by about 80%."

While visiting other centers that routinely use TMR and RPNI, Dr. DeLong has noted that patients experience lower pain levels, and a higher percentage successfully ambulate after surgery. "Some of these novel techniques have only been publicized in the last decade," he says. "It takes a generation for them to be adopted at new sites, but this should be considered standard of care."

AT THE START OF A NEW COLLABORATION, Dr. Clites often begins with a simple question: What is a problem you have that can't be solved?

After some brainstorming, the surgeons and engineers test their ideas in the Surgical Innovation Suite, which is equipped with a surgical table, drawers filled with instruments, PPE and a freezer holding parts of cadavers. The only thing missing from making it a full operating room, Dr. Clites says, are monitors and their accompanying beeping.

With the surgeon on one side of the table with a scalpel and medical and engineering students on the other, they begin the process. "Can we pick this muscle up and put it here?" Dr. Clites says. "Can we move this bone here? How much space can we create? It's like we're debugging code. You need to have that code open in front of you and work through it. It is hard to do in the abstract."

Dr. Azari has been at that table. His specialty is the hand — in 2011, he led a team of surgeons to perform the first hand transplant at UCLA Health — and he notes that development of the opposable thumb 2 million years ago played a significant role in shaping human evolution by allowing humans to manipulate objects. If someone loses their thumb, they lose 40% of their hand function.

Dr. Azari and Dr. Wessel, also a specialist in hand surgery, are partnering with Dr. Clites to develop a thumb implant to help patients regain full function. Their idea is to cover the implant with skin and subcutaneous tissue from the forearm to provide functionality and sensation. "You would attach [the skin flap] to the nerves at the cut end of the thumb, where they can grow into each other and innervate the implant," Dr. Azari explains.

Sachi Bansal, a doctoral student in bioengineering who is working on the thumb project, is doing initial test-of-concept work on rats to see how well the skin adheres to the implant, and to devise ways to improve it. "I'm excited about the potential," she says.

Dr. Wessel studied civil engineering as an undergraduate student and is deeply interested in device design. "It's nice to have a collaborator who really treats you as a teammate," she says of Dr. Clites.

"Dr. Clites is an engineer who thinks he's a surgeon masquerading as an engineer," Dr. Azari adds. "There are certain people who somehow transcend their field, and he is one of them."

WHEN DR. CLITES INTERVIEWED to come to UCLA, Dr. SooHoo was among the UCLA Health surgeons with whom he first met. The two began collaborating soon after Dr. Clites arrived. Dr. SooHoo has had the experience of explaining to a patient who has broken their talus bone the difficult choice they face: fusion or amputation of the foot? In many cases, amputation is a better option because function can be restored with a prosthesis. "Still, it's distressing to amputate an otherwise viable limb," Dr. SooHoo says. "I asked if there was a way we can save that limb going forward."

Dr. Clites collaborated with a colleague in the Samueli School, Jonathan Hopkins, PhD, professor of mechanical and aerospace engineering, who was working extensively on compliant devices. Dr. Hopkins came up with several computer-assisted designs, which were 3D printed and tested on cadaveric body parts. "We immediately saw the promise of this," Dr. SooHoo recalls.

With seed funding from the school of medicine and a $2.5 million New Innovator Award from the National Institutes of Health, they hoped their concept could both save limbs and provide patients with an implant that mimics an external energy-storage-and-return prosthesis — a nuanced, complicated spring that bends and articulates without wearing out.

It is an exciting prospect for patients who otherwise face an excruciating choice. "We really have an opportunity to affect human health in a way that people are rarely able to," Dr. SooHoo says. "It's revolutionary, a completely different way of thinking about how we would replace a joint that isn't working."

What originated as a device to support a two-inch-long bone in the ankle could have applications across the broad spectrum of the skeleton. "If you look at a hip or knee replacement, they last 15, 20, maybe 25 years. But eventually they are going to fail," Dr. SooHoo notes. "This device could last 50-to-100 years, longer than a patient's lifespan. If it works for the ankle and foot, it could potentially be developed as a new form of knee or hip replacement and totally overturn the way we replace all joints."

FOR ATHLETES WHO ARE INJURED or lose a limb, the work Dr. Clites and his surgical colleagues are doing has enormous potential implications. For example, injuries to the ACL, one of the crucial ligaments that support the knee, are not uncommon among athletes participating in many different sports. But because training and injury-prevention paradigms were developed primarily for men, female athletes are at disproportionate risk. In fact, females are two-to-10 times more likely than male athletes to tear their ACL. (The problem was illustrated in the 2023 Women's World Cup in July when some of the biggest names in the game, and many who were lesser known, were sidelined with ACL injuries.) Such injuries usually don't heal on their own and require surgery to rebuild the ligament, as well as significant time to rehab the knee.

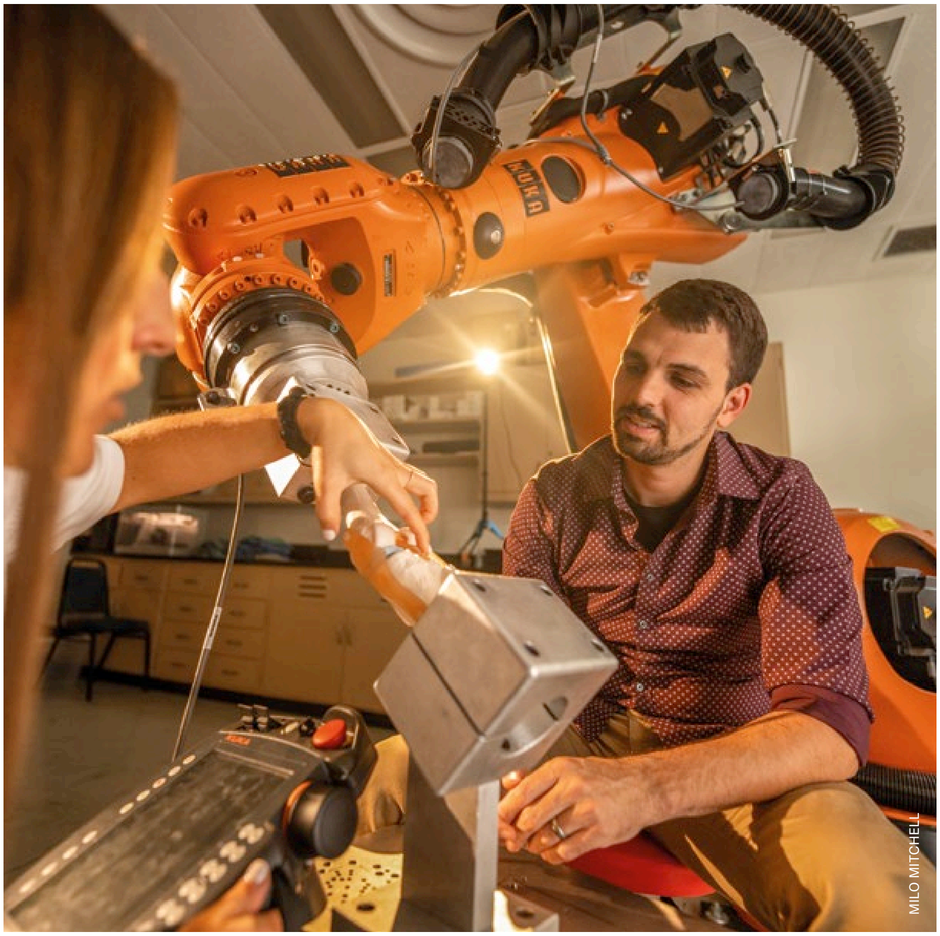
"But what if we had a prosthesis that we could implant that would prevent the injury from happening in the first place?" asks David R. McAllister, MD, chief of sports medicine.

That is something he and Dr. Clites now are working on together. The aim would be to identify high-risk athletes, such as those undergoing an ACL reconstruction, and implant a small device that would restrict the motion in the knee that causes the injury but not slow down the individual. "It's a whole different way of thinking about the problem," says Dr. McAllister, who is head team physician for UCLA Athletics and has been head team physician for the Los Angeles Lakers.

Utilizing the KUKA, he and Dr. Clites have been working with cadaveric knees to better understand the dynamics of the joint's motion. "If this works in the knee, there's a good chance it could be applied to other joints," Dr. McAllister says. He notes that there are approximately 400,000 ACL surgeries each year, mostly suffered by young athletes, and adds that a young person who suffers an ACL tear is at greater risk of developing arthritis in the knee at a young age. "We're trying to put ourselves out of business," Dr. McAllister says.

DESPITE THE INNOVATIONS OVER the last two decades, there are headwinds to bringing these devices to the commercial market. Research-and-development costs are high, the market is relatively small and it's difficult to recoup expenditures. What's more, insurance companies often are unwilling to reimburse patients who want the latest devices.

Providing benefit to injured service members and veterans is, on the other hand, a different story. For the defense department and Department of Veterans Affairs, new developments in prostheses, as well as enhanced surgical techniques for amputation, are of great interest. "Quite frankly, nobody moves standard-of-care faster than the Department of Defense," Dr. Bernthal says. "If they say this is the care our soldiers should receive, it gets covered very quickly."



Dr. Clites (right) and PhD student Ophelie Herve with the KUKA robot used to test new devices being developed by the Anatomical Engineering Lab.

There is optimism in the field of prosthetics, he says. "When I became a doctor nearly 20 years ago, amputation was seen as a failure. Now, when talking to a patient nothing is off limits. You never have to tell someone that the dream they have for their life is not an option. With the prostheses that are available today, and the next generations of prostheses now being developed, they can be fully functional. Someone with a prosthetic limb can run a marathon or compete in an Ironman or get back to active duty in the military."

And as anatomics continues to evolve, "bionic devices will become more and more integrated with the human body, and with the person's sense of self," Dr. Clites says. "Our goal is to transform the field of rehabilitation to improve care, open the door to options and opportunities and, ultimately, enhance the quality of people's lives." ●

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"Reinventing Extremity Amputation in the Era of Functional Limb Restoration," *Annals of Surgery*, February 2021

"Anatomics: Co-Engineering Body and Machine in Pursuit of Synergistic Bionic Performance," *Current Opinion in Biomedical Engineering*, August 2023

VARTIKA SHARMA

Violent Nights

By Kenneth Miller

UCLA researchers are shedding new light on a disorder in which sleepers act out their nightmares, and in the process, they're helping to find potential weapons against Parkinson's disease and related neurodegenerative disorders.

JOHN CHADWICK NEVER MEANT TO HIT HIS WIFE. IN fact, he thought he was defending her from a gang of thugs. But when her shouts woke him from a terrifying dream, he discovered that the face he was slugging belonged to Suzanne, his spouse of more than 30 years. "I was mortified when I saw what I was doing," recalls the retired hairstylist, a soft-spoken British expat whose only previous acts of violence involved the eradication of split ends. "I was already ashamed of what had been happening to me at night. When she was hurt, it was 10 times worse."

Chadwick was in his late 50s when his unnerving sleep troubles began. The first sign was twitchy legs; then came nightmares in which he and his family were under attack and he was fighting for their lives. Several times a week, Suzanne would be awakened by his flailing arms and bloodcurdling screams. Sometimes, he literally kicked her out of bed. Once, he bit her wrist so hard that the marks lingered for days.

Although the couple's relationship was warm and loving, a psychiatrist suggested that Chadwick's nocturnal behavior revealed unconscious rage. Yet, therapy failed to uncover any issues that might be fueling his Dr. Jekyll-and-Mr. Hyde-like transformations. Chadwick went to see a sleep specialist, who attributed his problems to stress and prescribed relaxation exercises. They didn't help. After his punch left Suzanne with a black eye, he started spending his nights on the couch in the living room.

The move brought new dangers. In the grip of his nightmares, Chadwick toppled the sofa, hurled the TV out the window and nearly jumped out himself. To protect the household from his dreaming self, he decamped to the garage — where one night, he grabbed a paint scraper to ward off a phantasmic adversary and lacerated his hands.

Realizing that the problem lay less with his sleeping environment than with his ability to interact with it, Chadwick dragged his mattress to a spare bedroom. A talented craftsman, he sewed together nylon webbing and padded cuffs to create restraints for his hands and feet. For extra safety, he made a strap with a quick-release buckle to go across his chest and secure himself to the bed. But the system was impractical for travel. On a business flight to China, he awoke to find his fingers around the throat of his seatmate.

That incident drove Chadwick to seek out other specialists who might be able to address his condition, an odyssey that brought a string of contradictory diagnoses and frustrating treatments. The medications he was prescribed reduced the frequency of his episodes, but they left him groggy during the day and affected his coordination and gait. "He walked as if he was stepping in post holes," says his adult daughter, Becky.

Concerned about her father's physical, as well as emotional, health — he told her he feared he was losing his mind — Becky started to investigate online. Chadwick's symptoms, she thought, pointed to a condition called rapid eye movement (REM) sleep behavior disorder, or RBD. This perplexing ailment is a type of parasomnia, a sleep disorder characterized by unusual, disruptive behaviors. In RBD, the protective paralysis that normally accompanies REM sleep — the sleep stage during which dreams are most frequent and vivid — fails to occur. At the same time, dream content may become more violent and frightening. Patients act out their sometimes physically tumultuous dreams, risking injury to themselves and their bed partners.

When Becky asked for advice on a sleep-disorders message board, someone suggested she contact a researcher at the University of Minnesota, Carlos H. Schenck, MD, who identified the syndrome in the 1980s.

Dr. Schenck responded to Becky's email with a tip of his own. "He wrote back, 'Lucky for you, you're in Los Angeles,'" she recalls. There's someone at UCLA her father should see, he told her.

ALON Y. AVIDAN, MD, MPH, IS A LEADING EXPERT ON REM sleep behavior disorder. He is the author of textbooks on sleep and key articles on RBD, and he has lectured

COURTESY OF CHADWICK FAMILY

John Chadwick at home with his wife, Suzanne (right), and daughter, Becky.

Dr. Alon Avidan.

JESSICA PONS

extensively on the topic. He's also one of the principal investigators for the North American Prodromal Synucleopathy (NAPS) Consortium, an alliance of nine academic health institutions coordinating research on RBD and its critical link to an array of neurodegenerative diseases.

"Physicians who encounter patients with RBD who present with dream enactment are sometimes unaware of its existence, and may even be dismissive of its symptoms," Dr. Avidan, professor of neurology, observes. "They say, 'Oh, it's probably just nightmares, or it may be related to something you ate the night before. But this is a condition that upends patients' lives, and the lives of their loved ones."

Beside the physical perils — one of Dr. Avidan's patients, an FBI agent, snatched a pistol from under his pillow during a dream about intruders and fired two bullets into the ceiling of a hotel room — RBD can destroy marriages. "It affects intimacy, because couples often have to sleep apart," he explains. "It can also undermine trust, especially if a patient's violent actions lead to a partner being badly hurt, and they suspect that the actions are directed at them."

The condition affects an estimated 0.5% to 1.25% of the general population, and about 2% of people over age 60. But its importance in terms of public health belies those numbers — and not only because of all those suffering bed partners. "What's unique about this sleep disorder," explains Ravi S. Aysola, MD, chief of sleep medicine in UCLA Health's Division of Pulmonary, Critical Care and Sleep Medicine and director of the UCLA Sleep Center, "is that it can be predictive of more pervasive disorders that may develop in the future."

Over the past decade, a raft of studies has shown that RBD can be a harbinger (in descending order of frequency) of Parkinson's disease, dementia with Lewy bodies or a devastating disorder known as multiple systems atrophy. For patients diagnosed with isolated RBD (that is, with no known underlying cause), the risk of developing one of these illnesses is between 50% and 80% within a decade.

All these ailments have one thing in common: They are associated with Lewy bodies — clumps of misfolded alpha synuclein, a normally beneficial protein, that clog nerve cells. No one knows why such so-called alpha synucleopathies happen, how to prevent them or how to cure them. And that's why the connection between RBD and synucleopathies intrigues researchers.

"REM sleep behavior disorder has the potential to give us valuable insights into Parkinson's and related illnesses," Dr. Aysola says. If biomarkers pointing to such disorders can be identified in RBD patients long before daytime symptoms occur, they could increase scientists' understanding of the earliest stages of the neurodegenerative process. Eventually, they could also provide opportunities to administer neuroprotective treatment before the damage becomes irreversible. "By learning more about RBD," he adds, "we can gain new insights about these future neurologic diseases."

These perplexities and possibilities inform the studies that Dr. Avidan and other researchers focused on RBD are conducting in the United States and elsewhere. But to grasp both the challenges and promise posed by this disorder, it helps to know a bit about its history — and about the sleep stage it affects.

EVEN UNDER NORMAL CIRCUMSTANCES, REM SLEEP IS a strange beast. During this stage of slumber, which occurs at approximately 90-minute intervals throughout the night, the eyes jerk back and forth and up and down, as if the sleeper were watching an exciting movie, while the brain produces EEG patterns resembling those of waking. Although the phenomenon was first reported in 1953, by University of Chicago researchers Eugene Aserinsky, PhD, and Nathaniel Kleitman, PhD, it wasn't until the end of the decade that another of its key oddities emerged. Experimenting with cats, French neuroscientist Michel Jouvet, MD, PhD, found their muscles went completely slack — a condition called *atonia* — while the animals were REMing.

In 1965, Dr. Jouvet made another momentous discovery: When he destroyed the tiny structure in the brainstem that triggered muscle atonia, cats acted out their dreams. They chased imaginary mice, defended themselves against imaginary attackers and fled from imaginary pursuers, all the while remaining unaware of the real world around them. This led the scientist to theorize that atonia during REM sleep served a simple purpose: to keep dreaming animals from such potentially disastrous shenanigans.

Nearly two decades later, a man in his 60s came to see Dr. Schenck, a psychiatrist and sleep researcher, at his sleep center in Minneapolis. For several years, the patient had experienced what he called "violent moving nightmares," during which his punches and kicks sometimes injured his wife. He signed up for a night in the sleep lab after slamming into a dresser — and gashing his forehead — during a dream in which he was playing football. Tests showed that, like one of Dr. Jouvet's neurosurgically altered cats, he was exhibiting REM sleep without muscle atonia.

By 1986, Dr. Schenck had identified four more patents with a similar syndrome. With the center's director, neurologist Mark Mahowald, MD, he published a report on these cases in the journal *Sleep*. The following year, the pair coined a name for this new parasomnia: rapid eye movement sleep behavior disorder — RBD. "After that," Dr. Schenck recalls, "these types of patients started coming to us from all over."

Early on, he and his team found that clonazepam (a benzodiazepine sedative), which had been used successfully to treat a more-common disorder, periodic limb movements during sleep, could control symptoms in most RBD patients. They also noticed that these patients shared several characteristics. The majority were men, and almost all were middle-aged or older. Rarely did their dreams involve initiating aggression; instead, the sleepers were responding to attacks — typically by unfamiliar people, animals or insects.

Other commonalities became clear only later. "Half of our patients had a neurological disorder that triggered their RBD, like a stroke, multiple sclerosis or Parkinson's disease," Dr. Schenck says. "But the other half were neurologically clean." After 10 years, however, a pattern began to emerge: More than one-third of those "clean" patients had developed Parkinson's-like disorders.

Dr. Avidan's interest in sleep medicine emerged around that time, while he was a resident in neurology. During fellowship training, he became interested in parasomnias — the panoply of disruptive disorders that includes sleepwalking, sleep sex, sleep eating, night terrors, bedwetting and RBD. The latter particularly captured his imagination. "Interpreting sleep studies and watching videos of patients with parasomnias and RBD reminded me of scenes from *The Exorcist*," Dr. Avidan says. "In another era, they would have been seen as demonically possessed."

Dr. Avidan joined UCLA's faculty in 2006, after heading the sleep disorders clinic at the University of Michigan (during which time he met and began collaborating with Dr. Schenck). He went on to publish extensively on the subject of RBD, including guidelines on how to distinguish it from other conditions that can produce violent or complex behaviors during sleep, such as night terrors, which occur during non-REM sleep and are typically not connected to dreaming; seizure disorders, in which body movements are stereotypical and patients are not easily awakened; post-traumatic stress disorder (PTSD), in which people relive a horrific scene they experienced in the past; or somnambulism, in which sleepers might make jam-and-cat food sandwiches or urinate in a wastebasket, but remember nothing upon waking. He also contributed to the

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"REM SLEEP BEHAVIOR DISORDER HAS THE POTENTIAL TO GIVE US VALUABLE INSIGHTS INTO PARKINSON'S AND RELATED ILLNESSES. BY LEARNING MORE ABOUT RBD, WE CAN GAIN NEW INSIGHTS ABOUT THESE FUTURE NEUROLOGIC DISEASES."

DR. RAVI AYSOLA

A Place to Put Sleep Problems to Rest

PATIENTS WITH REM SLEEP behavior disorder or other parasomnias — conditions characterized by disruptive behaviors during sleep — can sometimes search for years before receiving a correct diagnosis or effective treatment. “There’s a significant shortage of sleep medicine physicians nationwide, and access to a competent, knowledgeable clinician can be challenging,” notes Ravi Aysola, MD, chief of sleep medicine in UCLA’s Division of Pulmonary, Critical Care and Sleep Medicine and director of the UCLA Sleep Center.

UCLA Health offers options for such patients that are not available at many other centers. With its state-of-the-art sleep lab and more than 20 board-qualified sleep medicine physicians, UCLA Health’s practice is among the largest in the country. Its practitioners represent a broad range of specialties, including neurology, psychiatry, pulmonology, otolaryngology and oral-maxillofacial surgery. They also include faculty members whose focus is primarily on research, providing a conduit to clinical trials and cutting-edge therapies for patients with more esoteric or poorly understood disorders.

Sleep medicine is a complex specialty, involving both adult and pediatric patients, and covering more than 80 disorders — not only parasomnias, but also ailments involving excessive wakefulness, excessive sleepiness, abnormal timing of the sleep-wake cycle or problems with breathing during sleep. These disorders may occur in the absence of clear underlying causes, or they may arise from other diseases. “In my practice, I take care of a lot of patients with muscular dystrophies,” says Dr. Aysola. “Treating their sleep-disordered breathing poses different challenges from those of more common forms of sleep apnea.”


JESSICA PONS

Dr. Ravi Aysola.

For patients with a parasomnia, differential diagnosis is often crucial — for example, determining whether an individual’s nocturnal flailing results from abnormal muscle activity during rapid eye movement sleep (as in RBD), from an autonomic response to apneic episodes, from seizures or from some other cause.

“It can be a gray area,” Dr. Aysola says. “I’ve had patients who flailed in their sleep and broke a window or broke a piece of glass around the bed. They’d say, ‘I had this dream, and I was fighting, and then all of a sudden, my partner said I threw my arm at them or accidentally broke something.’” It sounds like it could be RBD, but then a sleep study reveals that episodes of apnea are actually triggering their actions.

That is why “it’s crucial to stay current with the latest basic and clinical science, as well as evolving diagnostic criteria and therapeutic modalities,” Dr. Aysola says. “Our clinicians are all engaged in ongoing education, and we attend national professional meetings year-round to keep up with developments in our respective fields.”

The UCLA Sleep Center’s mission, he adds, “is to educate and empower our patients, and to provide the highest level of care by practicing evidence-based medicine and engaging in continuous quality improvement. We are fortunate to have an exceptional group of physicians who excel at the bedside practice of medicine, as well as at education, research and developing new therapies,” Dr. Aysola says.

“Medicine truly is a team sport, and the strength of our center is our team.”

— Kenneth Miller

For more information about the UCLA Sleep Center, scan the QR code

continued
from p. 38 →

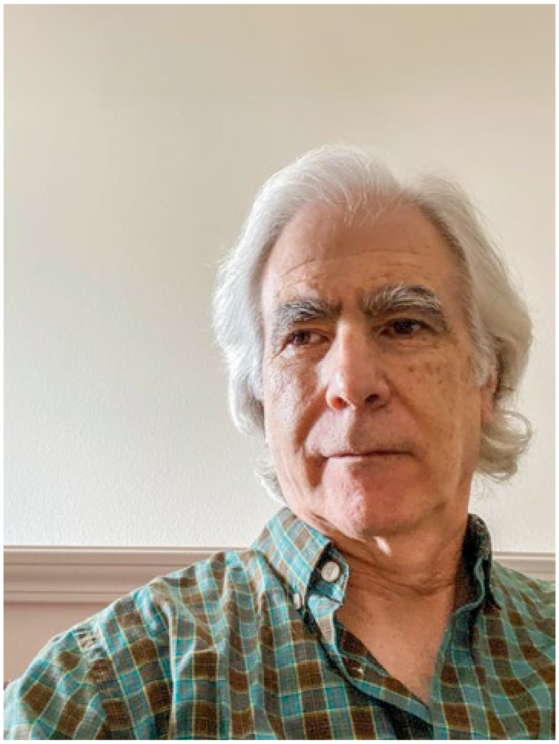
development of new protocols for identifying RBD through polysomnography — nightlong monitoring of brainwaves, muscle impulses, eye movements and respiration.

As every physician knows, finding the correct diagnosis is key to choosing the right therapy for any patient. But with RBD, that choice is not always straightforward. Although clonazepam has a long track record, the hormone melatonin has shown to be at least as effective for many patients, with less tendency to cause daytime drowsiness. For other individuals, however, neither approach controls symptoms, or their side effects are intolerable.

When Chadwick arrived at UCLA in May 2008, with wife Suzanne and daughter Becky, Dr. Avidan took a detailed clinical history and performed a physical exam, neurological workup and sleep study. After confirming a diagnosis of RBD, he changed the patient's medication, placing him on melatonin while reducing his original dose of clonazepam. Chadwick's grogginess and gait problems cleared up swiftly, while his dream-enactment behaviors diminished in frequency and severity. Eventually, he felt secure enough to give up his bed restraints — and today, at 80 years old, he has only four or five mild episodes a month. Remarkably, he has also remained free of Parkinson's or other synucleopathies, though he is battling several unrelated health problems.

Not all therapeutic puzzles can be solved so neatly, however. That was the case for Dan Reder, an IT manager who broke a finger during an RBD episode in 2016 and found his way to UCLA. Reder also suffered from severe insomnia, complicating his therapeutic needs.

After counseling the 65-year-old on how to create a safe sleeping space (no unprotected windows, no sharp-edged furniture, nothing that can be used as a weapon), Dr. Avidan started him on high-dose melatonin, which improved both his insomnia and his RBD symptoms, but left him too sleepy to function the next day. When a lower dose failed to control Reder's dream enactments, Dr. Avidan added clonazepam to the regimen, but the combination again impaired the patient's daytime alertness. A switch to temazepam — a shorter-acting benzodiazepine — solved that problem, but Reder continued to have RBD episodes once or twice a week, particularly when stress levels were high.


COURTESY OF DANIEL REDER

Daniel Reder.

To lessen their impact, Reder suggested an approach he'd learned about on his own: a device that triggered a voice alert when a sensor indicated that a sleeper's movements had become excessive. Over the following months, Dr. Avidan implemented a regimen that incorporated a Posey bed alarm — which played a recording of Reder's wife, Claudia, calmly urging, "Wake up, Danny, you are just having a dream" — with an ongoing course of melatonin and temazepam.

Reder's RBD episodes have grown far less intense. So has his daytime fatigue. Best of all, he and Claudia are still able to share a bed, albeit with a barricade of pillows between them. "The scariest thing about this disorder is the loss of control," he says. "I'm grateful to be able to regain it."

THE CHALLENGES OF CONTROLLING RBD extend to its possible long-term implications. For that reason, some physicians are uncomfortable informing newly diagnosed patients that the disorder can be a harbinger of future neurodegenerative conditions. If nothing can be done to prevent or cure those neurologic disorders, the thinking goes, why mention them at all?

Dr. Avidan disagrees with that reasoning. In March, he coauthored a paper with Dr. Schenck and other colleagues in the journal *Seminars in Neurology*, titled "Ethical Aspects of Prodromal Synucleineopathy Prognostic Counseling." The team examined the pros and cons of disclosing the association of RBD with Parkinson's-like diseases in a wide range of scenarios. The decision, they concluded, should be made on a case-by-case basis only after asking patients what they already know and whether they're interested in finding out more.

> **“THE HOPE IS THAT IF WE CAN CATCH THESE AT-RISK PATIENTS EARLY ENOUGH, WE CAN PROTECT THEM FROM DEVELOPING FUTURE NEURODEGENERATIVE CONDITIONS.”**
>
> **DR. ALON AVIDAN**

As a rule, however, the authors favored transparency and a shared decision-making approach — partly because surveys show that’s what most patients want, and partly because many will go ahead and research their diagnosis on the internet. “Not only might learning this information on one’s own be alarming,” they wrote, “but it might also undermine trust in the physician if this had not been previously broached as a topic for discussion.”

Adds Dr. Aysola, director of the UCLA Sleep Center: “They’re going to be more vulnerable to misinformation they find online if they don’t get the real facts from us first.”

Dr. Avidan makes a point of asking patients if they have investigated RBD on their own, and then, “If RBD predicted a neurologic condition, would you like me to review that with you? Some people say, ‘I’d rather not know. I’m already in my late 80s, and I’d rather live without the anxiety.’ But most patients do want to know, so that they can be more proactive — whether that means enrolling in a clinical trial to delay or slow down progression to incorporating lifestyle changes that might slow the course of the disease or taking an adventurous vacation now instead of 10 years from now.”

As site principal investigator for the NAPS Consortium, Dr. Avidan and colleagues at UCLA Health are conducting research to prepare for future neuroprotective clinical trials for alpha synucleopathies. The data they gather will be used to develop biomarkers to identify people at risk for synucleopathies in the presymptomatic stage, a crucial step for learning how to combat these scourges.

Other efforts to identify such markers are already underway — including a study led by Dr. Avidan and Gal Bitan, PhD, professor-in-residence of neurology. The team has devised a blood test based on brain-derived exosomes (neurofilaments and proteins that enter the bloodstream from the central nervous system), which can detect elevated alpha-synuclein levels in people with RBD. They’re currently investigating how these assays could be used to gauge a patient’s likelihood of progressing to Parkinson’s or other synucleopathies.

“The hope is that if we can catch these at-risk patients early enough, we can protect them from developing future neurodegenerative conditions,” Dr. Avidan says. “RBD is the canary in a coal mine that could help us stop neurodegeneration in its tracks.” ●

***Kenneth Miller** is a science writer whose work has appeared in* Time, Discover, Mother Jones *and* Prevention, *among other publications. His new book,* Mapping the Darkness: The Visionary Scientists Who Unlocked the Mysteries of Sleep *(Hachette Books, 2023), was published in October.*

For more information about REM sleep behavior disorder and to join a registry to identify potential participants for clinical studies, go to: naps-rbd.org

Hooray for Bollywood

By Kelsie Sandoval

AS KIRAN KAVIPURAPU, DO, STEPS onto a stage, he is overcome with anticipation that is mixed, in equal parts, with anxiety and excitement. But once he locks eyes with his audience, the music starts and he begins to twist his arms and hands and twirl his body to the rhythms of an Indian beat, all of that is stilled.

JASON RAISH

"I feel one with the music and love expressing myself in unique ways," he says.

"Bollywood" dancing — a stylistic mash-up that blends traditional Indian folk, hip-hop, Arabic and jazz influences — has been Dr. Kavipurapu's passion since he was a child. Growing up in a family that embraced arts and culture, he began when he was 6 years old.

His mother, a TV and radio artist before immigrating to the United States from India, got him started. She choreographed his dances, enrolled him in formal training and signed him up to perform at community cultural events. Dr. Kavipurapu, who today is assistant clinical professor of obstetrics and gynecology and director of the OB/GYN residency program in the David Geffen School of Medicine at UCLA, has been hooked ever since.

While an undergrad, he was a member of a competitive dance team. It was a commitment that had him practicing after classes, sometimes until four in the morning during the height of the competition season. Even while juggling all the demands on him — he was a premed student and also working toward a master's degree in public health — dance practice never felt like a chore. If anything, "it was a release for me," he says. "I never looked at it as a job."

It did, in fact, become a job as he neared the end of his undergrad studies and prepared to enter medical school. He was hired into a professional troupe that performed at a variety of events, and was even brought in to consult and perform in a music video — replete with ornate saris and costumes, opulent jewelry and the complex hand gestures and dance moves that make Bollywood dancing a visually striking performance — by American-Venezuelan singer Devendra Banhart.

The Bollywood style is a feature of India's Hindi film industry. The word itself is a portmanteau of Bombay (today called Mumbai) and Hollywood. The associated dance tells stories, whether they are drama or a light-hearted romp, through music and movement, and has dream-like qualities, often shifting on the screen from one location to the next — say, from a sand dune to a snow-topped peak — in an instant. “Bollywood dance tends to embrace that dream, asking what could we do if we spread our imagination beyond the confines of the normal life that we live in and its day-to-day struggles?” Dr. Kavipurapu says.

During his competitive and professional dancing days, Dr. Kavipurapu was able to spread his own imagination as a choreographer. He liked to incorporate different types of dances — Afro, Bollywood and jazz — into one unique piece, and he thrilled to the creative process of tweaking the choreography until it had achieved his grand vision. He also enjoyed watching as the dancers moved from skepticism about his choreographic ideas to embracing them. “It is rewarding to see your production on stage and the ‘wow!’ feeling that comes with it,” he says.

That feeling, Dr. Kavipurapu says, is available to everyone. One doesn’t need to be a professional dancer to experience the joy and calm that comes with moving your body and listening to music. He sees that is true in his own patients. Whether going into labor or preparing for an anxiety-provoking procedure, his patients often use music as a tool to destress and get in the zone.

Dr. Kavipurapu also encourages his patients to take up dancing during their pregnancy. It helps to prepare them for labor, he says, and the flexibility facilitates their baby moving into the proper pelvic position for a natural birth. “There is the stigma in women’s health that tells them when they are pregnant, they should take it easy. I take the opposite approach and tell them to listen to music and work out,” Dr. Kavipurapu says. One day, he would like to create a Bollywood dance class to help his patients engage in a fitness routine while pregnant.

While his time to pursue Bollywood dancing significantly diminished once he started clinical rotations in his third year of medical school — while simultaneously attending law school and earning a JD — Dr. Kavipurapu, to this day, still carves out time to perform at cultural events for Indian holidays like Diwali or Holi. He and his family are involved in the Telegu Association of Southern California, an organization that celebrates Telegu heritage and hosts an annual cultural event.

One day, he hopes to return to practicing and performing Bollywood dance on a regular basis. “I will never let go of it,” Dr. Kavipurapu says. “It is a huge part of me.” ●

***Kelsie Sandoval** is a senior media relations officer for UCLA Health. Before coming to UCLA, she was a member of the health-reporting teams for NBC News and the online news site Insider*

AWARDS & HONORS

Dr. E. Dale Abel , chair of the Department of Medicine at the David Geffen School of Medicine at UCLA and executive medical director of the UCLA Health Department of Medicine, received the Endocrine Society Fred Conrad Koch Lifetime Achievement Award.

Dr. Ambre Marguerite Solange Bertholet, assistant professor of physiology, was selected by the Pew Charitable Trusts as a 2023 Pew Scholar in the Biomedical Sciences.

Dr. Arleen F. Brown (FEL ’88), professor of medicine and chief of general internal medicine and health services research at Olive View-UCLA Medical Center, was elected to the Association of American Physicians.

Dr. Cecilia Canales (RES ’22), assistant professor of anesthesiology and perioperative medicine, was selected for the 2023-2024 National Academy of Medicine Scholars in Diagnostic Excellence program.

Dr. Carolyn J. Crandall (MD ’18), RES ’22), professor of medicine, was appointed chair of the American College of Physicians’ clinical guidelines committee.

Dr. Steven M. Dubinett (RES ’84), a founding director of the UCLA Clinical & Translational Science Center and interim dean of the David Geffen School of Medicine at UCLA, was named dean of the David Geffen School of Medicine at UCLA.

Dr. Patricia A. Ganz (MD ’73, RES ’76, FEL ’78), Distinguished Professor of Medicine, professor of health policy and management at the Jonathan and Karin Fielding School of Public Health at UCLA and associate director for population science at the UCLA Health Jonsson Comprehensive Cancer Center, was elected to the Association of American Physicians. In addition, Dr. Ganz was awarded the 2023 AACR-American Cancer Society Award for Research Excellence in Cancer Epidemiology and Prevention.

Dr. Tzung Hsiai, Maud Cady Guthman Endowed Chair and professor of medicine and bioengineering, was elected to the Association of American Physicians.

Dr. Donald B. Kohn, Distinguished Professor of Microbiology, Immunology & Molecular Genetics and of pediatrics and molecular and medical pharmacology, received the Maureen Andrew Mentor Award from the Society for Pediatric Research.

Dr. Leonid Kruglyak, Diller–von Furstenberg Family Professor of Human Genetics and Distinguished Professor of Human Genetics and Biological Chemistry, was elected to the National Academy of Sciences.

Dr. Nicholas G. Nickols (MD ’09, RES ’14), member of the UCLA Health Jonsson Comprehensive Cancer Center and chief of radiation oncology at the VA Greater Los Angeles Healthcare System, was honored by the U.S. Department of Veterans Affairs in recognition of his work to provide medical care to veterans.

Dr. Antoni Ribas (FEL ’98, ’01), professor of medicine, surgery and molecular and medical pharmacology, director of the Tumor Immunology Program at the UCLA Health Jonsson Comprehensive Cancer Center (JCCC) and director of the Parker Institute for Cancer Immunotherapy Center at UCLA, was elected to the Association of American Physicians.

Dr. Richard J. Shemin, Robert and Kelly Day Chair in Cardiothoracic Surgery and chief of the Division of Cardiac Surgery, received the 2023 Mitral Value Repair Reference Center Award from the American Heart Association.

Dr. Jeffrey L. Veale (FEL ’06), professor of urology and director of the UCLA Kidney Transplantation Exchange Program, received the 2023 Paul Terasaki Medical Innovation Award from the National Kidney Registry.

Dr. Donna L. Washington, professor-in-residence of medicine and director of the Health Equity-Quality Enhancement Research Initiative at the VA Greater Los Angeles Healthcare System, was honored by the U.S. Department of Veterans Affairs in recognition of her work to provide medical care to veterans.

Dr. Karol E. Watson (RES ’92, FEL ’97, PhD ’98), professor of medicine and director of the UCLA Women’s Cardiovascular Health Center and the UCLA-Barbra Streisand Women’s Heart Health Program, received the 2023 Bernadine Healy Leadership in Women’s CV Disease Award from the American College of Cardiology.

Dr. Elizabeth M. Yano, adjunct professor of medicine and director of the Women’s Health Research Network at the VA Greater Los Angeles Healthcare System, was honored by the U.S. Department of Veterans Affairs in recognition of her work to provide medical care to veterans.

Oprah Winfrey and U.S. Surgeon General Headline WOW 2023 Mental Health Summit

By Sandy Cohen

"Mental health is the defining public health crisis of our time," said United States Surgeon General Dr. Vivek Murthy during an onstage conversation with Oprah Winfrey on May 4, 2023, at UCLA Royce Hall.

The two discussed loneliness, mental health and what makes life meaningful during WOW 2023, UCLA Health's annual mental health summit. The "Wisdom of Wellness" event is designed to nurture the body, mind and spirit, while supporting mental health research, education and patient care programs at UCLA. Other guests who spoke with Winfrey during the three-hour summit included Oscar- and Grammy-winning musician Jon Batiste, author and Harvard Business School professor Dr. Arthur C. Brooks, and three UCLA students, who shared their personal experiences with mental health challenges. Actress and Resnick Neuropsychiatric Hospital Board member Lisa Kudrow hosted the summit, which also featured a video message from mental health advocate Jeanie Buss, president of the Los Angeles Lakers and a governor of the NBA, who spearheaded a comprehensive mental wellness program for athletes.

The inspiring program, a fundraiser for the Jane and Terry Semel Institute for Neuroscience and Human Behavior at UCLA and the Stewart and Lynda Resnick Neuropsychiatric Hospital at UCLA, raised more than $2.5 million and was attended by more than 1,500 people. The event honored philanthropists Andrea and Peter Roth as community leaders in mental health; the Roths recently donated $1 million to support autism research and intervention. During the afternoon, it was announced that a grant for early-career faculty at Resnick Neuropsychiatric Hospital would be named in honor of Winfrey.

Dr. Murthy shared that loneliness is as detrimental to human health as smoking 15 cigarettes a day because human beings evolved as hunter-gatherers who lived in tribes and are hardwired for connection with one another. He noted that chronic loneliness causes chronic stress that can raise levels of inflammation, damage tissues and blood vessels and increase the risk of physical illness, including heart disease.

RICHARD DORAN

(From left) WOW founders and event chairs Terry Hyman Hamermesh and Cece Feiler, special guest Oprah Winfrey, WOW founder and event chair Dr. Nancy Glaser (RES '95) and event chair Stephanie Lushing.

RICHARD DORAN

(From left) Honorees Peter and Andrea Roth with U.S. Surgeon General Dr. Vivek Murthy.

"As much as our circumstances are very different today than they were in our hunter-gatherer days, our brains and our nervous systems are still very similar to how they were back then," Dr. Murthy said. "That's why we see such an impact of loneliness and disconnection on physical illness and mental illness. This is much more than just a bad feeling. Our social connections are something we need for our survival, for our well-being, and we need to treat them as such."

Speaking about the impact of loneliness and disconnection, he said he learned this the hard way when during his first stint as surgeon general under President Obama, he threw himself into the job and stopped reaching out to his family and friends. When he was dismissed from the position a year and a half ahead of schedule, Dr. Murthy was left without his work colleagues and the relationships that had sustained him before.

"I felt profoundly alone. But I also felt ashamed," he said. "Because it was my fault — I had neglected those relationships. It was a choice I had made. And I felt embarrassed to call those friends and say, 'Hey, I'm sorry I wasn't there for you for the last two and a half years.'"

His wife urged him to reconnect with his friends and helped him overcome the shame that kept him isolated.

"We can't think our way out of shame. What we often have to do is experience our way out of shame," Dr. Murthy said. "And that means we often need somebody in our life who can check on us, who can remind us that we're loved. One of the best definitions of a friend that I ever heard was when I was in college: A friend is somebody who reminds you of who you are when you forget."

He told Winfrey and the audience that connections can be built by spending just 15 minutes a day reaching out to friends and loved ones, whether by phone or in person. The key, he said, is to stay focused on that connection the whole time, without simultaneously checking email or scrolling through social media.

Dr. Murthy also led the crowd through a brief exercise that brought several audience members to tears. He asked attendees to place their right hand on their heart, close their eyes and spend 20 seconds thinking about the people in their lives who have loved them over the years and supported them during difficult times, the people who reminded them of their inherent worth.

"Feel their love flowing through you, strengthening, lifting you up, filling you with peace," he said. "And I want you to remember that their love is always with you, even if they're not physically with you, because it resides in your heart."

Dr. Murthy acknowledged that sometimes people say to him, "You're the surgeon general, aren't you supposed to be talking about tobacco?" He said, "there's nothing more fundamental to the health and well-being of people in our country than ensuring that we are building that moral and spiritual foundation that is driving how we interact with each other and how we think and how we act."

And that means embracing love, which he called "our oldest medicine."

"It has extraordinary capacity to heal, and it's the force that we need to reach for each and every day in our lives," Dr. Murthy said.

Other speakers, including Dr. Brooks and the UCLA students, also addressed the importance of love to human thriving.

"Happiness is love, full stop," Dr. Brooks said.

WOW 2023, presented by Friends of the Semel Institute for Neuroscience and Human Behavior at UCLA and the Board of Advisors of the Stewart and Lynda Resnick Neuropsychiatric Hospital at UCLA, also included appearances by UCLA Chancellor Gene Block and Johnese Spisso, MPA, president of UCLA Health, CEO of the UCLA Hospital System and associate vice chancellor of UCLA Health Sciences, who talked about UCLA opening a new, dedicated hospital for mental health in 2026. ●


TODD CHENEY

(From left) Chancellor Gene D. Block, Carol Block, Jeanie Buss and Johnese Spisso.

***Sandy Cohen** is a senior writer in UCLA Health Communications and a former national writer for The Associated Press. Her article, "The Price," received the Robert G. Fenley Gold Award for Excellence in Writing and the COVID Pivot Award from the Association of American Medical Colleges.*

UCLA Honors the Nancy and Jonathan Glaser Family for Endowed Chair

TODD CHENEY/UCLA PHOTOGRAPHY

(From left) Dr. John C. Mazziotta, Johnese Spisso, Chancellor Gene D. Block, Carol Block, Dr. Noah Federman, Dr. Nancy Glaser, Jon Glaser and Dr. Steven M. Dubinett.

On May 31, 2023, UCLA Chancellor Gene D. Block and Carol Block hosted a dinner at their residence recognizing the establishment of the Nancy and Jonathan Glaser Family Endowed Chair in Pediatric Sarcomas. Jonathan (Jon) Glaser is an investment professional and a member of the Ronald Reagan UCLA Medical Center Board of Advisors; Dr. Nancy Glaser (RES '95) is a psychiatrist, founding chair and a current member of the Board of Advisors of the Stewart and Lynda Resnick Neuropsychiatric Hospital at UCLA, and a board member of both the Friends of the Jane and Terry Semel Institute for Neuroscience and Human Behavior at UCLA and UCLA Mattel Children's Hospital. Dr. Noah Federman (RES '05, FEL '08), director of the Pediatric Bone and Soft Tissue Sarcoma Program at UCLA, has been named the inaugural chair holder.

TODD CHENEY/UCLA PHOTOGRAPHY

(From left) Aerin Glaser, Dr. Noah Federman, Jon Glaser and Dr. Nancy Glaser.

Four years ago, the Glasers' youngest daughter, Aerin, was diagnosed with rhabdomyosarcoma, a rare form of cancer. Typically, 400-to-500 new cases of rhabdomyosarcoma occur in the United States each year, most of them in children. Along with the endowed chair, the Glasers also established a pediatric sarcoma research fund, with the hope of bringing leading-edge research to the clinic in support of other families who find themselves on this difficult and complicated journey.

Dr. Federman has been treating Aerin since her diagnosis. Jon Glaser remembered his immediate impression that Dr. Federman was extremely kind and gifted, saying, "He sees hundreds of patient families, but he makes each of them feel like the only one."

Dr. John C. Mazziotta (RES '81, FEL '83), vice chancellor of UCLA Health Sciences and CEO of UCLA Health, presented Dr. Federman with his commemorative chair. Dr. Federman said that at the start of his career, he knew he wanted to focus on the roughly 20% of childhood cancers that are currently incurable, mostly sarcomas. He came to UCLA 20 years ago and was able to found the pediatric sarcoma program with the support of another donor couple in attendance, Melissa and Timothy Pennington. Dr. Federman noted the clinical program is one of the busiest in the country, and that researchers have successfully brought a new drug to market, with more in the pipeline.

Dr. Federman expressed gratitude to the Glaser family and his deep admiration for Aerin, who was also in attendance. "She is brave, talented, artsy, kind and determined," he said.

In his remarks, Dr. Mazziotta noted how endowed chairs create a special bond between the donors, chair holder and university — a relationship that typically lasts for the chair holder's entire career. "Endowed chairs amplify our research and how we care for patients, and the support provides valuable time for creative, innovative work," he said.

UCLA leadership in attendance included Johnese Spisso, MPA, president of UCLA Health, CEO of the UCLA Hospital System and associate vice chancellor of UCLA Health Sciences, and Dr. Steven M. Dubinett (RES, '84), dean of the David Geffen School of Medicine at UCLA. The Glasers also were joined by family, friends, UCLA faculty and other UCLA supporters, including Jo Champa, Victor Coleman, Cece and Bill Feiler, Sharon and Herb Glaser, Vicky and Chip Goodman, Laurie and Steven Gordon, Terry Hyman Hamermesh, Lisa Kudrow and Andrea and Peter Roth. ●

For more information, contact Margaret Steele at: 310-968-0734

Dodgers Honor Gluck Family with First Pitch and Promote Stroke Education

Longtime UCLA donor and UCLA Health System Board Chair Henry Gluck and his daughter, UCLA Health System Board member Tracey Gluck, enjoyed more than just an exciting baseball game when they attended the Los Angeles Dodgers versus the Washington Nationals game on Memorial Day, May 29, at Dodger Stadium. Father and daughter took to the field, and Tracey Gluck threw the pre-game ceremonial first pitch.

Also on hand was the UCLA Health Mobile Stroke Unit (MSU), along with Dr. May Nour (RES ’13, FEL ’14, ’15), medical director of the UCLA Arline and Henry Gluck Stroke Rescue Program, and Dr. Jeffrey L. Saver, senior associate vice chair for clinical research and Carol and James Collins Chair in the UCLA Department of Neurology, who shared information on this innovative, lifesaving program. Launched in 2017 as a pilot project, California’s first MSU provides vital access to highly advanced clinical care in the prehospital setting. Staffed by a vascular neurologist, critical care nurse, firefighter paramedic and a technologist, the MSU is a specialized ambulance with a computed tomography scanner. This enables the medical team to examine brain tissue and brain blood vessels in the vehicle prior to arrival at the hospital.

UCLA HEALTH

Donors and UCLA Health staff with the mobile stroke unit at the Dodger game.

UCLA HEALTH

(From left) Henry Gluck, Tracey Gluck and Dodgers manager Dave Roberts.

Once the team determines the type of stroke, patients can be quickly treated with lifesaving medications in the MSU and routed to the most appropriate level-of-care stroke center.

“It was truly an honor to throw the first pitch, but more than that, my father and I were grateful to spread awareness about a leading health concern to such a large audience,” Tracey Gluck said.

The Gluck family provided the initial funds to equip the MSU and has advocated for its use since the beginning. UCLA Health participated in a nationwide study that showed MSUs improve access to stroke care and treatment, as well as better clinical outcomes for patients, compared to those who don't start receiving care until they reach the emergency department.

“Time is everything with stroke diagnosis and treatment,” said Henry Gluck. “We are thrilled the mobile stroke unit has been highly successful in prehospital response to needs all throughout Los Angeles County since the program was launched more than five years ago. With information from our research into hot spots of greatest stroke occurrence — especially in medically underserved areas — our sights are set on blanketing the county with additional MSUs where the needs are greatest.”

UCLA Health serves as the official medical partner of the L.A. Dodgers, a multiyear relationship in which UCLA Health physicians provide care to players. The partnership between the two organizations extends to collaborations that benefit the community and deliver their joint mission of community service, fitness and health for a broad and diverse audience. UCLA Health provides various basic health care resources at a number of events throughout the year, including free eye exams, basic dental checks, blood pressure and blood glucose screenings, nutrition education and fitness training.

To further educate Memorial Day game attendees about stroke, stadium screens lit up with photos of the Gluck family and the UCLA MSU, accompanied by a voiceover explaining the Gluck family’s involvement, the purpose of the stroke program and the MSU and thanking the family for helping support the program — all part of an L.A. Dodgers program, Dodgers Healthcare All Stars, presented by UCLA Health. ●

For more information, contact Ellen Haddigan-Durgun at: 310-321-8366

Recognizing Nurses and Compassionate Care

Victoria and Ronald Simms, through the Simms/Mann Family Foundation, have made a philanthropic gift to recognize the vital contribution of nurses. To celebrate this commitment, the Simms family hosted the “Off the Chart: Rewarding Nursing Greatness” event on May 22, 2023, at the Wallis Annenberg Center for the Performing Arts. Through Off the Chart, the Simms/Mann Family Foundation is collaborating with three diverse health systems — UCLA Health, Keck Medicine of the University of Southern California and City of Hope — that will each receive a three-year gift of $300,000 to reward 10 nurses per year at each facility for their leadership, ingenuity and expertise in caring for their fellow humans and future generations. Recipients embody a capacity for self-direction, originality and creative instincts, courageous and bold thinking and the potential to achieve even more.

The Simms/Mann Family Foundation’s investment in nurses comes at a crucial time as the nursing workforce crisis grows in urgency and significance on a global and national scale, with more than a third of nurses considering leaving the profession. Off the Chart hopes to broaden the public’s understanding of the essential role nurses have in all health care settings. The Simms also hope to encourage action to reverse the trend of nurse departures by inspiring others to make their own philanthropic contributions to support the health and well-being of communities.

“Nurses are the backbone of the nation’s health,” said Dr. Victoria Mann Simms, co-founder and president of the Simms/Mann Family Foundation and Institute. “When there is a shortage of nursing care, there are grave consequences: We are all less safe; screening, diagnosis and treatment are delayed; care costs more; the workload for each nurse increases; and care feels less caring. It is important to our foundation to raise awareness about this area and recognize the vital service nurses provide.”

Johnese Spisso, MPA, president of UCLA Health, CEO of the UCLA Hospital System and associate vice chancellor of UCLA Health Sciences, attended the event to help honor the inaugural Off the Chart nursing recipients, including the 10 UCLA Health honorees: registered nurses Lindsay Brant, Amy Castillo, Kelly Hopkins, Kayla Kafka-Peterson, Christopher H. Lee, Mithun Mahinda, Iris Mayoral, Valentina Obreja, Kemi Reeves and David Yamada.

> “WHEN THERE IS A SHORTAGE OF NURSING CARE, THERE ARE GRAVE CONSEQUENCES: WE ARE ALL LESS SAFE; SCREENING, DIAGNOSIS AND TREATMENT ARE DELAYED; CARE COSTS MORE; THE WORKLOAD FOR EACH NURSE INCREASES; AND CARE FEELS LESS CARING.”

UCLA Health 2023 Off the Chart nursing award recipients with UCLA Health chief nursing executive Dr. Karen Grimley (far right).

JONAH LIGHT

Also in attendance were Dr. Karen A. Grimley, chief nursing executive at UCLA Health and vice dean at the UCLA School of Nursing; Dr. Robert Cherry, chief medical and quality officer for the UCLA Health system; and family members of the nurse recipients. Sarah DiGregorio, author of *Taking Care: The Story of Nursing and its Power to Change Our World*, spoke at the event.

Continuing to shine light on the role of nurses, UCLA Health and health systems across the nation celebrated National Nurses Week, which began on May 6 and ended on May 12, Florence Nightingale’s birthday. This year, UCLA expressed gratitude to its nurses with special treats, including breakfast, a pizza party and flowers. In addition, the annual nursing awards, held at Ronald Reagan UCLA Medical Center and UCLA Santa Monica Medical Center, celebrated 21 individual nurses for nursing excellence. Donors wishing to honor nurses during National Nurses Week contributed $55,000, raised from 56 gifts, with a lead donation of $30,000, all of which helped recognize the more than 5,000 UCLA Health nurses with small acts of kindness. These acknowledgement efforts are important to nurses and show that the community appreciates their hard work. ●

For more information, contact Noah Green at: 424-325-8184

DONATIONS & GIFTS

CLASS OF ’98 ENDOWS SCHOLARSHIP IN INTERNATIONAL HEALTH

The David Geffen School of Medicine at UCLA Class of 1998 has established the Class of ’98 Medical Student Scholarship in International Health. Funded through the efforts of the Class of 1998, UCLA medical students interested in pursuing a global-health experience will have the resources to travel to international locations and experience how medicine and research are practiced in a range of global settings. Through the medical school’s Global Health Program, the scholarship will help up to two students per year, covering expenses such as pretravel health care fees, airfare, in-country housing and food, ensuring that students who are passionate about expanding their medical training can participate, regardless of their financial capabilities.

For more information, contact Alison Wong at: 310-869-1810

ADVANCING AUTISM RESEARCH

Andrea and Peter Roth, recently honored at the UCLA WOW 2023 event as community leaders in mental health, have contributed $1 million to benefit the UCLA Center for Autism Research and Treatment (CART). Under the direction of Dr. Daniel Geschwind (RES ’95, FEL ’97), Gordon and Virginia MacDonald Distinguished Chair in Human Genetics, CART is committed to changing the world for families impacted by autism through understanding its causes, improving diagnosis and developing transformative therapies. CART also works to build strong partnerships with members of the autism community and train the next generation of researchers and clinical practitioners. This philanthropic investment from Andrea and Peter Roth will provide vital funding to sustain the CART team as they continue essential investigations that will lead to new therapies for autism and provide world-leading clinical care and education.

For more information, contact Christopher Carbado at: 310-562-6498

GIFT GRANTS MORE SPECIAL WISHES TO DYING PATIENTS

Sandy and Joel Sprague, via a private foundation, have directed a $25,000 contribution to the UCLA Health 3 Wishes Program. Celebrating its five-year anniversary, the 3 Wishes Program grants special requests to patients in their final days of life, such as enabling them to hear a cherished piece of music performed for them, spend their final moments outdoors or to visit with a beloved friend or pet. Sandy Sprague’s first husband, Adam Levitt, was the first recipient of this meaningful program. Sandy has remarried and, with her husband, Joel, made a donation in honor of Adam to support the 3 Wishes Program’s goals of providing the best possible end-of-life experience for patients and families by celebrating lives and supporting the grieving process. “The kindness and compassion the ICU team showed during Adam’s last moments meant everything to me,” said Sandy. Joel Sprague also contributed to the UCLA Prostate Cancer Program, part of the Institute of Urologic Oncology, under the guidance of Dr. Leonard S. Marks (RES ’78), Jean B. deKernion, M.D., Endowed Chair in Urology.

For more information, contact Larissa Harrison at: 310-592-5613

GOLF TOURNAMENT RAISES MONEY FOR UCLA PATIENT CARE

The UCLA Health Golf Invitational, held April 17, 2023, at The Riviera Country Club in Pacific Palisades, raised more than $651,000 to benefit the UCLA Health System President’s Strategic Fund, which supports the hospital system’s greatest needs in patient care. Sponsored by Lenzo Yoon and other dedicated UCLA donors, the event was attended by more than 80 golfers. The special one-day golf experience — hosted by Dr. John C. Mazziotta (RES ’81, FEL ’83), vice chancellor of UCLA Health Sciences and CEO of UCLA Health; Johnese Spisso, MPA, president of UCLA Health, CEO of the UCLA Hospital System and associate vice chancellor of UCLA Health Sciences; and Dr. Benjamin J. Ansell (MD ’92, RES ’95) — also included a post-golf dinner and awards. Tournament players included Los Angeles Lakers legends Norm Nixon, James Worthy and Derek Fisher, and Los Angeles Dodgers legends Chan Ho Park, Rick Dempsey, Shawn Green and Eric Karros.


SHANDA VENNEAU/SHANDA PHOTOGRAPHIC

(From left) Chris Baldizan, Alex Kang, Byung Hun Lee, Chan Ho Park, Lenzo Yoon, Royce Ryu, Kangmin Shin and JJ Kim.

For more information, contact Leah Brown at: 310-869-3936

FORMER UCLA QUARTERBACKS RAISE MONEY FOR CHILDREN’S HEALTH

On April 15, 2023, the UCLA Quarterback Club held a fundraiser at the UCLA Meyer and Renee Luskin Conference Center. Attended by 20 former UCLA quarterbacks; UCLA football coach Chip Kelly; and Johnese Spisso, MPA, president of UCLA Health, CEO of the UCLA Hospital System and associate vice chancellor of UCLA Health Sciences, the event raised $210,000, which will provide unrestricted funding for UCLA Mattel Children’s Hospital. Sportscaster Josh Lewin moderated a panel discussion featuring former UCLA Bruin and three-time Super Bowl champion Troy Aikman, and Gary Beban, who won the Heisman Trophy as a UCLA Bruin. Lewin interviewed the former players about their time at UCLA, as well as their football and post-football careers. They also discussed the use of a player’s likeness for commercial purposes and compensation for that use, the future of football and other related topics.


TODD CHENEY/UCLA PHOTOGRAPHY

UCLA Quarterback Club.

For more information, contact Danielle Dietz at: 310-694-653

My Face in the Mirror

By Chloe Corcoran

COURTESY OF CHLOE CORCORAN

FINALLY, I SEE MY REAL SELF.

Even before I transitioned in 2016, I started to think about facial feminization surgery. I was living in Rochester, New York, and I believed my insurance would cover it. But after I went through a whole process to move forward, I was told: "Oh, we're not going to cover that."

While the idea of the surgery stayed in the back of my mind as a possibility that could actually happen, I approached it with kind of a deficit mindset: "I can get surgery to fix my face," I thought. But as time passed and the more I became okay with myself, the more I talked to other people in the community and the more I learned, I came to understand that it was not about fixing anything. Nothing was broken. Nothing about me had *ever* been broken.

But having facial feminization surgery would allow the mirror to reflect back how I saw myself. Many people in my position choose not to go through the procedure. For myself, I really wanted to go down that road. Part of my reasoning, perhaps, was that I was very safety minded at the time, and I thought that doing it might make people do a little bit less of a doubletake when they saw me. Then I realized: I'm over six feet tall. People are going to look, no matter what.

I finally started moving toward having the surgery at the end of 2020. It was not an easy journey. The administrative red tape is difficult, especially when you consider that to have a gender-affirming surgery, you've got to get sign-off from both medical and mental health providers. A cisgender person who wants a breast enhancement doesn't have to provide such documents, so it feels kind of wrong. I was going to say interesting or weird, but I think it's wrong.

Also, you have to be in therapy for a while before most providers will sign off on the procedure. At the time, my therapist did not feel it was her role to affirm that I was in a place in life to have facial feminization surgery. She didn't feel making such a determination was an appropriate role for any psychologist. Eventually, she did sign off after discussing it with her practice manager. But that was difficult for me — I felt like I was not in control of what would happen next. It was like: This is what I want. This is what I need to do. I've been living transitioned for almost five years. And I have to ask permission from somebody who doesn't really know me, for them to say, "Yes, you can do this for yourself"?

Then there's the issue of trying to find a surgeon. There is a long waiting list for these surgeries, and you don't want to go to just anyone. Trans women try, for the most part, to take care of each other, and we let each other know who to see — and who not to see. Justine

Lee, MD (FEL '13), PhD, at UCLA Health, was highly recommended by other members of the community. The more I talked with people who had been under her care, the more I started to feel safe with her and trust her, even before I met her.

A patient already feels a lot of anxiety around this kind of surgery because there's no real way to know what one's forehead is going to look like with a four or five or six millimeter difference, so you really have to trust your surgeon. Dr. Lee made me feel comfortable; she didn't try to push me in any particular direction. "These are options," she said to me. "These are some things that people have done in the past. If you want that, we can do it. And if you don't want it, we don't have to."

> "Now, when I look in the mirror, a year-and-a-half after my surgery, I see Chloe, 100%. I don't feel like I'm trying to hide anything anymore."


COURTESY OF CHLOE CORCORAN

The surgery itself was terrifying. I'm not going to lie: It hurt. A lot. You wake up in pain. And the recovery process was no easier. The swelling is there for so long. I got anxious: "Oh my gosh, is this ever going to look better?" And it can get lonely, because I didn't want to go out in public — I looked like I'd been beat up. It was a very tender time. A very difficult time.

It took about six weeks for the swelling to go down enough for me to start to notice changes. "Wow," I thought, "this is awesome!" I still didn't have a good idea of where things were heading because it took about a year for my face to feel settled.

Now, when I look in the mirror, a year-and-a-half after my surgery, I see Chloe, 100%. I don't feel like I'm trying to hide anything anymore. Sure, there are some things that I would like to keep working on — we all have that feeling — but I fully see myself.

Still, it's hard sometimes because there are so many physical remnants of the identities I used to hold. I have the scars and lingering aftereffects of so many injuries and concussions from playing college football. But now I see me, and it makes me want to do better. It makes me want to take care of myself. I want to be healthy. Whereas before I believed there was no future for me — I, at times, thought of taking my own life — today I want to have one. I can only speak for myself: This was, for me, a life-saving procedure.

And now it is important for me to stand up. The hate and violence directed against trans people is an attempt to intimidate and isolate us, from each other and from our larger communities. It is essential for those of us who can be visible to make space for those who may not be there yet. That's why I share my story. People want us go away, and that makes me, more than ever, not want to go away. Other trans people speaking out has made my life better. Now that is my mission. People have done for me, and now I need to do for other people.

Chloe Corcoran *underwent facial feminization surgery at UCLA Health in 2021.*

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We look forward to hearing from you.

Thank you.
David Greenwald
Editor, *U* Magazine

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