

TAILOR MADE

By shaping treatments to the unique needs of individual patients, precision health promises to transform nearly every aspect of health care.



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Photo: Ann Johansson

Partners in Care

In response to shifting market realities, UCLA Health aligns with other health care providers to meet the growing demand to enhance quality, contain costs and better manage the needs of patient populations.

The landscape of today's health care marketplace is shifting, with increasing emphasis on cost-effective and value-based care that focuses on prevention, wellness and population health. We are responding to these evolving challenges and opportunities by embracing a growth strategy that may come as a surprise to many observers.

UCLA Health is a world-leading health care system, and our hospitals are among the best in the country, but we recognize that we can't do everything. So in addition to investing in what we already do well in community-based settings, a core element of our strategy is to forge alliances with partners who are as committed as we are to driving change and innovation to complement the excellent care that we provide. These partnerships involve some institutions that are among our chief competitors. But in the words of an oft-quoted proverb from Africa, "If you want to go fast, go alone. If you want to go far, go together."

The outcome of these alliances benefit not just our health system, enabling us to focus more of our resources to grow UCLA's core strengths, but also our partners. Together, we will serve our broader communities, expanding the continuum of care to ensure that the needs of patients are met in the most appropriate venues and in a way that contains costs and promotes patient satisfaction.

These alliances, large and small, are winning opportunities for everyone involved. For example, our agreement with Cedars-Sinai Medical Center and Select Medical to build a new 138-bed inpatient rehabilitation hospital in Century City, California Rehabilitation Institute, fills a void in the community for patients with acute rehabilitation needs. Alone, none of us could have made the investment necessary for a project like this, but together, with a common vision, purpose and goals, we have built a legacy project, a state-of-the-art regional and

national center of excellence that enhances the quality of our patients' lives, promotes access and improves the overall health status of the community.

The partnership strategy also supports UCLA Health's efforts to offer more convenient access to primary care and certain specialty services in Los Angeles communities. Our UCLA Stein Eye Institute has aligned with Doheny Eye Institute to more broadly advance patient care, vision research and education. We have partnered with Accent Care to provide home-health services to our patients, and our alliance with the Motion Picture & Television Fund extends UCLA's health care resources to members of the entertainment industry. Together with Cedars-Sinai, MemorialCare Health System, Torrance Memorial Medical Center, Good Samaritan Hospital, Huntington Memorial Hospital and PIH Health, we have joined with Anthem Blue Cross to create Vivity health plan, a first-in-the-nation partnership between an insurer and a group of competing hospital systems to enhance the health of all plan members, as well as to share financial risk and gain.

These efforts are exciting, and in addition to directly serving our patients, they further enhance our research and teaching missions. They also represent uncharted territory for academic medical centers, and there are many eyes now on us to see how it will work out. We believe that we are uniquely positioned to select and establish the types of partnerships that will enable us to drive effective change for the benefit of patients and society.

John C. Mazziotta, MD (RES '81, FEL '83), PhD
Vice Chancellor, UCLA Health Sciences
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Mobile Stroke Unit: Hospital on Wheels

Roughly every 40 seconds, someone in the United States has a stroke, and almost every four minutes, one of those people dies. Against that backdrop, UCLA Health has launched the first mobile stroke unit on the West Coast, enabling rapid delivery of brain-saving medications to stroke patients who might otherwise face debilitating delays in treatment.



Dr. May Nour (top) is medical director of the UCLA Arline and Henry Gluck Stroke Rescue Program, which sponsors the new UCLA Health Mobile Stroke Unit (bottom).

Photos: UCLA Health

As part of the first phase of a pilot program, the specialized ambulance unit and highly trained personnel began responding in September to select 911 calls in Santa Monica in coordination with the Santa Monica Fire Department. With support from the Los Angeles County Board of Supervisors, the unit's range will expand to other parts of Los Angeles County, possibly including Compton, Carson, Long Beach and Westwood. Ultimately, program organizers hope, the unit will operate in other areas of the county and may be the first of a fleet of four-to-nine units serving the entire county.

"Rapid response is critical, because the sooner a stroke is treated, the better the patient's outcome," says May Nour, MD (RES '13, FEL '14, '15), PhD, medical director of the UCLA Arline and Henry Gluck Stroke Rescue Program. "We know from research at UCLA that in a typical stroke, every minute that goes by without treatment, 2 million brain cells die."

A mobile stroke unit is a unique type of ambulance equipped with a mobile computed tomography scanner (CT), which allows doctors to diagnose and treat strokes in the field with appropriate medications. The unit includes a mobile blood-testing laboratory, as well as a neurologist, critical care nurse, CT technologist and paramedic.

"With the UCLA Health Mobile Stroke Unit, we are bringing the hospital to the patient instead of the patient to the hospital in order to save as much brain as possible," says Jeffrey Saver, MD, director of the UCLA Comprehensive Stroke Center.

The UCLA unit is the first of its kind to operate in California. It will be the West Coast anchor of the first national demonstration project to gather data on the degree of improved patient outcomes and cost-effectiveness with accelerated field treatment. Positive results from the study could enable the federal Centers for Medicare and Medicaid Services and other insurers to reimburse emergency medical service and hospital systems for mobile stroke clinical activities.

"To be able to take care of stroke patients in the very first minutes after onset, when there is the most brain to save, is our ultimate goal," Dr. Nour says. "Recovery and quality of life for stroke survivors is of utmost importance. By providing treatment in the most efficient timing, we offer patients the greatest possibility of improved clinical recovery."

In the initial phase of the pilot program, a neurologist specializing in stroke treatment will be riding in the unit. As the program develops, however, a neurologist will oversee care more efficiently via a live



Top: The UCLA Health Mobile Stroke Unit brings the hospital to the patient, allowing doctors to make a diagnosis quickly. **Bottom Left:** The ambulance includes a CT scanner to conduct head and neck scans before the patient arrives at the hospital. **Bottom Right:** Dr. May Nour reviews brain images.

video and voice connection from Ronald Reagan UCLA Medical Center. “Definitive treatments for acute stroke can only be started after a head CT scan is done and shows the type of stroke the patient is having,” Dr. Nour says.

This past summer, the Los Angeles County Board of Supervisors voted to provide additional funding of nearly \$1.5 million to enable the state-of-the-art vehicle to operate every week, instead of the original plan to operate every other week, and to extend the life of the pilot program from 18 to 30 months. The additional funding also will increase the

geographic reach of those served by the unit and enhance the quality of data gathered through the project.

“Minutes matter when it comes to treating strokes,” says Supervisor Janice Hahn, who wrote the motion for funding. “With a mobile stroke unit operating in L.A. County, doctors will be able to diagnose and treat stroke patients faster than ever before — making it more likely that they not only survive, but also go on to live longer, healthier lives.”



To learn more about the UCLA Health Mobile Stroke Unit, go to: uclahealth.org/mobile-stroke

Sip Black Tea to Drop Pounds

UCLA researchers have demonstrated for the first time that black tea may promote weight loss and other health benefits by changing bacteria in the gut. In a study of mice, the scientists showed that black tea alters energy metabolism in the liver by changing gut metabolites. The study found that both black and green tea changed the ratio of intestinal bacteria in the animals – the percentage of bacteria associated with obesity decreased, while bacteria associated with lean body mass increased.

Previous studies indicated that chemicals in green tea called polyphenols are absorbed and alter the energy metabolism in the liver.

The new findings show that black tea polyphenols, which are too large to be absorbed in the small intestine, stimulate the growth of gut bacteria and the formation of short-chain fatty acids, a type of bacterial metabolites that have been shown to alter the energy metabolism in the liver.

“The results suggest that both green and black teas are prebiotics, substances that induce the growth of good microorganisms that contribute to a person’s well-being,” says Susanne Henning, PhD, adjunct professor at the UCLA Center for Human Nutrition in the David Geffen School of Medicine at UCLA.

In the study, four groups of mice received different diets: low fat and high sugar; high fat and high sugar; high fat, high sugar and green tea extract; and high fat, high sugar and black tea extract. After four weeks, the weights of the mice that were given green or black tea extracts dropped to the same levels as those of the mice that received the low-fat diet throughout the study.

The researchers also collected samples from the mice’s large intestines, to measure bacteria content and liver tissues to measure fat deposits. In the mice that consumed either type of tea extract, there was less of the type of bacteria associated with obesity and more of the bacteria associated with lean body mass. However, only the mice that consumed black tea extract had an increase in a type of bacteria called *pseudobutyrvibrio*, which could help explain the difference between how black tea and green tea change energy metabolism.

The study also concluded that green tea and black tea have different effects on liver metabolism. Dr. Henning says the molecules in green tea are smaller and can more readily be absorbed into the body and reach the liver directly, while black tea molecules are larger and stay in the intestine rather than being absorbed. When black tea molecules stay in the intestinal tract, they enhance the growth of beneficial bacteria and the formation of microbial metabolites involved in the regulation of energy metabolism.

 “Decaffeinated Green and Black Tea Polyphenols Decrease Weight Gain and Alter Microbiome Populations and Function in Diet-induced Obese Mice,” *European Journal of Nutrition*, September 30, 2017

Illustration: Maja Moden



As Re-hospitalizations Go Down, Mortality Goes Up

Federal policymakers introduced the Hospital Readmission Reduction Program in 2012 to spur hospitals to reduce Medicare readmission rates by penalizing them if they didn't. A new analysis led by researchers at UCLA and Harvard University, however, finds that the program may be so focused on keeping some patients out of the hospital, that related death rates are increasing.

In a study of 115,245 fee-for-service Medicare beneficiaries at 416 hospitals, implementation of the reduction program was linked to a decrease in readmissions at 30 days after discharge and at one year after discharge among people hospitalized for heart failure. But the program also was linked to an increase in mortality rates among these groups of patients.

“Through this program, Medicare financially penalizes approximately two-thirds of U.S. hospitals based on their 30-day readmission rates,” says Gregg Fonarow, MD '87 (RES '90, FEL '93), Eliot Corday Professor of Cardiovascular Medicine and Science and co-chief of cardiology. “These data suggest it also incentivized strategies that unintentionally harmed patients with heart failure.”

The analysis of clinically collected data confirms what an analysis of billing data had previously suggested — that the major federal policy, implemented under the Affordable Care Act, is associated with an increase in deaths of patients with heart failure.

Using data from the American Heart Association's Get With The Guidelines–Heart Failure Program, a voluntary quality-improvement initiative at hospitals across the country, as well as Medicare data, researchers compared readmission rates of patients with heart failure, mortality rates and characteristics, along with hospital characteristics, from January 2006 through December 2014. The findings point to a reversal in a decades-long trend of a declining death rate among patients with heart failure, one that researchers concluded was linked to the implementation of the Hospital Readmission Reduction Program.

The declining readmission rates change the fact that patient deaths — the ultimate outcome — have increased. As Dr. Fonarow points out: “If a patient dies, then that patient cannot be readmitted.”

The researchers don't dispute that the goals of the program — reducing the number of re-hospitalizations and decreasing the costs to the health care system — are positive.

But they say the policy of reducing readmissions is focused too narrowly on not readmitting patients to hospitals.

“To avoid the penalties, hospitals now have incentives to keep patients out of hospitals longer, possibly even if previously some of these patients would have been readmitted earlier for clinical reasons,” says Ankur Gupta, MD, cardiovascular research fellow at the Brigham and Women's Hospital, Harvard Medical School. “Therefore, this policy of reducing readmissions is aimed at reducing utilization for hospitals rather than having a direct focus on improving quality of patient care and outcomes.”

The researchers now are studying which types of hospitals and patients are most affected by the trend. Regardless, they wrote, the data support a reconsideration of the policy's use for patients with heart failure. “The policy should focus on incentivizing improving quality and patient-centered outcomes of those with heart failure,” Dr. Fonarow says, “and not on a misguided utilization metric of re-hospitalizations.”

 “Association of the Hospital Readmissions Reduction Program Implementation with Readmission and Mortality Outcomes in Heart Failure,” *JAMA Cardiology*, November 12, 2017



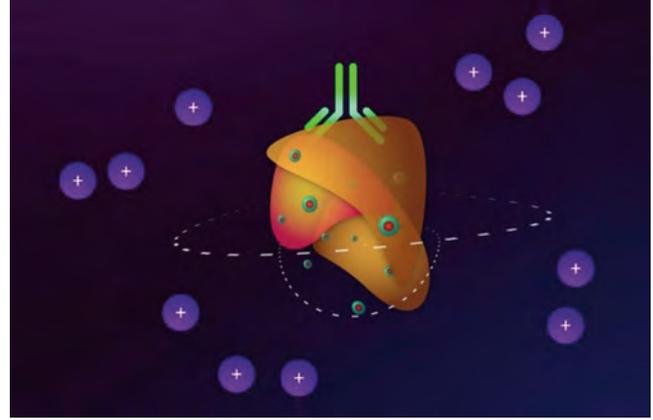
Image: iStock

Modified Herpes Virus Shows Promise for Treating Advanced Melanoma

In a two-year study at UCLA, nearly two-thirds of people with advanced melanoma responded positively to a treatment that combines the immunotherapy drug pembrolizumab with a herpes virus called talimogene laherpareovec, or T-VEC. Researchers found that the side effects of the treatment were manageable and comparable to side effects for people who took either pembrolizumab or T-VEC as a standalone treatment.

UCLA scientists are testing the combination of pembrolizumab and T-VEC as a treatment option for people with advanced melanoma who do not fully respond to either treatment separately. T-VEC is a genetically modified version of the herpes simplex virus that causes cold sores but is safe to use. T-VEC already has been approved for the treatment of melanoma, and it works both by directly killing cancer cells and using a protein that attracts immune cells into the cancers.

Pembrolizumab has become a standard-of-care treatment for advanced melanoma, and it also is being used to treat non-small-cell lung cancer; cancers of the head, neck, kidney and bladder; and



Rendering of combination pembrolizumab (green form at top center) and T-VEC (green circles with red centers) in action.

Image: Courtesy of UCLA Jonsson Comprehensive Cancer Center

Hodgkin's disease. It works by taking the "brakes" off the body's immune system, enabling it to attack cancer.

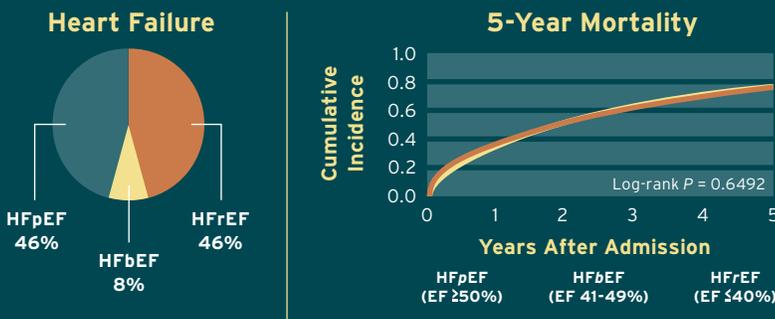
Antoni Ribas, MD, professor of molecular and medical pharmacology and director of the Tumor Immunology Program at the Jonsson Comprehensive Cancer Center, says people whose melanoma does not respond to pembrolizumab often lack a type of T cell called CD8+ in their tumors; the lack of CD8+ cells seems to prevent immunotherapy drugs from working. But the researchers believe those people might benefit from a combination therapy because T-VEC attracts CD8+ immune cells to the tumors, and pembrolizumab allows them to attack the cancer cells.

The phase 1 clinical trial evaluated 21 people with advanced melanoma. Researchers injected patients' melanoma tumors with T-VEC for six weeks and then gave them infusions of pembrolizumab. Sixty-two percent of the patients had a partial or complete response, meaning that their tumors either shrank or were no longer detectable. The combination therapy could provide an alternative treatment for people with melanoma whose tumors don't respond to other therapies. It also is being tested in people with head, neck and colon cancers.



"Oncolytic Virotherapy Promotes Intratumoral T Cell Infiltration and Improves Anti-PD-1 Immunotherapy," *Cell*, September 7, 2017

5-Year Outcomes in Patients Hospitalized with HF with Preserved, Borderline and Reduced EF



Outcomes - 5-Year Event Rates (%)

| | Mortality | Readmission | CV Readmission | HF Readmission | Mortality/ Readmission |
|-------|-----------|-------------|-------------------|-------------------|---------------------------|
| HFrEF | 75.3 | 82.2 | 63.9 | 48.5 | 96.4 |
| HFbEF | 75.7 | 85.7 | 63.3 | 45.2 | 97.2 |
| HFpEF | 75.7 | 84.0 | 58.9 | 40.5 | 97.3 |

Heart's Pumping Function Doesn't Indicate Heart Failure Survival Rates

Contrary to popular practice, a measure of the heart's pumping function known as "left ventricular ejection fraction" is not associated with the long-term outcomes of hospitalized patients with heart failure, a UCLA-led study of Medicare patients has found. Hospitalized heart-failure patients in all age groups within

Weak Burst of Electricity Can Help to Improve Memory

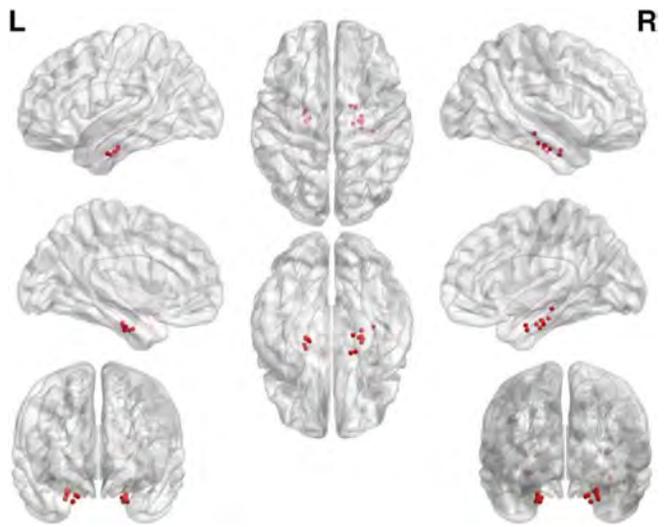
UCLA neuroscientists have discovered precisely where and how to electrically stimulate the human brain to enhance people's recollection of distinct memories. People with epilepsy who received low-current electrical pulses showed a significant improvement in their ability to recognize specific faces and ignore similar ones.

Eight of nine patients' ability to recognize the faces of specific people improved after receiving electrical pulses to the right side of the brain's entorhinal area, which is critical to learning and memory. However, electrical stimulation delivered to the left side of the region, tested on four other people, resulted in no improvement in the patient's recall.

The study, led by Itzhak Fried, MD, PhD '81, professor of neurosurgery, and Nanthia Suthana, PhD '09 (FEL '12), assistant professor-in-residence in neurosurgery, builds on 2012 research at UCLA demonstrating that human memory can be strengthened by electrically stimulating the brain's entorhinal cortex.

The researchers followed 13 people with epilepsy who had ultrafine wires implanted in their brains to pinpoint the origin of their seizures. The team monitored the wires to record neuron activity as memories were formed, then sent a specific pattern of quick pulses back into the entorhinal area. Using the ultrafine wires allowed researchers to target the stimulation but use a voltage as low as one-tenth to one-fifth as strong as had been used in previous studies.

The study suggests that even low currents of electricity can affect the brain circuits that control memory and human learning. It also illustrates the importance of precisely targeting



Placement of entorhinal microelectrodes (red dots) was determined from co-registration of preoperative high-resolution MRI and postoperative CT scans.

Image: Courtesy of Drs. Itzhak Fried and Nanthia Suthana

the stimulation to the right entorhinal region. Other studies that applied stimulation over a wide swath of brain tissue have produced conflicting results. Electrical stimulation could offer promise for treating memory disorders such as Alzheimer's disease.

 "Theta-burst Microstimulation in the Human Entorhinal Area Improves Memory Specificity," *eLife*, October 24, 2017

the study and with all levels of ejection fraction had significantly lower rates of survival after five years and a higher risk of re-hospitalization than people in the United States without heart failure.

The study is the first to use national data to specifically categorize heart failure by three distinct ejection fraction subgroups. Gregg Fonarow, MD '87 (RES '90, FEL '93), Eliot Corday Professor of Cardiovascular Medicine and Science, co-chief of cardiology and director of the Ahmanson-UCLA Cardiomyopathy Center, and Kevin Shah, MD, cardiovascular clinical fellow, led the research at UCLA. The study concluded that better treatments for heart failure and new ways of predicting patient outcomes are needed.

Heart failure occurs when heart muscle is weakened and cannot pump enough blood to meet the body's needs. Ejection fraction is measured by ultrasound and shows how well the heart is pumping. Doctors use ejection fraction to guide treatment of patients with heart failure and estimate their likelihood of re-hospitalization and survival.

Researchers used national data from the American Heart Association's Get With The Guidelines-Heart Failure program and the U.S. Centers for Medicare and Medicaid Services and included 39,982 patients from 254 hospitals admitted for heart failure from 2005 to 2009. The study categorized the patients by three distinct ejection-fraction subgroups: preserved, borderline and reduced.

The findings underscore the serious nature of a diagnosis of heart failure and the long-term risk associated with it, regardless of the heart's estimated pump function. The study suggests cardiologists need to find new strategies to better treat patients with heart failure and to prevent patients from developing heart failure in the first place. The next stage of research will look at the specific causes of death for the different subgroups and determine potential treatment strategies to improve their outcomes.

 "Heart Failure with Preserved, Borderline, and Reduced Ejection Fraction: 5-year Outcomes," *Journal of the American College of Cardiology*, November 14, 2017

Biomarkers Could Reveal Undetected Concussions

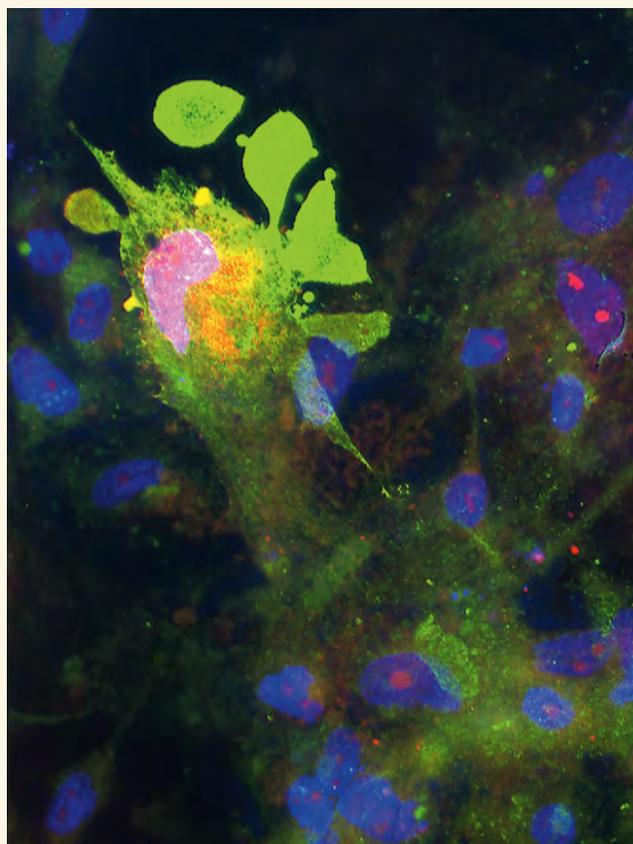
UCLA researchers have identified four biomarkers that could help doctors diagnose brain trauma and concussions through a simple blood test. The biomarkers are proteins, from brain cells called astrocytes, that are released instantly into the bloodstream when astrocytes' outer membranes rupture from blunt impact or whiplash trauma.

Mild traumatic brain injuries, also called concussions, often go undiagnosed, but they can lead to lasting neurological impairment, especially after repeated occurrences. Currently, doctors use computed tomography (CT) scans or a standard scoring system to describe the level of consciousness in a person who has suffered a hit to the head. But research has shown that neither approach correlates well with recovery or disability, and both approaches may not help identify milder brain injuries, such as concussions.

As a result, people with the types of mild head injuries often seen among athletes and military personnel frequently don't take the proper steps for recovery. Because of the shortcomings of the current diagnostic methods, scientists have been searching for a brain-injury "signature" that could objectively identify milder traumatic brain injury (TBI) early on, as well as assess the severity of TBIs to guide treatment.

In the lab, Ina Wanner, PhD, associate neuroscientist at the David Geffen School of Medicine at UCLA, mechanically "injured" human astrocytes using abrupt pressure pulses. She found that the astrocytes leaked substantial amounts of certain proteins. When the researchers analyzed cerebral spinal fluid from patients who had suffered a TBI, they found the same set of astrocyte proteins.

Dr. Wanner wanted to find out if these trauma-released proteins from astrocytes also could be found in the bloodstream. A hit to the head sends shock waves through brain tissue, tearing apart cells, rupturing cell membranes. Because astrocytes have numerous extensions that attach to capillaries and blood vessels, any rupture in this connection allows proteins to directly enter the circulation — even after minor injuries.



Proteins, stained green, leak through the damaged membrane of a wounded brain cell.

Image: Courtesy of Dr. Ina Wanner

Beginning on the day of injury and for up to five days after, the scientists analyzed blood samples from people who had suffered TBIs of varying degrees of severity. They discovered that three of the new biomarkers appeared in patients' blood as soon as one hour after an injury and even when the injuries were mild enough that they couldn't be detected by CT scans. The study showed that those three proteins are released from wounded, compromised cells. The fourth biomarker was exclusively associated with cell death after trauma.

A new biomarker panel based on the research would make it possible for the first time to diagnose mild TBI and to monitor brain-tissue compromise as it occurs. The advance could be especially important because diagnosing a concussion within an hour after the injury could make a critical difference in preventing repeated hits, promoting rest and recovery and averting chronic symptoms.



"New Astroglial Injury-defined Biomarkers for Neurotrauma Assessment," *Journal of Cerebral Blood Flow and Metabolism*, August 17, 2017

Researchers Create Molecule that Could ‘Kick and Kill’ HIV

Current anti-AIDS drugs are highly effective at making HIV undetectable and allowing people with the virus to live longer, healthier lives. The treatments, a class of medications called antiretroviral therapy, also greatly reduce the chance of transmission from person to person. But the medications do not actually rid the body of the virus.

HIV has the ability to elude medications by lying dormant in cells called CD4+ T cells, which signal another type of T cell, the CD8, to destroy infected cells. When a person with HIV stops treatment, the virus emerges and replicates in the body, weakening the immune system and raising the likelihood of opportunistic infections or cancers that can sicken or kill the patient.

Researchers have been looking for ways to eliminate the “reservoirs” where the virus hides, and scientists from UCLA, Stanford University and the National Institutes of Health may have developed a solution. Their approach involves sending an agent to “wake up” the dormant virus, which causes it to begin replicating, so that either the immune system or the virus itself would kill the cell harboring HIV.

Scientists call the technique “kick and kill.”

Destroying the reservoir cells could rid some or all of the HIV virus from people who are infected. And although the scientists’ approach has not yet been tested in humans, a synthetic molecule they developed has been effective at kicking and killing HIV in lab animals.

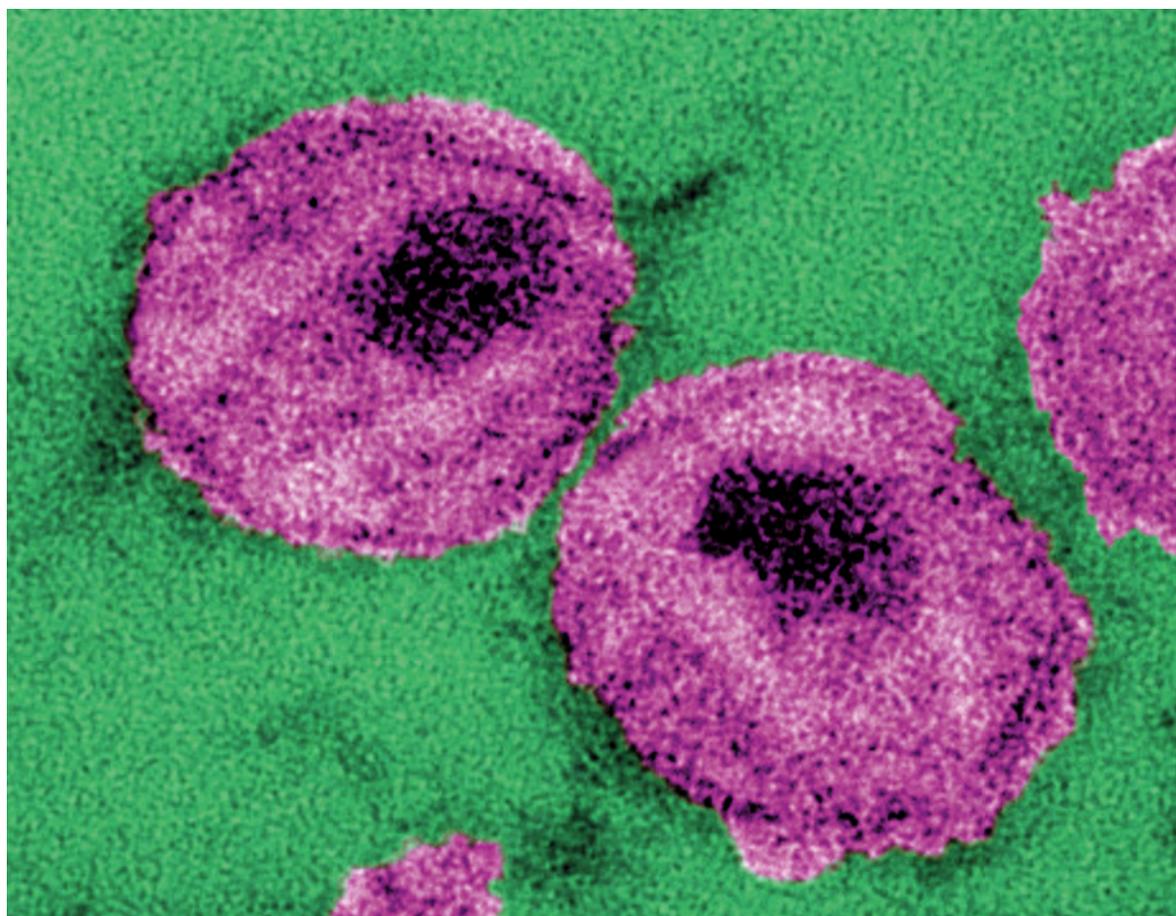
“The latent HIV reservoir is very stable and can reactivate virus replication if a patient stops taking antiretroviral drugs for any reason,” says Matthew Marsden, PhD, assistant professor of medicine in the Division of Hematology/Oncology. “Our study suggests that there may be means of activating latent virus in the body while the patient is on antiretroviral drugs to prevent the virus from spreading and that this may eliminate at least some of the latent reservoir.”

To test the approach, the researchers gave antiretroviral drugs to mice that had been infected with HIV and then administered a synthetic compound called SUW133 to activate the mice’s dormant HIV. Up to 25 percent of the previously dormant cells that began expressing HIV died within 24 hours of activation. With further development, the technique could lower the viral reservoir enough for people with HIV to be able to discontinue their antiviral therapy, Dr. Marsden says.

SUW133 is based on bryostatin 1, a natural compound extracted from a marine animal called *Bugula neritina*. The research determined that the new compound is less toxic than the naturally occurring version. In further studies, the scientists plan to learn how to make SUW133 less toxic and to evaluate its effectiveness in larger animals before it could be tested in humans



“In Vivo Activation of Latent HIV with a Synthetic Bryostatin Analog Effects Both Latent Cell ‘Kick’ and ‘Kill’ in Strategy for Virus Eradication,” *PLOS Pathogens*, September 21, 2017



By sending an agent to “wake up” the dormant HIV virus, causing it to begin replicating, scientists have found they can spark the immune system or the virus itself to kill the cell harboring HIV.

Image: A. Harrison and Dr. P. Feorino/CDC

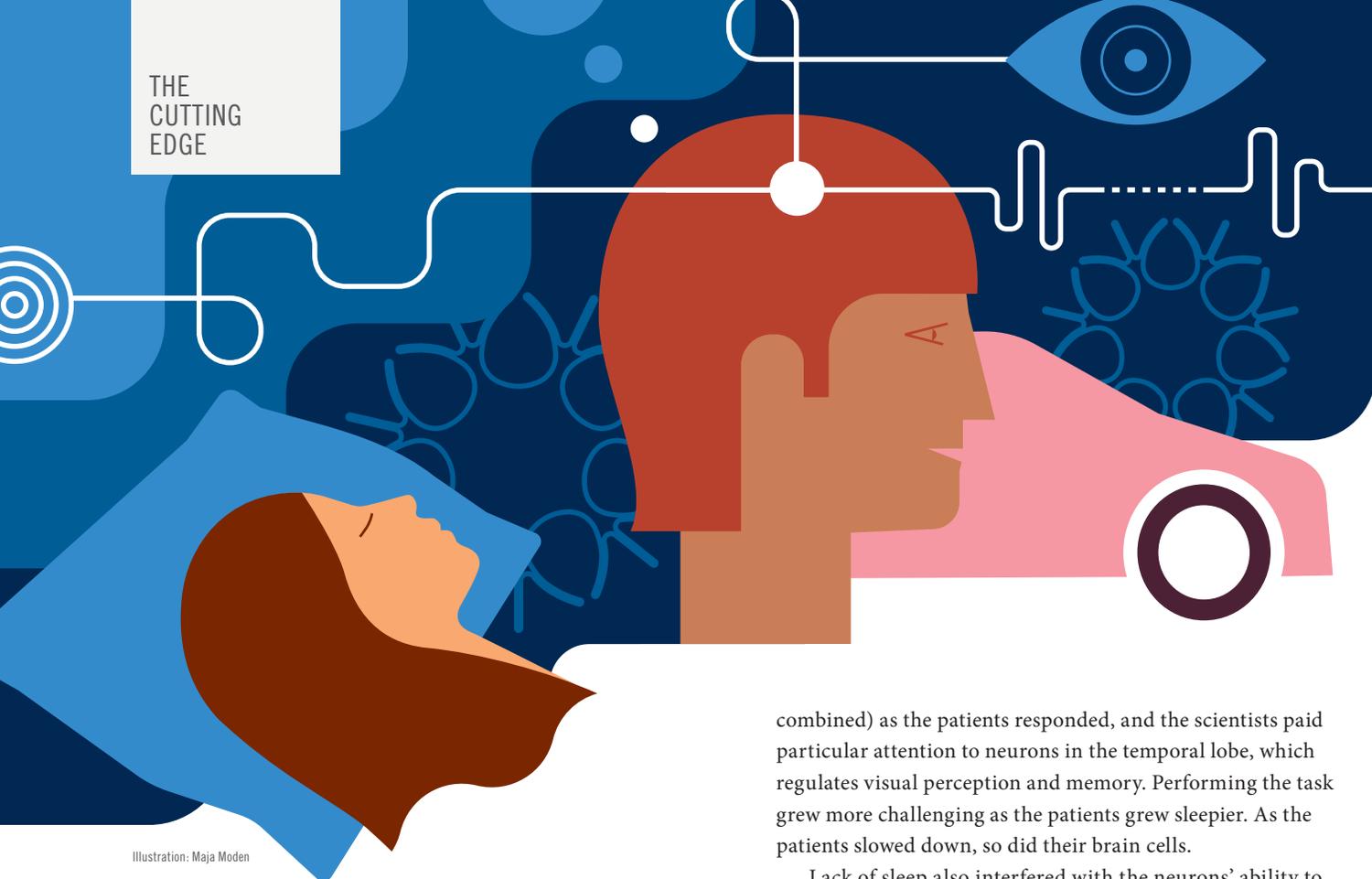


Illustration: Maja Moden

Study Blames Mental Lapses on Sleep-deprived Brain Cells

A new UCLA-led study is the first to reveal how sleep deprivation disrupts brain cells' ability to communicate with each other. Itzhak Fried, MD, PhD '81, professor of neurosurgery, and his colleagues believe that disruption leads to temporary mental lapses that affect memory and visual perception.

"We discovered that starving the body of sleep also robs neurons of the ability to function properly," Dr. Fried says. "This leads to cognitive lapses in how we perceive and react to the world around us."

The international team of scientists studied 12 people who were preparing to undergo surgery for epilepsy at UCLA. The patients had electrodes implanted in their brains in order to pinpoint the origin of their seizures prior to surgery. Because lack of sleep can provoke seizures, patients stay awake all night to speed the onset of an epileptic episode and shorten their hospital stay.

Researchers asked each participant to categorize a variety of images as quickly as possible. The electrodes recorded the firing of a total of nearly 1,500 brain cells (from all of the participants

combined) as the patients responded, and the scientists paid particular attention to neurons in the temporal lobe, which regulates visual perception and memory. Performing the task grew more challenging as the patients grew sleepier. As the patients slowed down, so did their brain cells.

Lack of sleep also interfered with the neurons' ability to encode information and translate visual input into conscious thought. The same phenomenon can occur when a sleep-deprived driver notices a pedestrian stepping in front of his or her car. "The very act of seeing the pedestrian slows down in the driver's overtired brain," Dr. Fried says. "It takes longer for the driver's brain to register what he or she is perceiving."

The researchers also discovered that slower brain waves accompanied sluggish cellular activity in the temporal lobe and other parts of the brain. "Slow, sleep-like waves disrupted the patients' brain activity and performance of tasks," Dr. Fried says. "This phenomenon suggests that select regions of the patients' brains were dozing, causing mental lapses, while the rest of the brain was awake and running as usual."

The study's findings raise questions about how society views sleep deprivation. "Severe fatigue exerts a similar influence on the brain to drinking too much," Dr. Fried says. "Yet no legal or medical standards exist for identifying overtired drivers on the road the same way we target drunk drivers."

Dr. Fried and his colleagues plan to more deeply explore the benefits of sleep and to unravel the mechanism responsible for the cellular glitches that precede mental lapses. Previous studies have tied sleep deprivation to a heightened risk of depression, obesity, diabetes, heart attacks and stroke. Research has also shown that medical school residents who work long shifts without sleep are more prone to make errors in patient care.



"Selective Neuronal Lapses Precede Human Cognitive Lapses Following Sleep Deprivation," *Nature Medicine*, November 6, 2017

Behavioral Therapy Increases Connectivity in Brains of People with OCD

UCLA researchers have found that people with obsessive-compulsive disorder (OCD) when treated with a special form of talk therapy demonstrate distinct changes in their brains as well as improvement in their symptoms. In the study, people with OCD underwent daily cognitive behavioral therapy, or CBT, to learn how to better resist compulsive behaviors and decrease distress. Within one month, they had developed extensive increases in the strength of the connections between regions of their brains — which may demonstrate that the participants gained new non-compulsive behaviors and thought patterns.

The results bolster the argument for making CBT more widely available for treating the disorder, which affects more than one-in-50 people in the U.S. The study also could help guide future treatments that are faster or more effective, which would lower health care costs.

“The changes appeared to compensate for, rather than correct, underlying brain dysfunction,” says Jamie Feusner, MD '99 (RES '03, FEL '04, '06), director of the Adult Obsessive-Compulsive Disorder Program at the Jane and Terry Semel Institute for Neuroscience and Human

Behavior at UCLA and the study's senior author. “The findings open the door for future research, new treatment targets and new approaches.”

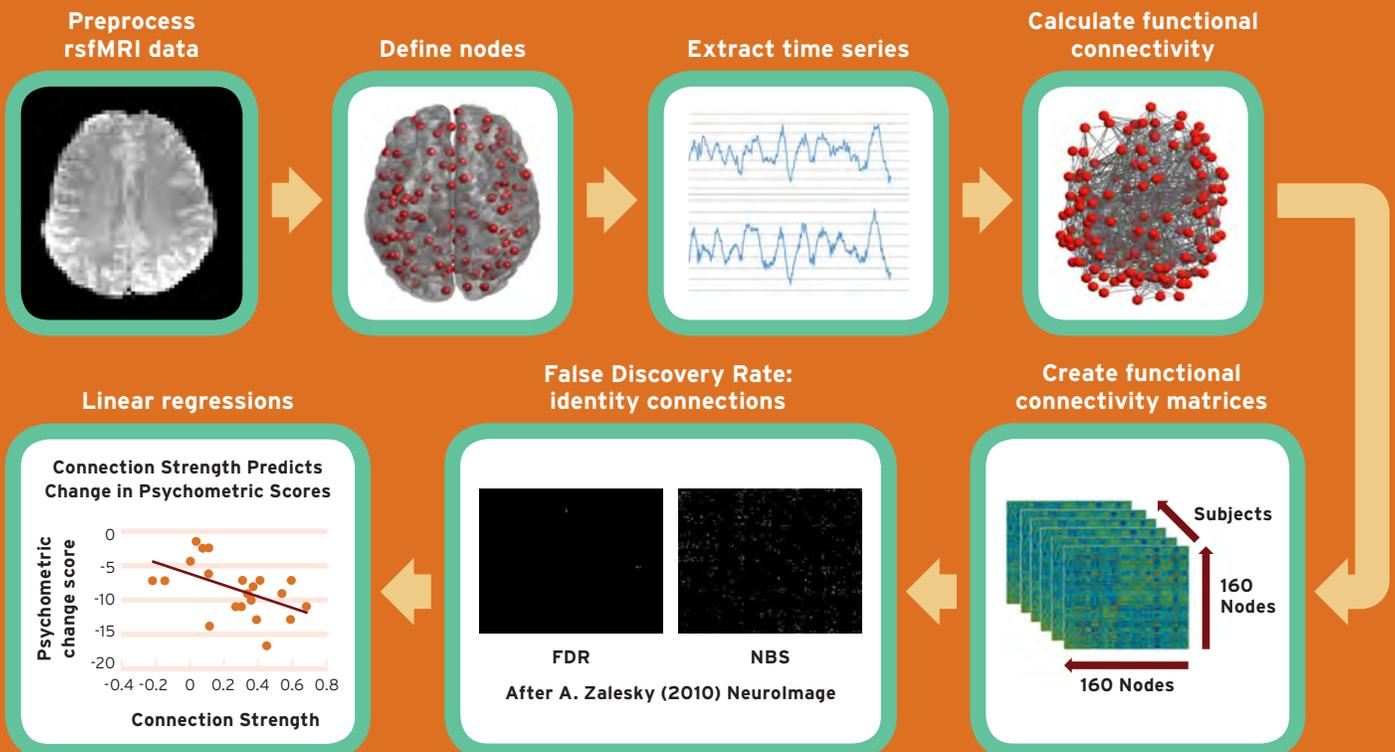
OCD is a psychiatric condition in which a person has difficult-to-control, reoccurring thoughts, as well as the urge to repeat behaviors. Common symptoms include fear of germs or contamination, unwanted or aggressive thoughts and compulsions to clean, check or put things in order. It typically is treated with medication, psychotherapy or a combination of the two.

In the new study, UCLA researchers evaluated 43 people with OCD who received intensive CBT therapy (either immediately or after a four-week wait) and 24 people without OCD as a comparison group. All of the participants underwent scans with a neuroimaging tool called functional magnetic resonance imaging, or fMRI. Those with OCD were scanned before and after four weeks of treatment, and those who do not have OCD — and therefore did not receive treatment — also were scanned before and after the four weeks.

When the scientists compared the before-and-after brain scans of the participants who received CBT, they saw an increase in connectivity — which can signify greater communication — between the cerebellum and the striatum and between the cerebellum and the prefrontal cortex. The scans of people without OCD did not show any changes. Among the people with OCD who waited four weeks for their treatment, there also were no changes during the waiting period, demonstrating that the changes in the brain do not occur spontaneously with the passage of time.

 “Mechanisms of Cognitive-behavioral Therapy for Obsessive-compulsive Disorder Involve Robust and Extensive Increases in Brain Network Connectivity,” *Translational Psychiatry*, September 5, 2017

Network-based Stratification Methods



Flowchart of the analysis that found stronger brain connectivity in OCD patients after cognitive behavioral therapy.

Image: Courtesy of Dr. Manish Butte

New Direction in Hand Transplantation

By calling in talent from other medical institutions and performing pre-transplant amputation to preserve structures and better prepare the recipient's limb, Kodi Azari, MD, is aiming to change the paradigm of hand-transplantation surgery.

Kodi Azari, MD
 Professor of Orthopaedic
 Surgery and Plastic Surgery
 Surgical Director, UCLA Hand
 Transplantation Program
 Chief, Reconstructive
 Transplantation

In March 2011, Kodi Azari, MD, surgical director of UCLA's Hand Transplantation Program, led a team that successfully transplanted the right hand of a 26-year-old woman, making UCLA the first medical center west of the Rockies to perform a hand transplant. After that procedure, Dr. Azari theorized that if he could do the amputation as well as the transplantation of the hand, he could improve the outcome by preserving more of the tendons, nerves and vessels. But it would be rare to find such a candidate, as most already would have had the hand removed to be fitted for a prosthetic. Then he met entertainment executive Jonathan Koch, who nearly died from a mysterious septic illness. Koch survived the ordeal, but both his feet and hands were severely damaged — his left hand beyond repair but not yet amputated. (Koch wrote about his experience in the Fall 2017 issue of *U Magazine*.) In October 2016, Dr. Azari and a team from UCLA and other Southern California medical institutions transplanted Koch's left hand. Dr. Azari, whose UCLA office is decorated with sculptures, paintings and photos of hands, spoke with *U Magazine* contributor Lyndon Stambler about advances in the hand-transplant procedure.

What have you learned about hand transplants since performing the first UCLA hand transplant?

Dr. Kodi Azari: Each one is incredibly unique. Regardless of how much preparation you do, each one throws you huge curve balls. That's why we expanded the program to not just UCLA, but also to other institutions from Southern California. We recruited surgeons who I thought would be spectacular and whom I knew personally. These surgeons from competing institutions were asked if they would be willing to join us in performing one of these operations. I am truly grateful for their collegiality, as none of them asked for any recognition or reimbursement; they all were happy to participate because they knew it was going to help someone. That's the spirit that drew me to medicine. It shows that we can put aside our competitive and financial differences for the greater good of helping a patient. When patients come to UCLA with a difficult problem such as this, we can build a team, regardless of institutions, to help that person.



Jonathan Koch and his transplant team, with Dr. Kodi Azari (front row, second from right).

Photo: Reed Hutchinson

What makes a hand transplant such a difficult procedure?

Dr. Azari: The hand is unique because of the complex balance between the tendons in the palm and the back of the hand. That's what makes the hand and fingers flex and extend. It's about setting a balance between push and pull, and those forces need to be precisely balanced. If they are not balanced, it won't work well. There is no cookbook showing how to do this. It is something that is as much art as it is science. It is about surgical intuition and experience. There's a saying that I love: "The only shortcut in surgery is preparation." If you've ever watched Olympic divers or gymnasts, they're visualizing every little step and turn in their minds. I do the same almost every night as I am preparing for a surgery. The entire sequence goes through my mind. Every single detail of each step. When you watch a good surgeon, his or her hands aren't moving fast; they're moving efficiently. They make the difficult parts look easy.

A procedure such as hand transplantation requires a large team. What is needed for such a group to work efficiently for the best result?

Dr. Azari: It is critical to have a team that you can trust and that can work in harmony with one another. When you are engaged in the operation, it's like you have tunnel vision, as each step requires full concentration. It is hard to think of things globally or holistically. You have to trust that the others who are helping you can see the other steps that are required and keep you from getting into trouble, or they can make the otherwise huge speed bumps you inevitably will encounter along the way into smaller ones.

What made Jonathan Koch's transplant unique?

Dr. Azari: What made Jonathan's case different from others I've done was that I also was the surgeon who did the amputation. Usually, patients will have had their limb amputated to be fitted for a prosthetic. But an amputation for a prosthetic fitting is different

"It is critical to have a team that you can trust and that can work in harmony with one another. When you are engaged in the operation, it's like you have tunnel vision, as each step requires full concentration."

“Nerves are like coaxial cables, except there’s no red-to-red, green-to-green or yellow-to-yellow color codes to properly orient the connections.”

than an amputation for a transplant. For a prosthetic fitting, one removes about one-third of the forearm. That helps you to best fit the prosthetic. To prepare a limb for transplantation, it’s the opposite. You want all the structures to be as long as they can be, as close to the fingers as possible. With Jonathan, I cut his tendons very distally, close to the fingers, and we took all the tendons and attached them to the bone so they wouldn’t retract. He could flex each individual tendon in his mind and maintain his hand’s shape and function. Also, the tendons would actually have some resistance, and they would already be the length they were supposed to be. That is part of the reason that Jonathan is doing so well.

He has a fighter’s determination — he loves the movie *Rocky*. Did that help?

Dr. Azari: He woke up after 18 hours of surgery, and the first thing he said was, “Doc, did you do it?” I said, “Yes.” Then he started singing the *Rocky* theme song. What did I do to deserve this guy? He’s perfect! The patient is an absolutely critical part of this procedure. Without the patient’s input, dedication to therapy and getting better and being compliant with medications they have to take, this would be a failure. I think this story summarizes it all. He doesn’t drink or smoke. He’s never used a drug in his life. His drug of choice is exercise. Having had the hand transplant allows him to do that now, whereas before he couldn’t. Now he pushes through that pain and does extra reps — for the donor, because that person gave him this gift, and he wants to treat it with respect. That shows you what an incredible person Jonathan is.

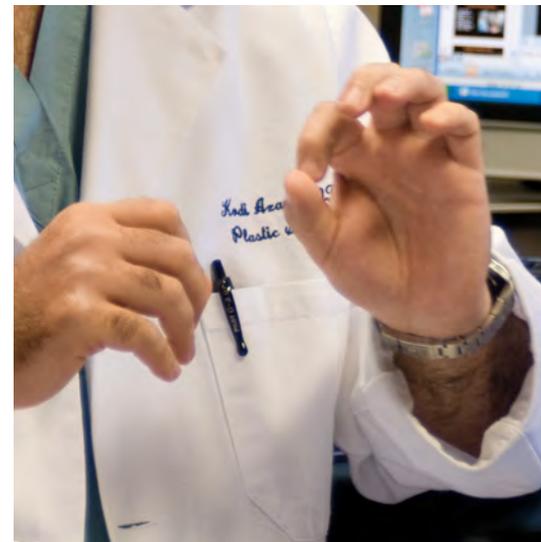
Preserving more of the limb produced a better outcome.

Dr. Azari: Yes. I don’t think that’s a new discovery, but it may be a paradigm shift. Maybe before doing an amputation, surgeons might consult with teams that do hand transplantations to see whether or not the patient may be a candidate for transplantation. Many patients come to us after their amputation, but they are excluded as transplant candidates because their kidneys or lungs might not be functioning properly. Maybe they are not sufficiently motivated psychologically, or they are not prepared for the rigors of hand transplantation and post-surgical therapy. With Jonathan, we began the process from the opposite direction. We looked first at the things that could exclude him — his kidneys and lungs and other elements, and then we determined before his amputation that he would be a good candidate for transplant. That’s when we proceeded.

A hand transplant is very complicated. It involves as many as 23 tendons, four nerves, two arteries, three veins and two bones.

Dr. Azari: Every one of them varies. If you do the amputation at one point on the arm, you would have three nerves to reattach. At another point, there would be four or five nerves to reattach. Nerves are like coaxial cables, except there’s no red-to-red, green-to-green or yellow-to-yellow color codes to properly orient the connections. You have to figure out the orientation of the nerve so that you know that the parts of the nerve that are involved with motor function match up to the ones in the donor hand. You don’t want to take a part that’s involved

Photos: Ann Johansson



“[Jonathan] woke up after 18 hours of surgery, and the first thing he said was, ‘Doc, did you do it?’ I said, ‘Yes.’ Then he started singing the *Rocky* theme song. What did I do to deserve this guy?”

with movement and connect it to a part that’s involved with sensation. It just won’t work. You have to figure out those connections precisely.

How did the immunosuppressive medications that Jonathan must take against rejection affect him?

Dr. Azari: Patients aren’t used to taking medications at first, so there’s an adjustment period. We often say that your life during the first year after surgery is going to take a quality hit, but thereafter, everything falls into place. Jonathan has gotten used to the medication, and he’s not having any side effects.

Immunosuppression and controlling rejection is the holy grail of all transplantations, and we always are working to make improvements. UCLA just received a donation to start the Connie Frank and Evan Thompson Restorative Transplantation Research Program. This is a basic science research program designed to help minimize the effects of anti-rejection medications. If there are ways to mitigate the immune response to the transplanted organ, operations can be done more safely, and we can increase or expand the indications for the procedures.

Has Jonathan been able to accept the transplanted hand as his own?

Dr. Azari: It is not unusual for recipients to initially refer to the hand transplant as *the hand*. Then something happens, usually about three-to-six months after transplantation, and they

subconsciously switch to saying *my hand*. I think that happens when the nerve regeneration and sensation really start to come back. What I love about Jonathan is that he keeps telling me, “Doc, my transplanted hand is the best part of my body. It’s the part I don’t have to think about. Every other part hurts. This is the best limb that I have.” That’s really encouraging.

Shortly after the first hand transplant at UCLA in 2011, the Section of Reconstructive Transplantation was established. Can you talk more about that program?

Dr. Azari: The program is the vision of Dr. Ronald W. Busutill (RES ’77, executive chair of the Department of Surgery) to help people who have suffered severe trauma or other disfigurement to the upper extremities, face or abdomen. Its growth has been slow, but that’s by design. At the outset, when you have a new program, you don’t want to make mistakes. You want to have home runs. We purposely have moved slowly in finding the appropriate candidates for procedures such as hand, face and abdominal-wall transplants. When the program was established six years ago, reconstructive transplantation was where we were with solid-organ transplantation in the mid-1980s, and it is clear that for certain patients — like Jonathan — the outcomes can be life-changing.

“It is not unusual for recipients to initially refer to the hand transplant as *the hand*. Then something happens, usually about three-to-six months after transplantation, and they subconsciously switch to saying *my hand*.”

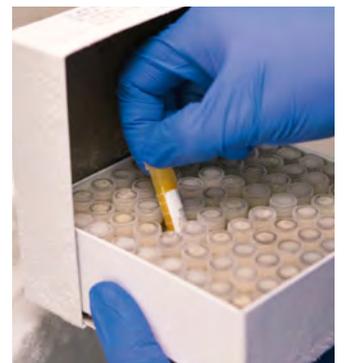
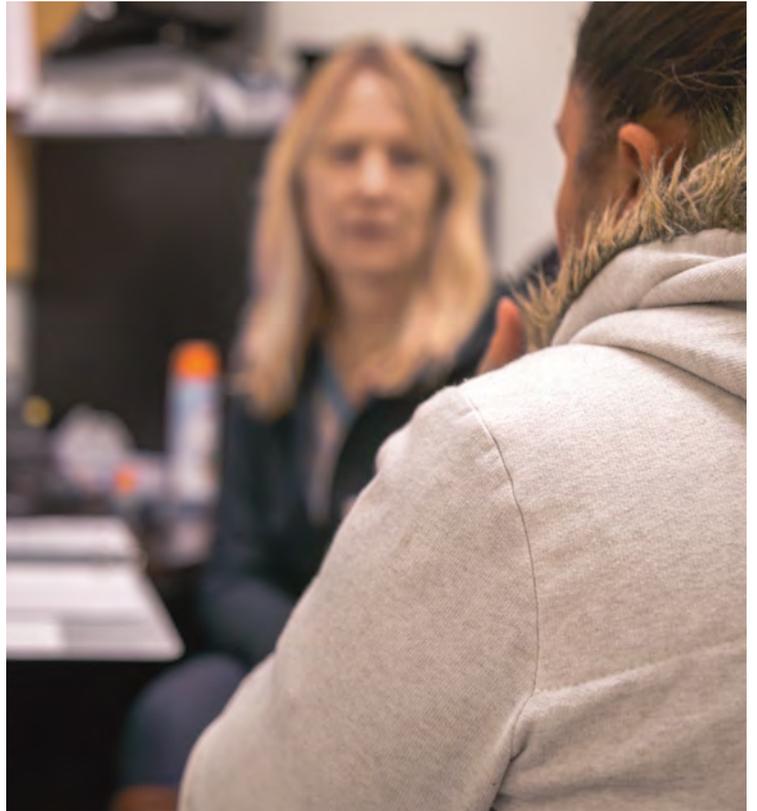
UCLA Vine Street Clinic

The UCLA Vine Street Clinic was established in 2005 to study the spread of HIV among groups of methamphetamine users. Today, the site serves as a location for clinical trials, behavioral research and to provide direct services to treat addiction and offer HIV prevention. Located in a transitional neighborhood of Los Angeles that is designated as medically underserved, UCLA Vine Street Clinic includes exam and counseling rooms for patient care, a lab for collection and storage of biological samples and group meeting space. By conducting its work so close to where its patient population lives, Vine Street Clinic endeavors to reach those most in need.



For more information, go to:

uclacbam.org/ucla-vine-street-clinic



Since opening in 2005 as a site to study the spread of HIV, nearly 5,000 Angelenos have come to the UCLA Vine Street Clinic in Hollywood to participate in research and receive essential care and support.

Photos: Courtesy of the UCLA Vine Street Clinic



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Tailor Made

BY TOM FIELDS-MEYER • ILLUSTRATION BY NEIL STEVENS

Precision health is medicine's next big thing, promising to revolutionize everything from the diagnosis of cancer to treatments for depression.

Consider this scenario: At your annual physical, your internist notices that your blood pressure is elevated. Based on this reading and a few questions about your medical history, she diagnoses you with hypertension and prescribes a medication, one that she says works for about a quarter of patients. Give it a try, she says, and check back in a couple of months.

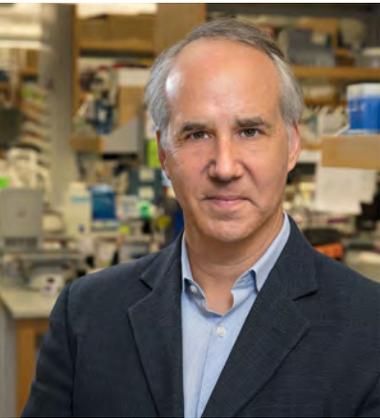
Now, imagine another scenario: Even before your visit, the doctor knows about your hypertension because a mobile device that monitors your blood pressure has securely transmitted that information to a central database. The doctor also has instant access to detailed information not only about you, but also a wealth of privacy-protected material about millions of other patients — genetic information, demographic details, data about lifestyle and diet. She quickly identifies a few hundred patients whose profiles look a lot like yours and analyzes how various hypertension medications have worked for them. Based on that detailed information, she prescribes a medication and dosage that's almost certain to work for you.

The second story is the vision of precision health, a revolutionary, comprehensive approach that stands to transform health care. Thanks to giant leaps in information technology and unprecedented access to details about people's genetic makeup, it promises to touch nearly every aspect of how health care professionals treat, monitor and communicate with patients and how people interact with doctors and other health care workers.

"It really is the dawn of a new form of medicine," says Daniel H. Geschwind, MD (RES '95, FEL '97), Gordon and Virginia MacDonald Distinguished Chair in Neurology, Psychiatry and Human Genetics and director of the new UCLA Institute for Precision Health, which is spearheading the campus-wide effort. "Instead of treating people as the average, we'll be able to individualize therapy for you."

Besides providing more exact and personal ways to treat illness, precision health will enable medical professionals to pinpoint the precise underlying causes of a wide range of conditions — from lung cancer to depression to heart disease. It also has the potential to help doctors accurately





Dr. Daniel H. Geschwind:
“It really is the dawn of a new form of medicine. Instead of treating people as the average, we’ll be able to individualize therapy for you.”

Photo: Reed Hutchinson

These potential benefits have emerged, thanks to two significant breakthroughs over the past decade that would have been unimaginable a generation ago. The first is a leap in the capacity to collect, store and access large amounts of medical data. ... The second factor is a revolution in gathering ... details about a particular person’s genetic makeup.

predict everything from whether or not a particular patient is likely to experience post-surgical complications to which people with obesity are at highest risk for developing diabetes.

“This transformation will be larger than any other in modern medicine,” says Steven M. Dubinett, MD (RES ’84), associate vice chancellor for research and director of UCLA’s Jonsson Comprehensive Cancer Center Lung Cancer Research Program. “We’ll be able to concentrate much more on prevention and prediction based on an individual’s needs as opposed to being reactive and waiting for someone to present to us with advanced stages of a disease.”

THESE POTENTIAL BENEFITS HAVE EMERGED, thanks to two significant breakthroughs over the past decade that would have been unimaginable a generation ago. The first is a leap in the capacity to collect, store and access large amounts of medical data. The emergence of electronic health records has meant that health care professionals now have access to huge, searchable data warehouses of information on millions of patients. To ensure the safety and confidentiality of that information, some of it is de-identified — that is, it is coded in such a way that researchers know the genetic and demographic profile of the patient but not the actual identity.

The second factor is a revolution in gathering genomic information — that is, details about a particular person’s genetic makeup. When scientists first mapped the human genome, a project that finished in 2003, it cost \$2.7 billion and took 13 years. Now, mapping a genome costs around \$1,000 and takes a day or two.

In this world of big data, precision health represents the intersection of genomic medicine and bioinformatics, enabling scientists and physicians to understand the individual in the context of the broader population. “Precision health has emerged as a new way of taking all that information and understanding how to leverage it to customize medicine so that it really is targeted toward a specific individual,” notes Kelsey C. Martin, MD, PhD, dean of the David Geffen School of Medicine at UCLA and co-chair of California Gov. Jerry Brown’s state-wide Advisory Committee on Precision Medicine.

The new approach also will incorporate mobile technology and wearable devices that researchers are developing to monitor everything from what we eat and how we are breathing to sleep and mood,

routinely communicating that data to health care providers. A recovering stroke patient, for example, might go home with wrist and ankle bracelets equipped with accelerometers that measure body movement. If the devices detect a significant change in gait over time, doctors would know to bring in the patient for an examination.

“Maintaining health is not abstract; it is every day,” notes Alexander Hoffmann, PhD, Thomas A. Asher Professor of Microbiology and director of UCLA’s Institute for Quantitative and Computational Biosciences. “When we feel run-down, we go to bed extra early. If we have a sore ankle, we stop exercising and start icing. Precision health is the same, except with the benefit of objective indicators like molecules that can be measured in blood or urine or physiological indicators from wristbands, etc. If such data are available, health may be monitored, and adjustments to lifestyle or medications can be made immediately.”

Scientists at UCLA are among those inventing such wearable devices. Dr. Dubinett says one UCLA group is developing a pendant that will measure heart pressure to monitor patients who leave the hospital after experiencing congestive heart failure. Alex Bui, PhD, professor in the Department of Radiological Sciences and a member of the UCLA Medical Informatics Group, is developing smartphone technology to monitor childhood asthma, even collecting information on air quality in order to alert parents and physicians of a potential breathing difficulty.

“These things might sound surprising now,” Dr. Dubinett says, “but they will become part of what we do in medicine to reach outward and prevent events and diseases rather than reacting to them.”

Those sorts of far-reaching efforts already were well underway at UCLA when President Barack Obama hailed precision medicine in his 2015 State of the Union address, later citing its potential for “delivering the right treatments, at the right time, every time, to the right person.”

UCLA has opted for the term “precision health,” Dr. Geschwind says, because the effort extends beyond medical care, encompassing an entire approach to improving quality of life, optimizing health and preventing disease. Part of what drew Dr. Geschwind to the project was his experience as director of UCLA’s Center for Autism Research, where he spent nearly two decades investigating the

genetic roots of the neurological disorder. Autism, he found, is not one condition; rather, it is a collection of rare disorders, each caused by different genetic mutations. Recent leaps in understanding genetics are helping researchers to tease apart autism and differentiate individual cases.

That work gave him the ideal background to take on precision health, harnessing the power of genomics and big data he had brought to autism but on a much larger stage. “I’m very interested in improving health care broadly,” Dr. Geschwind says. “This is one way that we can have a big impact across a lot of disciplines.”

Among the most promising arenas is treatment of cancer. As Dr. Martin explains, a woman’s physician might diagnose her with breast cancer based on a mammogram, but there are many types of breast cancer, each caused by a different cellular mutation. Precision health offers the potential to identify individual cancers with specificity and then to use big data to identify which therapies will be most effective based on how others with similar genetic and demographic profiles have responded.

“Until relatively recently, many patients with lung cancer were treated the same way,” notes Dr. Dubinett. “Now we’re beginning to understand that different mutational events within tumors dictate different types of therapies.”

That specificity can cut across virtually all areas of medical specialization. For gastroenterologist Eric Esrailian, MD (FEL ’06), Lincy Foundation Chair in Clinical Gastroenterology, co-chief of the Vatche & Tamar Manoukian Division of Digestive Diseases and director of the Melvin & Bren Simon Digestive Diseases Center, precision health represents the further breaking down of barriers between disciplines. That, he says, “will enable us to personalize care for the unique variables in the lives of our patients. Rather than utilizing a one-size-fits-all approach to treat disease or to make lifestyle recommendations to a patient, we will be able to be much more specific and effective because of the technology and knowledge that will be at our fingertips.”

ONE SIGNIFICANT UCLA UNDERTAKING THAT’S ALREADY HARNESSING THE POTENTIAL OF PRECISION HEALTH is the Depression Grand Challenge, a comprehensive, campus-wide effort with the ambitious goal of

reducing the occurrence of depression worldwide 50 percent by the year 2050. It already has launched its first step, aiming to track 100,000 people who encounter UCLA’s health system and tracking the course of their depression over a decade or longer.

Nelson Freimer, MD, director of the Center for Neurobehavioral Genetics in the Jane and Terry Semel Institute for Neuroscience and Human Behavior at UCLA, heads the project. He says it will require a significant infrastructure, using online tools for screening and diagnosis and access to electronic health records to track symptoms and therapies. “We want to be able to understand the cause of depression by doing things like genomic sequencing,” he says, “and we want to identify biomarkers that enable us to predict why a treatment will work for one person but not another.”

The depression research also will incorporate emerging mobile technology to track symptoms without burdening the person who is being assessed. Researchers know, for instance, that when people become less physically active, they are more prone to depression. Dr. Freimer and colleagues already are testing a smartphone app that would continuously measure activity levels and factors like tone of voice to assess depression levels and the impact of physical activity.

“This kind of tracking is going to revolutionize our ability to tell how people are doing with a degree of precision that we never have had before,” Dr. Freimer says. That, combined with the unprecedented capacity to gather and assess genetic information, will enable health care professionals to prescribe specific therapies and medications, eliminating the trial-and-error process, which can add to the burden on those struggling with depression. “If we can predict in advance who’s going to respond to which treatment, we can short circuit a lot of misery,” Dr. Freimer says.

Another way precision health stands to alleviate suffering is by significantly reducing how long it takes to reach an accurate diagnosis. When young children display behaviors and other symptoms that can’t be easily connected to a particular disorder, families often undergo what doctors term a “diagnostic odyssey,” a protracted search to pinpoint the child’s disorder.

Besides causing stress and anxiety in children and their parents, such a protracted search can also cost the family and the health care system tens of

“If we can predict in advance who’s going to respond to which treatment, we can short circuit a lot of misery.”



Top: Dr. Steven M. Dubinett: “This transformation will be larger than any other in modern medicine.” **Bottom:** Dr. Kelsey C. Martin: “Precision health has emerged as a new way of taking all that information and understanding how to leverage it to customize medicine.”

Photos: (Dubinett) Amanda Friedman; (Martin) Ann Johansson

“The patient is becoming a participant in the whole process of trying to understand human biology and health and disease.”

thousands of dollars, or more. Now, using exome sequencing — analyzing about 5 percent of the genome — scientists can identify a diagnosis in about one-third of cases, a figure that is continually rising, Dr. Geschwind says. “The hope is that as we identify the mutational basis of these disorders, it will lead to much more effective targeted therapies, just as we have seen in cancer.”

While such breakthroughs will benefit large numbers of patients and their families, the advent of precision health also will bring about significant changes in the ways people interact with their health care providers. Instead of giving information and laboratory samples only for their own benefit, patients will be routinely sharing anonymized data of all sorts — through mobile devices and other technology, as well as via lab results — to advance the health of the larger population.

As Dr. Martin puts it, “The patient is becoming a participant in the whole process of trying to understand human biology and health and disease.”

TO THAT END, RESEARCH WILL MORE DIRECTLY BECOME PART OF HEALTH CARE.

“Instead of health care and research being separate, we envision a learning health care system — learning for the patients and learning for the physicians to optimize patients’ quality of life and outcomes,” Dr. Geschwind says.

That process already is underway.

Through a program called the UCLA ATLAS California Health Initiative, UCLA’s health system is

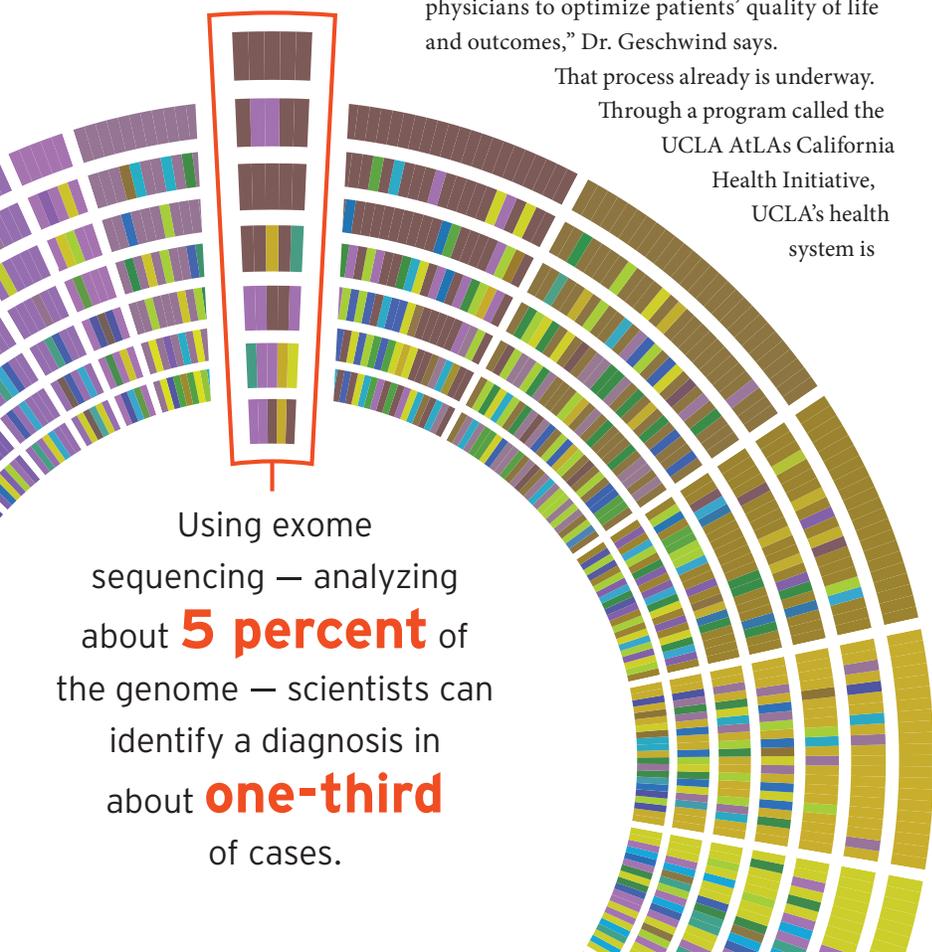
endeavoring to collect laboratory results — blood, saliva and tissue specimens — from a sample of some 100,000 patients as a pilot for a more comprehensive “biobank” that eventually will store such information from every patient who offers consent. The samples will provide a repository of DNA, proteins or mRNAs useful to answer diagnostic or treatment questions.

Dr. Geschwind says it is a high priority to educate the larger community and fully disclose to patients how researchers might collect and use their information. The project’s team has created a four-and-a-half-minute video, in English and Spanish, explaining to potential patients how sharing their information will produce benefits on a larger scale. “It’s a partnership with the community, and by participating, you’re helping your neighbor,” he says. “We’re all part of a village, and by participating, patients are helping us to understand them as individuals within the context of the whole population.”

Not that sharing personal information is a novel concept. Anyone who shops online has had the experience of searching for, say, a mattress or running shoes and then being inundated afterward with banner ads pushing those same products. “Information is being collected from all of us all the time and used for purposes that are not necessarily helpful to the individual,” Dr. Freimer says. “In this case, with ATLAS, there’s a potential direct benefit both to you and the larger community.”

Another significant challenge that precision health poses is figuring out just how to collect and store such large quantities of information in ways that make it accessible and useful to a wide range of health care professionals. That task falls to Michael Pfeffer, MD (RES ’07), chief information officer for UCLA Health, who is heading up a team of experts — database architects, systems engineers, physician informaticists and others — charged with creating the engine that will drive precision health.

As he explains it, the project he heads has two significant phases. The first is creating a system for gathering information — imaging data, genomic data, environmental data — from patients and devising algorithms to enable researchers to access the information. The second phase calls for devising ways to incorporate that information back into the electronic health record to be used in clinical care, the process of caring for patients. “People go



Using exome sequencing — analyzing about **5 percent** of the genome — scientists can identify a diagnosis in about **one-third** of cases.

into health IT because they love the combination of technology and improving patients' lives," Dr. Pfeffer says. "We're all thrilled to be part of this."

The challenge sounds daunting, but "given that technology always is changing, we are building infrastructure that is flexible and scalable so that we don't have to reinvent the wheel when something better comes along," notes Clara M. Lajonchere, PhD, deputy director of the UCLA Institute for Precision Health. "Investing in strong partnerships both at UCLA and with industry leaders will allow us to become a leader in this field."

Acknowledging both the difficulty and the importance of that work to the future of health care, UCLA has devoted resources and energies in many ways. In addition to launching the precision-health institute, it has supported Dr. Dubinett's Clinical Translational Science Institute — focused on turning research into clinical treatments — and created an Institute for Quantitative and Computational Biosciences.

"UCLA is very strongly behind fostering the elements and the infrastructure necessary for world leadership in this domain," Dr. Dubinett says.

THAT'S NOT JUST SPECULATIVE TALK ABOUT THE FUTURE.

The university already is uniquely poised to take on precision health in ways almost no other institution can. For an effort that will require experts from disparate disciplines to work together, UCLA has the advantage of fostering that kind of collaboration.

"For precision health to be successful, it requires collaboration across many disciplines, ranging from basic science, genetics and genomics to engineering and clinical medicine," Dr. Lajonchere says. The institute "serves as a hub to bring all these disciplines together to move the needle."

There also is UCLA's location in the midst of the nation's most ethnically diverse county. That offers great advantage to projects like Dr. Freimer's, which aims in part to pinpoint genetic factors in depression. Having a potential patient population of millions from a wide range of backgrounds makes UCLA fertile ground to examine both individuals and populations in ways that can be done almost nowhere else.

For example, by examining the differences in men's health and women's health, as well as disparities among age groups and ethnicities, Dr. Martin says, "we can make sure that precision

health is used in a way that will overcome disparities rather than deepen them."

UCLA also benefits from being part of the University of California system, giving it access to a patient data warehouse shared among five medical centers statewide. Gov. Brown, with his advisory panel, has made precision health a priority. The state's California Initiative to Advance Precision Medicine funds team-based projects that bring together academic institutions, industry and other health care providers looking to the future.

With that kind of far-reaching support, precision health clearly is the way of the future. But with the focus on big data and the wonders of genomics, might health care providers lose sight of the kinds of personal attention that can be so critical to patient care?

"The art of medicine — kindness, altruism and all of the other elements that make up a doctor's bedside manner — will remain important," says Dr. Esrailian. "Utilizing the approach of precision health is not mutually exclusive with our being caring physicians and health care providers. We need to do both."

Ultimately, says Dr. Pfeffer, UCLA's chief information officer, who also sees patients as a hospitalist at Ronald Reagan UCLA Medical Center, precision health will offer clinicians a broader and more diverse set of tools to help them make more targeted and informed decisions about patient care. "If I know up front, based on your genomic and environmental profile, what is the best medication to start you on, I will spend less time changing medications and more time talking to you about other important health topics," he says.

Making such a wealth of information available literally at the clinician's fingertips clearly positions precision health as the next big thing to elevate medicine to new heights. "Instead of looking in the rearview mirror," says Dr. Lajonchere, "let's look toward the future to prevent disease before it happens and improve health and wellness."

Tom Fields-Meyer is a writer in Los Angeles and the author of *Following Ezra: What One Father Learned About Gummy, Otters, Autism, and Love from His Extraordinary Son* (New American Library, 2011).

"UCLA is very strongly behind fostering the elements and the infrastructure necessary for world leadership in this domain."



To learn more about precision health at UCLA, universal consent and the UCLA AtLAS CA Health Initiative, go to: uclahealth.org/precision-health



Ilana Lavine was a child when she fell ill with a parasitic infection that altered the course of her life.

Photo: Ann Johansson

ILANA AND THE STOWAWAY

BY CLAIRE PANOSIAN DUNAVAN, MD

The long and difficult medical saga of Ilana Lavine is a cautionary tale about the dangers of parasitic invaders and the damage they can wreak.

“People ask me why I got a liver transplant. ‘Do you have a couple of hours?’ I tell them. ‘No, wait! Do you have a couple of days?’”

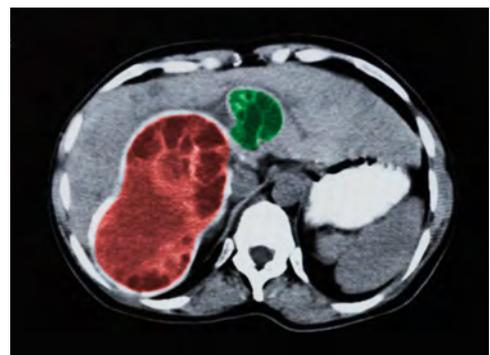
— Ilana Lavine

It is a warm morning in August 2017, and I am sitting with my long-time patient Ilana Lavine in her home in Woodland Hills, California. The living room is filled with feminine touches — a bronze “Contessa” with bustle, umbrella and wide-brimmed hat, a “Hello, Gorgeous” pillow, a candy dish bought in Hungary to replace some original Meissen porcelain lost in the Northridge earthquake. As usual, the lively, stylish Ilana is plying me with food. “Have you already eaten breakfast? Are you sure you don’t want an iced coffee? A muffin? It won’t take a minute.”

“Thanks, but no thanks,” I reply. “I need to drive to Westwood. But first, let’s get those X-rays.”

Later that day, after carting three dog-eared jackets to the Faculty Reading Room at Ronald

Reagan UCLA Medical Center, I meet Barbara Kadell, MD (RES ’68). “I know this case. It’s in my box of teaching slides!” exclaims UCLA’s chief of abdominal radiology. Peering through round, red glasses at a computed tomography (CT) scan from 1995, Dr. Kadell quickly notes its findings. “Here we see she has this large, calcified lesion in the right lobe of the liver and some smaller ones in the left,” she says. “The big lesion looks cystic because it’s low density. It also has cysts inside the cyst that are lined up around the edge. This is classic for *Echinococcus*.”



This enhanced pre-transplant CT image of Ilana Lavine’s liver shows a large parasitic cyst (red) and a smaller satellite cyst (green) above it. Together, they occupy more than half of her liver.

Image: Courtesy of Ilana Lavine

“Oh, I loved that dog. ... I throw the ball, he goes to the back of our house where there is land, cows, sheep. ... ‘Give it back!’ I say. So maybe I sucked my thumb or my hands went to my mouth, and that’s how I first got sick.”

How easy it is now to name Ilana’s invader, I later muse, recalling my patient’s long, difficult journey from parasitic infection to diagnosis to lifesaving treatment. At the same time, here in Los Angeles, we now know that exotic parasites lying in wait are not as rare one might think.

ILANA APTER LAVINE WAS BORN IN THE PORT CITY OF HAIFA, in northern Israel, before the establishment of the state. Her father Misha came to Palestine from Latvia as a “young pioneer.” Her mother Charlotte, the daughter of bookbinders, left Berlin, Germany, in 1938, after Kristallnacht. They met and married. Then came Ilana, a beloved only child whose earliest memories are of a carefree life on a sunny Mediterranean plain. She particularly remembers the large open fields where she often played with a neighbor’s dog. “Oh, I loved that dog — I think it was a German shepherd,” she tells me. “I throw the ball, he goes to the back of our house where there is land, cows, sheep. It was not hygienic, of course. And here I am throwing the ball over and over. ‘Aw, come on! Give it back!’ I say. So maybe I sucked my thumb or my hands went to my mouth, and that’s how I first got sick.”

That dog is a clue, if not the actual culprit that ferried the parasite that pummeled Ilana when she was only 4 years old. “When did you know for sure you had this unusual illness?” I asked my patient this

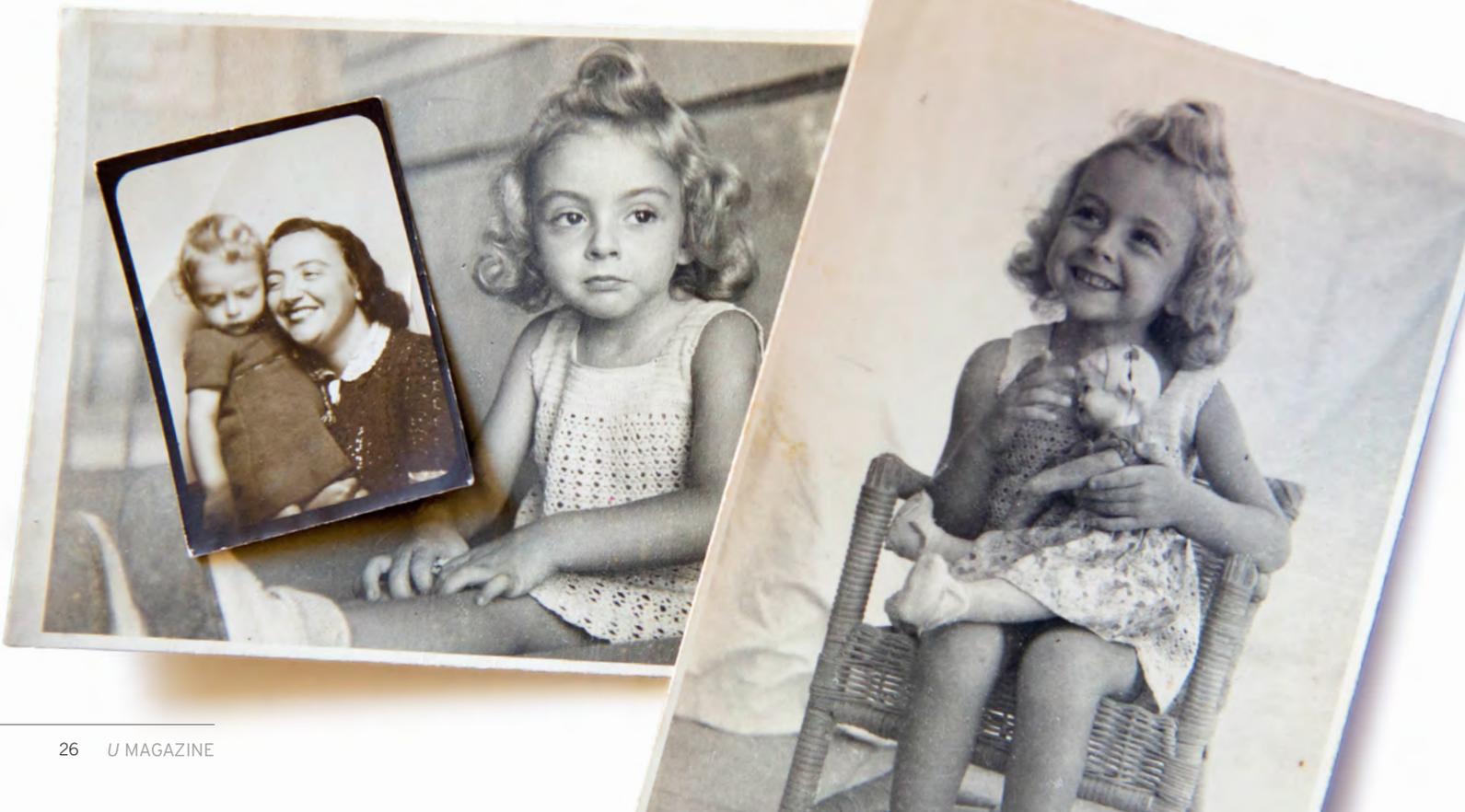
past summer. “After I grew up,” she says, “because my parents told me. But I remember as a child wondering why I couldn’t live in our house. It seemed like [I was exiled] forever. Three times a day, the nurse said ‘Cough!’ and I would cough. I also remember my mother crying because she needed money to keep me in the hospital. One day she sat in front of the hospital and sold her pearls. The doctors told my parents the illness would probably kill me, because I lost strength, stopped eating, just sat with this broken doll.

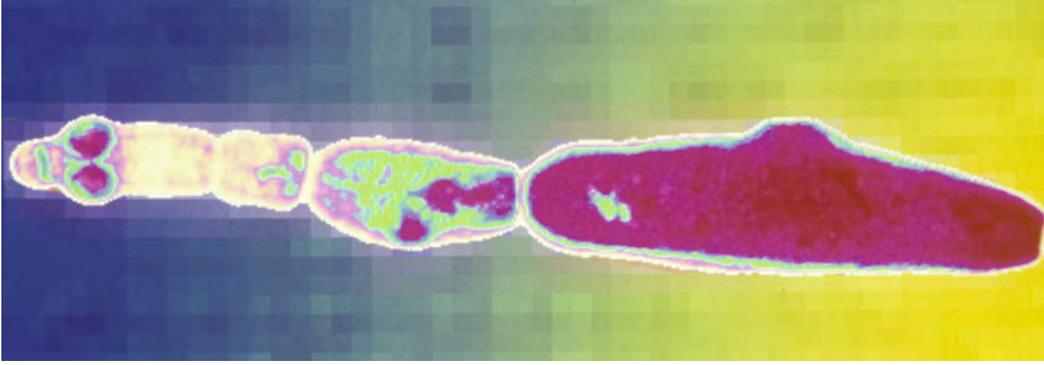
“Finally, my father contacted an Egyptian doctor and asked, ‘Don’t you know how we can get this out of her?’ And he said: ‘You know, there is one thing we can do.’ Then he shot formalin into the cysts in my liver and lung. All of a sudden I said to my mother, ‘I’m hungry! I want something to eat!’ Soon, I was in the newspaper. They called me a miracle child. ‘She’s going to kindergarten [the newspaper said]. She’s going to be a healthy girl.’”

FAST FORWARD 15 YEARS. Fearing that Ilana would join the Israeli Army and endanger her health, her parents sent her to England. One year later, the family reunited in New York, and Ilana started to work at a toy company in Queens. Then came the wintry night when she left her new pair of fur-lined gloves in a dress store. The manager, Barry Lavine, felt sure that Ilana would return, and the rest, as they

As a young child, Ilana Lavine played with a neighbor’s dog in a field near her home. It is there she probably picked up the parasite *Echinococcus granulosus*, a tapeworm of dogs, that would lead to her transplant as an adult.

Photos: Courtesy of Ilana Lavine





Photomicrograph of an adult *Echinococcus granulosus* tapeworm from the intestine of an infected dog.

Image: Medical Images

say, is history. The following fall, the two were married; six years later, they settled in Los Angeles.

For the next two decades, “We had nothing but good times,” Barry recalls. “We had healthy kids, knock wood. *We* were healthy. So there was no cloud of worry except about jobs and money, the normal things.” That was so until the mid-1980s, when Ilana began to suffer mysterious, painful attacks.

“I was so doubled over,” Ilana says. “I was lucky I didn’t tip over. I didn’t know what it was. I went to a local hospital, and everyone said cancer, cancer, cancer. What else can it be?”

It proved not to be cancer. “I had pancreatitis from scarring,” she continues. Her doctors sent her to UCLA for further evaluation and treatment. There, she underwent another abdominal cyst procedure, and she met with parasitologist Jerrold Turner, MD. One glance at Ilana’s X-rays was all Dr. Turner needed. “He recognized it like that!” Barry recalls. “The next thing, he asks, ‘Are your parents alive?’” Ilana said yes, her father was alive, “and he says, ‘I want to talk to him.’ That’s when we finally heard the story.”

ILANA’S HITCHHIKER, *ECHINOCOCCUS GRANULOSUS*, IS A TAPEWORM OF DOGS.

To canines, it poses no serious threat. But the invisible ova of the worm are far more menacing. Once passed by dogs and swallowed by humans or sheep, the tiny eggs spawn bleb-like larvae that can eventually grow as big as a fist. On top of that, the cysts’ interior lining continues to bud. The end result? Cysts within cysts, to paraphrase Dr. Kadell.

Long before the imaging power of CT and magnetic resonance scans, these complex, fluid-filled sacs also were called “hydatids,” from the Greek root for water. The condition itself is ancient, mentioned both in the Talmud and the writings of Hippocrates. Even today, few places where humans, dogs and sheep co-mingle are completely hydatid-free.

At least it’s not cancer, some might say. Yes and no. To modern parasitologists, hydatids still inspire fear and gritty respect. That’s because, much like

a scene from a ’50s horror movie, puncturing and spilling a cyst can plant dozens more larvae in the same patient. Now picture someone with an occult hydatid in her liver who slams on her brakes, hits the steering wheel and ruptures her cyst capsule. Leaking parasite proteins can also trigger a violent reaction, sometimes leading to full-blown shock, and even death.

I am an infectious diseases doctor and first encountered echinococcosis—AKA—hydatid disease during a stint of training in London. Back then, most of the afflicted at our Hospital for Tropical Diseases, a crumbling, Dickensian sickbay, were from Africa. But a few years later, when working as the sole infectious diseases specialist at a small county hospital in the San Fernando Valley, I met immigrants from other places around the world who were harboring the same multiseptate sacs. Then, in 1995, just before Ilana Lavine faced her medical Waterloo, three colleagues and I published a paper entitled “Imported Echinococcosis in Southern California” in *The American Journal of Tropical Medicine and Hygiene*. In it, we described almost 30 sufferers seen at two Los Angeles teaching hospitals over the preceding decade. How many more lurked in the shadows, I wondered at the time.

The truth is, a large number of the world’s roughly 2 million *Echinococcus*-infected patients depart this life with silent, painless cysts that never placed them in peril. But that wasn’t true for Ilana Lavine. In January 1996, her hand was forced. It was time for another surgery, this time on the liver itself.

THE ORIGINAL PLAN — TO REMOVE OBVIOUSLY DISEASED PORTIONS OF

Ilana’s organ and then allow her to heal — was both simple and hard. Twenty-two years later, Ronald Busuttill, MD (RES ’77), still can recount specific details. “She looked very good, but it was a challenging operation because her liver was down to here,” Dr. Busuttill, who today is William P. Longmire, Jr. Chair in Surgery, told me, gesturing toward his iliac crest. “Unlike polycystic disease, where we open cysts



Barry and Ilana Lavine met after she left a new pair of gloves in a dress store that he managed in Queens, New York. The following fall, they were married, and six years later, they settled in Los Angeles to raise their family, son David and daughter Michelle.

Photos: (Barry and Ilana) Ann Johansson; (family) Courtesy of Ilana Lavine

“Today, Los Angeles has become extraordinarily diverse. Some people are from other parts of the country, some are from other countries altogether. It’s really endless what physicians in L.A. need to know about different infectious diseases.”

and decompress, with an echinococcal cyst, if we open and rupture one, we spread it everywhere, or the patient goes into shock. I do remember that she had a huge, huge liver, and the only part that was not really affected was segment 2/3. My hypothesis was that the rest of her liver was not very functional because it was completely involved with all these cysts.”

Ilana and her husband prepared themselves for the surgery to come. The learning curve was steep, Barry recalls. “In the beginning, I didn’t even know how to spell the name for what she had,” he says. “I went to the medical library, and there I’d read a chapter, and then a book.” Their desire to learn as much as they could about Ilana’s disease impressed Dr. Busuttill. “I’d go to their room to talk to them, and they’d already have read all about it,” he says.

On the day of the surgery, Dr. Busuttill performed a major liver resection and rerouted Ilana’s biliary tract. But the post-op saga was just beginning as Ilana quickly descended into liver failure. “I knew I was very sick because I had pneumonia,” Ilana says. “And I couldn’t open my eyes.” “She was getting loopy, half-in, half-out (of consciousness),” Barry adds. “And her color started to change. Plus, there was her weight.” Before the surgery, Ilana weighed 113 pounds; two weeks later, her weight was in the 150s. “It was mainly fluid,” Barry says. “You could see it in her legs.”

The need to perform a transplant was evident. “She was encephalopathic” — her mental state was dramatically altered — “and she was significantly jaundiced,” Dr. Busuttill recalls. “She had an elevated INR [an abnormal lab result due to insufficient clotting factors]. We listed her right away as Status 1-A,” the highest priority level.

On January 28, 1996 — Super Bowl Sunday — Barry received a call; an organ had been found. But Ilana still was floating in and out of lucidity. “Just before the transplant, a psychiatrist came to my bed and said, ‘I need to ask you some questions.’ I said to myself, ‘Transplant? What transplant?’ I didn’t know how sick I was. ‘Maybe tomorrow,’ I said. ‘Now, can you just leave? I’m not feeling very well.’”

Later, with her family sitting at her bedside, her children asked, “‘Are you sure you want to get the transplant now? Maybe you’ll get better.’ This was hard stuff. But I said, ‘I’m a vegetable. It’s either this or I’m gone. I can’t live my life like this.’ They brought the paper, I signed it, and within 40 minutes they put me on the gurney — off I went.”

The surgery went well, and “afterward, in the ICU, I opened my eyes, and you know what I did? I half sat up and I went like this,” Ilana says, grinning and giving a triumphant thumbs-up with both hands. “I made it!”

ECHINOCOCCUS GRANULOSUS IS JUST ONE OF SEVERAL STOWAWAYS

that can silently hide within a person’s body for decades before wreaking havoc. My infectious diseases colleagues at UCLA and I have treated exotic invaders in people who, before falling ill, never imagined they were carrying a lethal passenger.

Knowledge of these invaders and keen, geographic instincts are necessary to diagnose them. One test can serve as a useful tip-off to certain stowaways. An excess of eosinophils — a unique class of white blood cell stuffed with fuchsia granules — often is found in people with disorders ranging from allergies to cancer, but also in patients with migrating worms. But it takes an astute practitioner to add “worms” to his or her list of possible ailments.

UCLA hematologist Michael Rosove, MD ’73 (RES ’76, FEL ’79), is one such practitioner. More than 40 years ago, Dr. Rosove first learned about *Strongyloides*, a tiny worm with an out-sized capacity to burrow and kill, when reading a case report. “It described a patient with acute leukemia who ended up dying from a massive infection that was completely unsuspected. After I read it,” he recalls, “I decided then and there that I would never forget this.”

Over years of practice, Dr. Rosove has diagnosed *Strongyloides* in half-a-dozen patients with unexplained eosinophilia. His most memorable case is that of a 70-year-old woman who spent much of her childhood going barefoot — not overseas, but in the rural American South — and then suffered persistent inflammation in her intestines and lungs. Fortunately, her immune system was strong, which is why she prevailed for so long before she finally received curative anti-*Strongyloides* treatment.

By coincidence, Dr. Rosove and I both grew up near UCLA, and we even attended the same junior high. As a result, we can easily summon memories of a much different city. “Today, Los Angeles has become extraordinarily diverse,” he tells me over lunch. “Some people are from other parts of the country, some are from other



The home that Ilana Lavine and her husband Barry share in Woodland Hills, California, is filled with artistic touches and photographs of their life together.

Photo: Ann Johansson

countries altogether. It's really endless what physicians in L.A. need to know about different infectious diseases."

Pulmonologist Michael Roth, MD '83 (RES '86, FEL '89), echoed the same opinion while sharing another story. "Probably four years ago, I saw a Korean-American patient with recurrent pneumonia, bronchiectasis [scarred, irregular airways] and a lung nodule. His original doctors were concerned about cancer but couldn't make the diagnosis. What no one had asked was, why was his eosinophil count 35-to-40 percent? This person also had *Strongyloides*.

"Sometimes you just have to pay close enough attention to subtle features to say that it doesn't make sense," Dr. Roth says. "Something else must be going on."

AFTER HER TRANSPLANT, ALL WENT WELL FOR ILANA FOR ABOUT TWO YEARS.

Then she developed right-sided chest pain — a pleural effusion and recurrent pneumonia. Additional tests showed a fluid-filled mass in her right lung, an air-filled cyst in her left, plus many more dots and blots. Once again, echinococcosis had reared its ugly head.

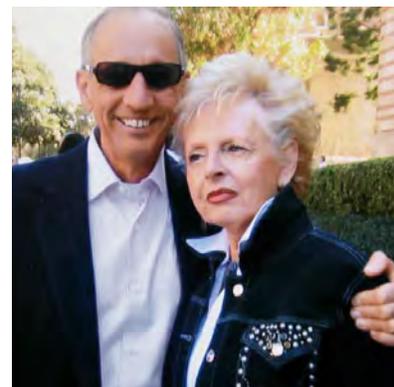
That's when I met Ilana. Fortunately, I had something to offer: an excellent anti-parasitic drug called albendazole. She's been taking it ever

since, while continuing to be followed by multiple specialists and her surgeon, Dr. Busuttil, who keeps a beautiful photograph in his office of Ilana celebrating the 20th anniversary of her transplant. It's a perfect picture of a woman who triumphed in her 50-year battle against a cunning parasite.

Together, Ilana and Barry have endured her painful and dangerous ordeal. After her surgeries, he cared for her with immense focus and tenderness. "You need a partner who really cares," Ilana says. "When I came home from the hospital, there were tubes, tubes, tubes." Every day, Barry would help her to remove and clean them. Ilana's friends took notice of his devotion. "Your husband is amazing," they used to say," she told me in her charming staccato mix of New York and Israeli accents. "There isn't another Barry.' And they were right!"

"There's no question we both went through some real hectic moments," Barry says. "I showed strength when I was with her, but she's the real power. She's the strength."

Dr. Claire Panosian Dunavan is clinical professor of medicine emeritus (recalled) in the David Geffen School of Medicine at UCLA and a medical journalist. Her writing has been published in the Los Angeles Times, The New York Times, Washington Post, Discover magazine and Scientific American, among others. She served as president of the American Society of Tropical Medicine and Hygiene in 2008.



Dr. Ronald Busuttil (RES '77), William P. Longmire, Jr. Chair in Surgery, performed Ilana Lavine's liver transplant in 1996. He keeps a photograph in his office of them together on the 20th anniversary of her surgery.

Photo: Courtesy of Ilana Lavine

Heartfelt

By Nancy Sokoler Steiner



Dr. Juan C. “Chuck” Alejos has been traveling to Peru since the 1990s to treat children with cardiac disease and train physicians in that country in the latest surgical and medical-management techniques.

Photo: Courtesy of Dr. Juan C. Alejos

When, soon after he completed fellowship training, his father died, Juan C. Alejos traveled to Lima, Peru, to retrace his dad’s path to becoming a physician. It was, after all, his father who had inspired “Chuck” Alejos, MD (RES ’90, FEL ’93), to pursue medicine. As a youngster, he sometimes would accompany his father on rounds. Other times, his father would play recordings of heart sounds for his son to identify. “He worked countless hours and was on call 24/7, but he was very happy, and he had a strong bond with his patients,” says Dr. Alejos, a pediatric cardiologist at UCLA Mattel Children’s Hospital. “I could see his love for what he did, and it got to the point where I couldn’t imagine doing anything else.”

In Lima, Dr. Alejos visited his father’s medical school — though he was educated in Peru, the elder Dr. Alejos never practiced there; he emigrated to the United States and practiced as a pediatrician in Detroit, Michigan — as well as the country’s only

children’s hospital, Instituto Nacional de Salud del Niño, where his father would have trained. There, Dr. Alejos met the hospital’s chief of staff and offered to return to give lectures on pediatric cardiology. She responded by asking him to give demonstrations instead.

He did more than that. He returned with another cardiologist and a cardiothoracic surgeon, and the three UCLA physicians performed heart procedures on several patients. So began a tradition of annual medical missions bringing volunteer medical teams, along with donated supplies and medications, to treat children with congenital heart disease and provide advanced training for Peruvian surgeons, physicians and staff.

Dr. Alejos formalized the effort in 2005 and created the non-profit Hearts with Hope Foundation — Corazones con Esperanza. Peru remains a major focus, but the missions have expanded into other Latin American countries as well as the Philippines. The missions may vary in size and scope, but most bring about 30 volunteers — including teams specializing in surgery, intensive care, cardiac catheterization, echocardiography and general pediatrics — for one week to perform about a dozen heart surgeries and twice that number of cardiac catheterization procedures. In Peru, the effort has grown to include general pediatric and dental teams that travel around the country, bringing services to close to 5,000 children. About half of the volunteers are affiliated with UCLA, while the rest hail from throughout the U.S. and abroad.

Since 2006, Hearts with Hope has performed 136 open heart surgeries, 245 cardiac catheterizations, 1,069 diagnostic cardiac echocardiograms and 59 ablations and pacemaker implants. “The most challenging thing is that we are not able to save them all, but we want to show that saving many of these children — maybe even most of them — is doable,” says Dr. Alejos, who today is director of UCLA’s Pediatric Heart Transplantation/Heart Failure Program and director of the Pediatric Pulmonary Hypertension Program. “Our goal is to build on these efforts, so that the doctors in the countries where we work can learn how to better perform these procedures on their own.”

He notes that when he first started the missions, the cardiac surgeons in Peru were doing procedures that were equivalent to those done in the U.S. 30 years earlier. Now, however, their knowledge and skills have caught up. In addition, the Peruvian

government added congenital heart disease as a covered condition after Hearts with Hope demonstrated that it can be treated successfully.

With limited time and resources, the Hearts with Hope team focuses on helping those children who have the best chance of recovering and thriving. Sometimes, Dr. Alejos admits, he breaks with his own protocol. In one instance, the team encountered a baby whose blood was flowing from his lungs into the wrong chamber of his heart. The baby needed immediate surgery but had croup, a sometimes serious respiratory infection. It would be unsafe to operate. Dr. Alejos reluctantly told the family he could not help.

But something, he said, “tugged at my heartstrings.” Dr. Alejos admitted the baby to the hospital for antibiotics and respiratory treatments. At the end of the week, he made a leap of faith and cleared the baby for surgery. “He did phenomenally. And who knows? That child could go on to be a senator or president,” Dr. Alejos says.

“It taught me that you can’t always follow hard-and-fast rules. Sometimes you have to go with your gut and your heart.”

Dr. Alejos’s father would surely be proud of his son’s heartfelt efforts to help children who are most in need, and that caring appears to be embedded in the family DNA. Both of Dr. Alejos’s daughters have chosen a caring path — his older daughter Alex will graduate from medical school this year, and his younger daughter Gabriela received her master’s degree in social work and is working at the UCLA/VA Veterans Family Wellness Center. So continues a legacy of heart.

“We know that what we are doing is not going to fix the world, and we are not going to save every child,” Dr. Alejos says. “But we can make a small dent. We have to do the best that we can.”

Nancy Sokoler Steiner is a freelance writer in Los Angeles.



Dr. Alejos's Hearts with Hope organization has performed 136 open heart surgeries, 245 cardiac catheterizations, 1,069 diagnostic cardiac echocardiograms and 59 ablations and pacemaker implants.

Photos: Courtesy of Dr. Juan C. Alejos

Awards & Honors

Three faculty members of the David Geffen School of Medicine at UCLA received National Institutes of Health High-Risk, High-Reward Research Program awards. **Dr. Olujimi Ajijola (FEL '13, '14)**, assistant professor of medicine, received the New Innovator Award; **Dr. Anne Andrews**, Richard Metzner Endowed Chair in Clinical Neuropharmacology and professor of psychiatry and biobehavioral sciences, received the Transformative Research Award; and **Dr. Valerie Arboleda (PhD '12, MD '14, RES '17)**, assistant professor-in-residence in pathology and laboratory medicine, received the Early Independence Award. The awards support scientists who propose innovative, high-risk or unconventional biomedical research projects with the potential for unusually broad impact.

Dr. Carrie Bearden, professor of psychiatry and biobehavioral sciences, was named to the scientific council of the Brain and Behavior Research Foundation, the nation's top

non-governmental funder of mental health research grants.

Dr. Joaquin Fuster, emeritus distinguished professor in psychiatry and biobehavioral sciences, and **Dr. Otoniel Martinez-Maza (PhD '81)**, professor of obstetrics and gynecology, epidemiology and microbiology, immunology and molecular genetics, have been named fellows of the American Association for the Advancement of Science.

Dr. Neal Halfon, founding director of the UCLA Center for Healthier Children, Families and Communities, received the American Academy of Pediatrics' C. Anderson Aldrich Award in Child Development.

Dr. Connie Kasari (FEL '90), professor of psychiatry and biobehavioral sciences and a founding member of the Center for Autism Research and Treatment in the Jane and Terry Semel Institute for Neuroscience and Human Behavior at UCLA, received the Acceleration Award from Autism Speaks.

Dr. Kelsey Martin, dean of the David Geffen School of Medicine at UCLA, was appointed by California Gov. Jerry Brown to the Governor's Advisory Committee on Precision Medicine.

Dr. Vishad Nabili (RES '07, FEL '07), associate professor of clinical head and neck surgery and director of the Otolaryngology/Head and Neck Surgery Residency Training Program, was named the 2018 recipient of the Parker J. Palmer Courage to Teach Award from the Accreditation Council for Graduate Medical Education.

Dr. David Reuben (FEL '88), chief of the Division of Geriatrics, accepted the SCAN Foundation's first Innovation in Health Care Award on behalf of the UCLA Alzheimer's and Dementia Care Program.

Dr. Jeffrey Saver, professor of clinical neurology and director of the UCLA Comprehensive Stroke Center, received a Gold Heart Award, the American Heart Association's highest

volunteer honor. In addition, Dr. Saver was presented with the association's Meritorious Achievement award.

Dr. Michael Steinberg (RES '81), director of clinical affairs at the UCLA Jonsson Comprehensive Cancer Center, has received the American Society for Radiation Oncology 2017 Gold Medal for his lifetime contributions in the field of radiation oncology.

In Memoriam

Dr. Christian Herrmann, Jr., professor emeritus of neurology, died October 23, 2017. He was 96 years old. He entered medical school in 1941, and during World War II, he served at the Naval Medical Center San Diego. He came to UCLA in 1954 as the second faculty member in the Division of Neurology. As assistant professor of medicine in neurology, he was responsible for teaching as well as running a number of specialty clinics. He retired as professor emeritus

in 1986 but continued to come to campus to do credentialing and to share his knowledge with the department's trainees.

Dr. W. Eugene Stern, founding chief of neurosurgery and former chair of surgery at UCLA, died on July 27, 2017. He was 97 years old. Dr. Stern joined the UCLA faculty in 1952 as chief of the Division of Neurosurgery in the new Department of Surgery and held that position until 1985. During his tenure, Dr. Stern established neurosurgical affiliations with the Wadsworth (now Greater Los Angeles) Veterans Administration Medical Center and with Harbor General Hospital (now Harbor-UCLA Medical Center), and he elevated the neurosurgery faculty and residency program to national prominence. The W. Eugene Stern Endowed Chair in Neurosurgery was named in his honor. In addition, he was chair of the Department of Surgery from 1981 to 1987.

MOSUL

Dr. Matthew Waxman traveled to Iraq in August 2017 to volunteer with NYC Medics at a trauma center outside of Mosul.

Photo: Getty Images

Out of Africa, Into Iraq

Two years have passed since UCLA emergency medicine specialist **Matthew Waxman, MD (RES '07)**, returned from Sierra Leone, where he traveled to treat patients during the Ebola crisis and then spent 21 days in home quarantine after returning to Los Angeles (*U Magazine*, Summer 2015). Now he has expanded his portfolio of global-health work to another humanitarian disaster.

In August 2017, he went to war-torn Iraq. On the outskirts of a fiercely contested city decimated by anti-ISIS airstrikes, Dr. Waxman spent a month at a Trauma Stabilization Point (TSP) in Mosul with NYC Medics, a non-governmental humanitarian organization funded by the World Health Organization. As the trip approached, an endless stream of questions buzzed in his head. “Who is ISIS? What is the difference between Sunni and Shiite? Why are we entering Northern Iraq from Kurdistan?” In an effort to better prepare himself, Dr. Waxman studied Arabic with a tutor for three months and read as much as he could about the war and the rise of ISIS. He quickly gained a deep understanding of the historical, social and political determinants of the conflict, steeling himself for the harsh reality of its cultural landscape.

Working for a humanitarian organization like NYC Medics and the World Health Organization, he was required to maintain complete neutrality. “We were constantly reminding ourselves



An injured Iraqi soldier arrives at Trauma Stabilization Point, where he is cared for by Dr. Matthew Waxman (left) and the NYC Medics team.

Photo: Courtesy of Dr. Matthew Waxman

that we were humanitarians, attempting to provide the same care to ISIS, civilians, prisoners and other combatants under trying circumstances,” he says.

In such a politically charged environment, Dr. Waxman learned firsthand the potential for ethical dilemmas when providing humanitarian care. He recently led a group discussion on the matter for first- and second-year students at the David Geffen School of Medicine at UCLA. Reflecting on their understanding of his service, he commented, “I was impressed how the students felt the tension between the humanitarian principles of maintaining impartiality and ensuring safety while delivering care close to the frontlines of a conflict.”

In addition to caring for a diverse patient population, Dr. Waxman and his colleagues faced the challenges of working in an active combat zone. “We lived in an abandoned house that was one of a few homes left undestroyed by airstrikes,” he recalls. He later had to move to another location as the battle shifted. “We slept packed into a room on sleeping bags. When it was safe, we slept on the roof because it was cooler.”

Patients had to be searched before they were brought into the treatment area, and the NYC Medics and Iraqi Army worked together to constantly monitor the TSP and secure the safety of its staff and patients. “We had full trust and confidence in [them],” Dr. Waxman says.

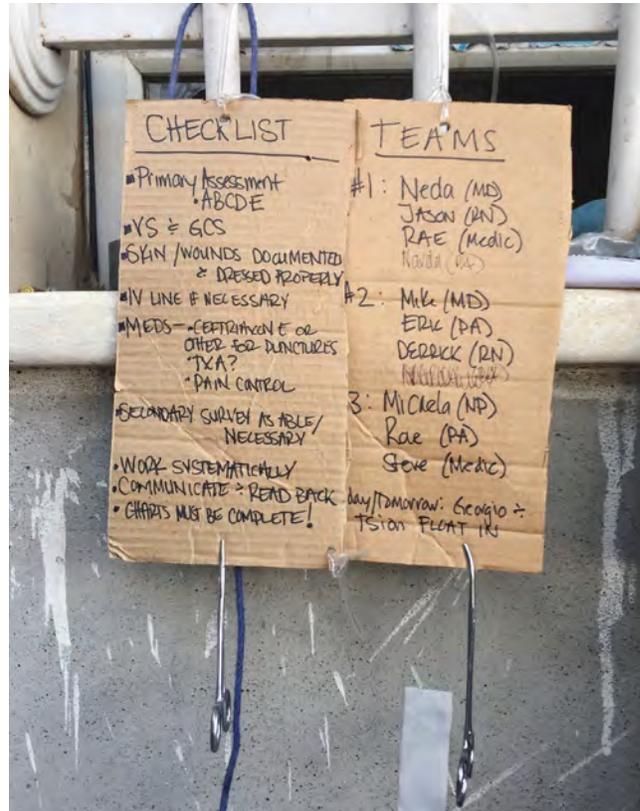
As in Africa dealing with a highly contagious and deadly disease, Dr. Waxman found in Iraq that fear is a constant presence when working to help in a humanitarian crisis. While medical knowledge and experience are necessary in such situations, “understanding the risks and mitigating those risks are key,” he says. “Whether you are serving a crush of patients suffering from viral hemorrhagic fever or taking care of patients with gunshot and blast injuries as airstrikes are going on in the background, both take a level head and focus on why you are there.”

Beyond the purely humanitarian mission of helping those in need, Dr. Waxman notes that working in such dynamic environments benefits the broader scope of medicine. “The opportunity to learn in such settings makes us all better doctors back here in the United States,” he says. “Working in global health can give you a fresh perspective on your own practice when you return, and it can be the ultimate cure for burnout.”

In addition to sharpening a physician’s skills, it also provides opportunities to extend medical knowledge. Since returning from Sierra Leone, Dr. Waxman completed a long-term research project looking at outcomes in patients with malaria and Ebola co-infection. He also has been a visiting professor at the University of Chile and lecturer at medical conferences worldwide. Although he stresses the importance of participating in global health long after one returns home from deployment — “A lot of work happens before and long after being on the ground to improve outcomes in future humanitarian emergencies,” Dr. Waxman says — he feels in-field experience is optimal for growth and perspective.

Toward that end, Dr. Waxman now is working to secure funding for a potential domestic project related to international medical training. He also plans to continue on-site support overseas with the World Health Organization.

📖 “Characteristics and Survival of Patients with Ebola Virus Infection, Malaria, or Both in Sierra Leone: a Retrospective Cohort Study,” *The Lancet Infectious Diseases*, June 2017



Top: A makeshift checklist of key clinical points and team composition hangs in the main trauma bay of the Trauma Stabilization Point (TSP). **Bottom:** Dr. Matthew Waxman outside the ruins of Al Zanjili, a neighborhood just west of the NYC Medics TSP in Mosul.

Photos: Courtesy of Dr. Matthew Waxman

Rides, Games and Laughter on the Pier



(From left) Mandana Sadigh, Mattel senior vice president and treasurer; Caitlin Beck; Johnese Spisso; Richard Dickson, Mattel president and COO; Amy Thompson, Mattel chief people officer; Joe Euteneuer, Mattel chief financial officer; and Dr. Sherin U. Devaskar, physician-in-chief of UCLA Mattel Children's Hospital and Mattel Executive Endowed Chair in Pediatrics.

Photos: Don Ponturo and Ben Shmikler/ABIImages

More than 2,000 guests enjoyed a fun-filled day celebrating the **18th Annual Party on the Pier** on November 5, 2017, at Pacific Park on the Santa Monica Pier. The event, an ongoing partnership with Mattel, Inc. that highlights the company's commitment to improving the lives of children, benefits UCLA Mattel Children's Hospital.

Attendees, including more than 50 sponsored patient families, enjoyed unlimited rides, carnival treats, ice pops and game booths that were filled with Mattel toys donated by the company. Highlights of the day included a Power of Play area sponsored by the Goldhirsh-Yellin Foundation. The play area included cookie decorating, sponsored by Ralphps/Food 4 Less; performances by the BeatBuds; complimentary glitter tattoos by Skechers; hair braiding; and Yoobi arts and crafts. The VIP area, hosted by the Toys "R" Us Foundation, featured music, dance contests and exclusive giveaways, along with lunch, courtesy of Wolfgang Puck Catering. Celebrity guests included Brooke Burke-Charvet, co-host of *Dancing With the Stars* from 2010 to 2013; Ruby Rose

Turner of *Fuller House*; Rico Rodriguez of *Modern Family*; Tia Mowry, Tiffani Thiessen and Raini Rodriguez of *Austin & Ally*; Tori Spelling; and many others who greeted fans, volunteered at the game booths and posed for photos at the interactive selfie station.

"Mattel Party on the Pier is our annual, signature fundraising event and a truly special day for the children who experience our care, their families and all who attend," said Johnese Spisso, president of UCLA Health and CEO of the UCLA Hospital System. "For the past 18 years, proceeds from Party on the Pier have made a real difference in our ability to provide world-class care for children treated at UCLA and around the world. We are grateful to Mattel for its generous support and to our event committee, hosts and sponsors for all their hard work and dedication."



For more information, contact Molly Moursi at: 310-267-1826



For more information about the event, go to: partyonthe pier.ucla.edu



Top: (From left) Johnese Spisso; Party on the Pier committee members Masha Chase, Kim Reed, Hillary Milken and Loris Lunsford; Dr. Sherin U. Devaskar, Party on the Pier committee members Brooke Lande, Melissa Mitchell and Jennifer Gardner. **Middle Left:** Tate Tuckman (left) and Kellye Carroll. **Middle Right:** The Laker Girls with members of the band The Fourth Kingdom. **Bottom Left:** (From left) Actors Benjamin Royer, Forrest Wheeler, Raini Rodriguez, Rico Rodriguez and Matthew Royer. **Bottom Middle:** Ralphs/Food 4 Less volunteers and attendees. **Bottom Right:** (From left) Actress Tori Spelling, her husband Dean McDermott, and Beau, Hattie, Finn, Stella and Liam McDermott.

Photos: Don Ponturo and Ben Shmikler/ABImages

UCLA Health System Board Meeting Features Stroke Care

The **UCLA Health System Board meeting** took place on October 4, 2017, at Geffen Hall. Hosted by Dr. John C. Mazziotta (RES '81, FEL '83), vice chancellor of UCLA Health Sciences and CEO of UCLA Health, and Henry Gluck, chairman of the UCLA Health System Board, the meeting featured a presentation on acute stroke care at UCLA. Stroke is the leading cause of serious, long-term disability in the United States. The talk highlighted UCLA Health's new Mobile Stroke Unit program, the first of its kind in the Western United States, which has the potential to transform outcomes for this condition by dramatically

lessening treatment-response time. Attendees heard from Dr. Jeffrey Saver, professor and senior associate vice chair of neurology and director of the UCLA Comprehensive Stroke Center, and Dr. May Nour (RES '13, FEL '14, '15), assistant professor of neurology and radiology and medical director of the UCLA Arline and Henry Gluck Stroke Rescue Program. Volunteers from UCLA's People-Animal Connection greeted guests at the reception.



For more information, contact Nora Bok at: 310-267-0050



Top Left: (From left) Drs. John C. Mazziotta and May Nour, Henry and Arline Gluck and their daughter Tracey Gluck, and Johnese Spisso, president of UCLA Health and CEO of the UCLA Hospital System. **Top Right:** (From left) Drs. Mazziotta and Jeffrey Saver, and Henry Gluck. **Middle Right:** (From left) Gerald and Merle Measer and Jodi and Michael Price. **Bottom Left:** (From left) Bill Simon, Laurie Davis Gordon and Steven Gordon. **Bottom Middle:** Lynn Booth (left) and Jennifer Diener. **Bottom Right:** Members of the UCLA Medical Center, Santa Monica Board: chair Peter Miller, Nat Trives, Nancy Greenstein, Kathy Volz and Ahmed Yehia.

Photos: Todd Cheney/ASUCLA Photography and Reed Hutchinson



Top: Matthew Hill, fire captain and paramedic for the Santa Monica Fire Department; Dr. May Nour, UCLA prehospital care coordinator Ryan Burgess; and Julian Zermeno, captain and paramedic coordinator for the Santa Monica Fire Department. **Bottom Left:** (From left) Dr. Nour, Johnese Spisso, Henry and Arline Gluck, Dr. John C. Mazziotta, L.A. County Supervisor Janice Hahn and Dr. Jeffrey Saver. **Bottom Right:** The ribbon-cutting ceremony included, from left, Drs. Mazziotta and Nour, Ronald Gluck, Henry and Arline Gluck, Supervisor Hahn, Tracey Gluck, Santa Monica Fire Department Chief Bill Walker and Dr. Saver.

Photos: Reed Hutchinson

UCLA Launches New Mobile Stroke Unit

On October 25, 2017, UCLA Health, the County of Los Angeles and the City of Santa Monica celebrated the launch of the **UCLA Health Mobile Stroke Unit (MSU)** with a standing-room-only audience at Ronald Reagan UCLA Medical Center. Event attendees included L.A. County Supervisor Janice Hahn; Santa Monica Fire Department Chief Bill Walker; Arline and Henry Gluck and their children Tracey Gluck and Ronald Gluck; Dr. May Nour (RES '13, FEL '14, '15), assistant professor of neurology and radiology and medical director of the UCLA Arline and Henry Gluck Stroke Rescue Program; Dr. Jeffrey Saver, professor and senior associate vice chair of neurology and director of the UCLA Comprehensive Stroke Center; Johnese Spisso, president of UCLA Health and CEO of the UCLA Hospital System; Dr. John C. Mazziotta (RES '81, FEL '83), vice chancellor of UCLA Health Sciences and CEO of UCLA Health; UCLA nurses; and first responders from Santa Monica and L.A. County.

The UCLA MSU, sponsored by the Henry and Arline Gluck Foundation and part of the UCLA Arline and Henry Gluck Stroke Rescue Program, is a specialized ambulance equipped with a mobile CT scanner for the rapid diagnosis of stroke. The MSU entered service on September 11, 2017, as part of a national clinical trial to measure the benefits of expedited stroke care. The ambulance brings the hospital to the patient, with a specialty care team that delivers the clot-busting drug tPA to those experiencing an ischemic stroke — caused by a clot that blocks blood flow to the brain and accounts for 80 percent of all strokes. The stoppage of blood circulation to the brain has a “platinum half hour,” during which the quick delivery of tPA can dramatically improve patient outcomes by breaking down the clot so blood will continue to flow to the brain. In L.A. County, 49 people suffer a stroke each day, and without timely intervention, many will die or suffer permanent disabilities.

After the completion of the study, Supervisor Hahn hopes to roll out a fleet of MSUs to serve all 10 million residents of L.A. County.



For more information, contact Ellen Haddigan-Durgun at: 310-206-3878

UCLA Operation Mend Marks a 10-year Milestone

Photography by Reed Hutchinson



During the stage presentation, UCLA Operation Mend patients and family members told stories of how the program changed their lives.

On September 24, 2017, the Katz family and more than 600 guests celebrated the **10th anniversary of UCLA Operation Mend** at the home of Ronald Katz. Operation Mend marked the milestone with a Red, White and Denim-themed backyard party that raised more than \$1.1 million to benefit the program. Highlights of the event included a series of 10 heartwarming, humorous and often tearful testimonials from Operation Mend patients and their families, one for each year of the program's history.

UCLA Operation Mend was launched in 2007 after Katz and his late wife Maddie saw a news report about the devastating injuries inflicted by roadside improvised explosive devices. Maddie turned to her husband and said, "We have to do something about this." They did, and UCLA Operation Mend was born. To date, 280

patients have received specialty medical care at UCLA, and the growing program continues to change the lives of hundreds of post-9/11 service members, veterans and their families.

Special recognition was given to Katz and the co-founding members of the team who helped build the program, including Amir Rubin, former COO of UCLA Health; Shannon O'Kelley, former associate director of clinical services and COO of UCLA Health; retired chief of plastic and reconstructive surgery Dr. Timothy Miller (MD '63, RES '70); Dr. Chris Crisera (RES '04, FEL '05), professor of plastic and reconstructive surgery and co-medical director of Operation Mend; Gen. James Amos, U.S. Marine Corps (retired); and Gen. Peter Chiarelli, U.S. Army (retired).

U.S. Army Sgt. Karolyn Smith, an Operation Mend patient who was injured in Iraq in 2005 when an improvised explosive device struck her truck, underwent a successful spine surgery at UCLA. She told the audience that the program has helped her thrive. “After years of chronic debilitating pain, and another five years on opioids, I was losing hope and quickly coming closer to being one of the 22 veterans a day that we lose to suicide,” she said. “In 2015, I found Operation Mend, and not only did they save my life, but they showed me what real care actually looks like.”

Christina Geist, a New York City-based brand strategist, children’s book author and entrepreneur, was a surprise honoree, recognized by program director Melanie Gideon for her ongoing

work creating a broad network of support for Operation Mend on the East Coast. Willie Geist, host of NBC’s *Sunday TODAY* and co-host of MSNBC’s *Morning Joe*, emceed the event, and Fritz Coleman of KNBC-TV led the live auction. The evening concluded with a concert by Billy Idol, Sebastian Bach, Billy Morrison and the Operation Mend All Star Band.

Currently, Operation Mend provides advanced medical treatment, comprehensive psychological support and an intensive treatment program for post-traumatic stress and traumatic brain injury for post-9/11 service members, veterans and their families.

 For more information, contact Nicholas Middlesworth at: 310-206-2089



Left: (From left) UCLA Operation Mend’s founding members Amir Rubin, Dr. Chris Crisera, Operation Mend founder and philanthropist Ronald Katz and Dr. Timothy Miller are joined by Cpl. Aaron Mankin, the program’s first patient. **Right:** (From left) Johnesse Spisso, president of UCLA Health and CEO of the UCLA Hospital System; Dr. John C. Mazziotta (RES ’81, FEL ’83), vice chancellor of UCLA Health Sciences and CEO of UCLA Health; Ronald Katz; UCLA Chancellor Gene D. Block; and Dr. Kelsey Martin, dean of the David Geffen School of Medicine at UCLA.



Members of The Thaliens, a philanthropic group, with Chairwoman Emerita Ruta Lee (center) and UCLA Operation Mend patients, caregivers and staff.

Celebrating 60 Years of Excellence in Cardiovascular Research



Top Left: Dr. James N. Weiss (left) received the UCLA Cardiovascular Research Leadership Award from Dr. Kelsey C. Martin, dean of the David Geffen School of Medicine at UCLA and Gerald S. Levey, M.D., Endowed Chair. **Top Right:** (From left) Shawn Casey of the AHA and Dr. Steven R. Houser, immediate past president of the AHA, presented the Volunteer of the Year Award to Dr. Gregg Fonarow. **Bottom:** (From left) Carl Wayne, AHA leadership; Dr. Yibin Wang; and William Wood, AHA leadership.

Photos: Todd Cheney/UCLA Photography

The UCLA Cardiovascular Research Laboratory was established in 1957 with a gift from the **American Heart Association (AHA)**. Since then, UCLA physician-scientists have been at the forefront of groundbreaking and collaborative investigations, accelerating discoveries that have altered the course of cardiovascular research and treatments. On September 26, 2017, UCLA celebrated this six-decade partnership with the AHA at the California NanoSystems Institute at UCLA.

The event spotlighted two outstanding cardiovascular researchers who have made a significant impact on the fight against heart disease and stroke. Dr. Gregg Fonarow

(MD '87, RES '90, FEL '93), director of the Ahmanson-UCLA Cardiomyopathy Center, co-chief of the UCLA Division of Cardiology and a longtime AHA/American Stroke Association volunteer, was honored with the AHA Los Angeles Volunteer of the Year Award for his efforts to create best practices that improve care for heart disease and stroke patients and for his research. Dr. James N. Weiss (FEL '81), director of the UCLA Cardiovascular Research Laboratory, chief of the UCLA Division of Cardiology and Chizuko and Nobuyuki Kawata Chair in Cardiology, received the inaugural UCLA Cardiovascular Research Leadership Award.

When it was established in 1957, the UCLA Cardiovascular Research Lab was the country's first local, privately supported research laboratory. Some of its milestones over six decades of excellence include:

- The development of an effective solution to protect the heart during open heart surgery;
- Research published by Dr. Weiss in the journal *Science*, demonstrating that complex proteins regulate cardiac ion channels, which are critical for all aspects of cardiac function;
- Performance of the first heart-lung transplant by a UCLA team;
- Discovery by UCLA researchers of how to stop cardiac scars from producing arrhythmias;
- Development of an evidence-based program by Dr. Fonarow for managing coronary artery disease that serves as a prototype for the AHA's "Get with the Guidelines" program, now practiced in more than 2,500 hospitals, benefiting more than seven-million patients;
- Performance of the UCLA Heart Transplant Program's 2,000th heart transplant in 2012, making UCLA the first program in the Western United States and only the second in the world to achieve this milestone.

Cardiovascular investigators at UCLA continue to design therapies and interventions that prevent and effectively treat heart disease. Supporting their efforts are cross-campus collaborations facilitated by the Cardiovascular Research Theme, one of six unified research strategies established by the David Geffen School of Medicine at UCLA. "Few places have the ability to transcend the different levels of innovation, from devices to surgical procedures, and molecular diagnostics to new therapies," said Dr. Yibin Wang, professor of anesthesiology, medicine and physiology and chair of the UCLA Cardiovascular Research Theme. "UCLA is already a leader in the field, and with the Cardiovascular Research Theme collaborations, our progress has accelerated."



For more information, contact Michelle Jacobson at: 310-267-1213

Department of Surgery Celebrates Inaugural Paul I. Terasaki Chair in Surgery



Dr. Jerzy W. Kupiec-Weglinski, director of the Dumont-UCLA Transplantation Research Center and professor in the UCLA Department of Surgery, has been selected

as the inaugural holder of the Paul I. Terasaki Chair in Surgery. On September 8, 2017, the department celebrated Dr. Terasaki's gift and Dr. Kupiec-Weglinski's appointment with a dinner at the Four Seasons hotel in Beverly Hills. The families of Drs. Terasaki and Kupiec-Weglinski, UCLA Health Sciences leadership and UCLA surgeons attended the event to honor the work of Drs. Terasaki and Kupiec-Weglinski.

The late Dr. Terasaki, who was professor emeritus of surgery in the David Geffen School of Medicine at UCLA, was a pioneer in organ-transplant medicine. He developed the test that became the international standard method to assess the compatibility of organ donors and recipients. A long-time supporter of the campus, in 2010



(From left) Dr. Ronald Busuttil (RES '77), executive chairman of the UCLA Department of Surgery, chief of the Division of Liver and Pancreas Transplantation and William P. Longmire, Jr. Chair in Surgery; Dr. Kupiec-Weglinski; Dr. Kelsey C. Martin, dean of the David Geffen School of Medicine at UCLA and Gerald S. Levey, M.D., Endowed Chair; and Dr. Keith Terasaki, one of Dr. Paul Terasaki's sons.

Photo: Reed Hutchinson

he gave \$50 million to the Division of Life Sciences in the UCLA College of Letters and Science. At the time, Dr. Terasaki's gift was the largest ever given to the UCLA College and was among the largest received by the university. In recognition of the gift, UCLA named the new life sciences building the Terasaki Life Sciences Building. Dr. Terasaki died January 25, 2016, at the age of 86, but prior to his passing, he made a gift to endow the Paul I. Terasaki Chair in Surgery. This generous philanthropic contribution will be vital to the advancement of transplantation surgery techniques and research.



For more information, contact Gretchen McGarry at: 310-794-4746

The Spectacular Sounds of Autism



Left: Alumni Chau Le (left) and John Klemm. **Right:** (From left) Drs. Daniel Geschwind; James McCracken, director of the UCLA Division of Child and Adolescent Psychiatry and Joseph Campbell Chair in Child Psychiatry; Amanda Gulsrud; and Elizabeth Laugeson, assistant clinical professor in the UCLA Department of Psychiatry and Biobehavioral Sciences.

Photos: Rex Sanchez

Northwestern Mutual hosted “[The Spectacular Sounds of Autism](#),” a benefit concert supporting the UCLA Center for Autism Research and Treatment (CART) and the UCLA Child and Adult Neurodevelopmental Clinic (CAN), on October 7, 2017, held at the home of Keith and Jeanette Wagner. Proceeds from the event will enable UCLA to launch a pilot program aimed at delivering comprehensive educational and support services to UCLA students with autism spectrum disorder (ASD).

This visionary endeavor was spearheaded by two UCLA alumni, Chau Le, chief operating officer of Northwestern Mutual Los Angeles, and her partner John Klemm, who saw a way to improve the collegiate and employment experiences of these young adults. Le co-chaired the event committee with her colleague Steve Izuno.

Dr. Daniel Geschwind (RES '95, FEL '97), director of CART and Gordon and Virginia MacDonald Distinguished Chair in Human Genetics, spoke about the center's role as a world leader in autism research and treatment. Dr. Amanda Gulsrud, clinical director of CAN, emphasized the potential impact of this innovative program, which will transform the lives of these diverse and talented college students. Northwestern Mutual representatives talked about the company's college internship program that employs students with ASD and teaches them valuable job skills in a supportive and inclusive environment. Two Northwestern Mutual interns shared their stories of success and how the internship helped launch their respective careers.

Nearly 300 guests attended the event and enjoyed a live performance by musician Stephen Stills, who expressed his support for the program and spoke about his brother, who has ASD. Stills's performance was followed by the boisterous 1980s cover band The Spazmatics. Through ticket sales and the silent and live auctions, the “spectacular” event raised close to \$200,000.



For more information, contact Alan Han at: 310-825-1546

Family's Bravery Leads to Generosity



From left: Kelly Tarantello and her mother Delphine Lee.

Photo: Courtesy of Kelly Tarantello

For **Kelly Tarantello**, born with a single ventricle, congenital heart disease never held her back. At the age of 7, she underwent Fontan surgery, which redirects blood flow through the lungs without being pumped by the heart. She was told she may need a heart transplant in about 20 years, but Tarantello was able to live a fairly normal life. She went away to college and traveled extensively.

When she was 29, her heart began to fail, and she was faced with additional health challenges. Her doctors advised her that her liver was not removing the toxins, and she also needed a liver transplant. In September 2016, she underwent a dual heart-liver transplant at UCLA.

"It's not easy," Tarantello says. "Once you get the transplant, that is the beginning of your having to fight, and you have to fight hard." She kept going through the support and love of her parents and sister and the encouragement of others.

Due to the complexity of the dual transplant, several specialists were involved, and every complication that arose required assembling a team of 15 doctors for consultation. Her mother Delphine Lee, a member of the Ahmanson/UCLA Adult Congenital Heart Disease Center board, stayed by her side every step of the way and recognized the need for a coordinator to arrange group meetings. Seeing the benefit of the group meetings firsthand and the need for a coordinator to set up those meetings led Lee to make a contribution to establish the UCLA Heart and Liver Disease Program. Improved coordination will ensure that the entire team of specialists and the patient's family are aware of all treatment decisions. The goals of the program are to advance the understanding of why both organs failed, educate cardiologists about possible liver failure in patients who have undergone Fontan surgery and develop a protocol for preventive care.

 For more information, contact Michelle Jacobson at: 310-267-1213

A Legacy for Loved Ones



Dr. J. Bronwyn Bateman

Photo: Courtesy of Dr. J. Bronwyn Bateman

Dr. J. Bronwyn Bateman (RES '78, FEL '78), former professor of ophthalmology and pediatrics at the David Geffen School of Medicine at UCLA, has made a generous

contribution to UCLA in memory of her late husband. As a young resident at UCLA Stein Eye Institute, Dr. Bateman faced tragedy when her husband Roderick K. Smith was diagnosed with mesothelioma, an asbestos-related cancer, during his residency in orthopaedics at UCLA. He died after an 11-month battle with the disease.

While this could have derailed her career, sage advice from her Stein Eye advisor, Dr. Bradley Straatsma, founding director of the Stein Eye Institute and chairman of the UCLA Department of Ophthalmology, helped keep Dr. Bateman on track. "He called me in and asked what I wanted to do with my life," she said. "I said I didn't know. He suggested ophthalmic genetics. This was before DNA was harnessed to identify gene defects in hereditary diseases." Dr. Bateman became board certified in both ophthalmology and medical genetics/clinical genetics. "Looking back, the professional opportunities offered by Dr. Straatsma and Dr. Bartly J. Mondino (current director of UCLA Stein Eye Institute and chairman of the Department of Ophthalmology) were pivotal in my career," she said.

During her time as a faculty member at UCLA, Dr. Bateman also became the first woman president of the American Association of University Professors, the organization for ophthalmology departments in the United States and Canada, and the president of the Pan-American Association of Ophthalmology.

Dr. Bateman thought about a gift to benefit Stein Eye for a long time. "I wanted to honor my first husband, who was not able to have a life and career," she said. "By endowing a chair in his name, I gave him the legacy that he could not create. The key is creating a legacy at a quality institution that has a high level of integrity, and I think there is opportunity for people to do very nice things for their families here at UCLA." She now is considering another gift to fund an endowed chair named after her mother and grandmother. "My grandmother was a Norwegian farm girl who married a physician," Dr. Bateman said. "My mother graduated from medical school in 1941 and became a pediatrician while my father was busy with the U.S. military in the Pacific theater. She managed to work full time and raise five children." Dr. Bateman also plans to create a nurses travel fund in honor of UCLA nurses Nan Fulton, Sue Yamada and Leonore Vogel, who were especially caring and helpful during her husband's health issues and his passing.

 For more information, contact Gail Summers at: 310-206-9701

Gifts



Connie Frank and Evan Thompson, joined by Kingston.

Photo: Courtesy of Connie Frank

Connie Frank and Evan Thompson have made a contribution to establish the Connie Frank and Evan Thompson Program for Restorative Transplantation Research, under the direction of Dr. Kodi Azari (FEL '04) in the Department of Surgery. The David Geffen School of Medicine at UCLA has initiated research themes to drive advancements, and this gift will be used to implement research awards in the Immunity/Inflammation/Infection/Transplantation Research Theme. Rejection remains the greatest challenge facing the organ transplant field, and this funding will harness the expertise of multidisciplinary

teams of UCLA scientists, as they aim to redefine transplant immunology and improve treatments for patients who suffer from conventionally unreconstructable limb, tissue and nerve injuries.

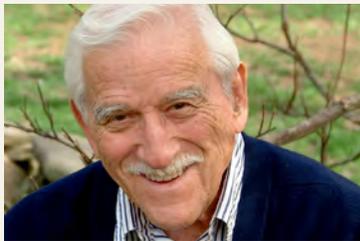
The **Mose J. and Sylvia Dilman Firestone Charitable Trust** has awarded \$1 million to UCLA to establish the Firestone Endowment for Care Management. The gift will support social work and supportive-care services for military service members and their families through UCLA Operation Mend's surgical and mental health treatment programs. Both Mose Firestone (1915-2011)

and Sylvia Dilman Firestone (1915-2009) were honored by the National Association of Social Workers as Social Work Pioneers for their lifelong commitment to the well-being of children, families, veterans and the sick, as well as the advancement of the field of social work. In addition to their distinguished careers and legacy of community leadership, each had ties to military service during and after World War II.



For more information, contact Health Sciences Development at: 844-474-4387

In Memoriam



Royce Diener

Photo: Jennifer Diener

Longtime UCLA friend and philanthropic partner **Royce Diener** passed away May 23, 2017, at the age of 99. Born in Baltimore, Maryland, Diener was a decorated World War II veteran of the United States Army Air Forces. He graduated from Harvard College, and following the war, he began a career in business, international finance and investment banking. He was best known as president and CEO of American Medical International from 1973 through his retirement in 1985. Among his many charitable endeavors, Diener helped shape and lead the Board of Advisors of Ronald Reagan UCLA Medical Center, at the behest of former UCLA Chancellor Charles E. Young, and was instrumental in the creation of UCLA Medical Center, Santa Monica and its orthopaedic center. Diener is survived by his wife Jennifer, who was a true partner to Diener in his endeavors and serves on the UCLA Medical Center, Santa Monica Board of Advisors.



Fred Silton

Photo: Todd Cheney/UCLA Photography

Longtime UCLA donor **Fred Silton** passed away on October 3, 2017, at the age of 94. He and his parents immigrated to the United States in 1938 and settled in St. Louis, Missouri. He served as a communications officer in World War II, and after the war, he followed his family to Los Angeles, where he worked in the family outerwear company, Silton Brothers, which under his leadership grew into a large national brand. In the 1980s, he transitioned to real estate development and investment and created an extensive portfolio of high-quality apartment buildings in the Westwood area. Despite Parkinson's disease, he was actively involved in managing his portfolio until shortly before his death. According to his family, Silton was committed to honoring the less fortunate and contributed to multiple charities. At UCLA, his generosity included gifts to the Jonsson Comprehensive Cancer Center, the Longevity Center and the Department of Neurology, where he endowed the Fred Silton Family Chair in Movement Disorders. He also donated to UCLA's performing arts programs and the Fowler Museum. He is survived by numerous children and grandchildren.



William L. Snelling

Photo: Courtesy of Phyllis Momtazee-Snelling

William L. Snelling, avid supporter of the UCLA Department of Neurology, died September 17, 2017 at the age of 86. Snelling was born in Omaha, Nebraska, and served in the United States Army. He earned both his BA and EMBA degrees from UCLA and his JD from Southwestern School of Law. Always working, he often said that he flunked retirement five times. Along with business partners, he had many successful ventures, including purchasing the Hotel del Coronado, founding the Community Bank of Santa Maria, serving as a founding partner and board member of IDB Communications in Los Angeles and, through a joint venture with a division of ITT, establishing Spaceport Systems, Inc., a company that operates a satellite-processing facility at Vandenberg Air Force Base. He is survived by his wife Phyllis, his older brother Don, four stepchildren and their spouses, and many other family members and friends.

'I Have Been on Both Sides'

By Frank Hebroni, MD '16

BEFORE I DELIVER A DIFFICULT DIAGNOSIS TO A PATIENT, I try to take a moment to remind myself: "You could be in their shoes."

After all, I have been.

Three times in my life, a doctor has told me that I have cancer. The news is never easy to absorb. But when it is given with the proper dose of empathy and compassion, a life-changing diagnosis is digested more easily, knowing that the person on the other end truly cares about the outcome. My journey from cancer patient to physician has taught me about both sides of health care and, I hope, will serve as a resource to those receiving treatment as well as to those providing it.

I grew up in Westwood and was 9 years old when my parents took me to an ophthalmologist at the UCLA Stein Eye Institute with what they thought was an eye infection. Instead, doctors discovered I had rhabdomyosarcoma, a rare skeletal-muscle tumor behind my right eye. The tumor was too close to my brain to risk an operation, and I was too young to understand the seriousness of the situation. I received radiation and chemotherapy treatment at Children's Hospital Los Angeles (CHLA), and the cancer went into remission, but I permanently lost vision in my right eye and hearing in my right ear.

Life took another twist during my freshman year of high school, when a routine checkup with my oncologist revealed that I had acute myelogenous leukemia, a cancer of the blood and bone marrow. It was hard to comprehend going through chemotherapy again, and, naturally, you ask questions like, "Why me?" The mental hurdles often proved just as tough to clear as the physical ones. The support of my family, friends

and health care team helped get me through more than a year of chemotherapy cycles and hospital stays.

After being sick, you would think I would get disgusted by the medical field, by always being in the hospital. But, after that, I wanted to be a doctor. Healthy again, I earned my undergraduate degree in psychobiology at UCLA and entered the David Geffen School of Medicine at UCLA. I was studying for the Step 1 exam near the end of my second year, in May 2011, when I progressively became more and more ill — first a sore throat, then a sinus infection, then bronchitis, then pneumonia. While I was at a party with friends, I suddenly felt extremely short of breath. I had a bad feeling in my gut; I thought, maybe I'm sick again.

A blood test confirmed what I had dreaded: At age 23, the leukemia had returned. My doctor at CHLA immediately told me I was too old to receive care at Children's Hospital, sending me into a panic. I remember getting angry and grabbing his suit jacket, saying, "I have to stay here!" In hindsight, all I needed was more time to process the information and ask questions — a guideline I hope every physician follows.

The cancer retreated after one round of chemo at City of Hope in Duarte, but my doctor warned that if the cancer recurred, it could resist chemo treatment, and he recommended a more permanent solution: a bone marrow transplant. Shortly after, a donor registry found a match on the other side of the world. Peter Entz, a 59-year-old German man, had registered years earlier during a local donor drive to save a young man in his tiny town of Bad Lippspringe. He agreed to donate his bone marrow and was told only that it was for a person living in the United States.

1997

At the age of 9, doctors discover rhabdomyosarcoma, a rare skeletal-muscle tumor behind Hebroni's right eye.

2002

At age 14, a routine checkup with his oncologist reveals that Hebroni has acute myelogenous leukemia, a cancer of the blood and bone marrow.

2010

Hebroni earns his undergraduate degree in psychobiology at UCLA and enters the David Geffen School of Medicine at UCLA.

2011

A blood test confirms what Hebroni has dreaded: At age 23, the leukemia had returned.



Top: Dr. Frank Hebroni with Peter Entz, a German man who donated his bone marrow to treat Dr. Hebroni's leukemia. **Bottom:** Dr. Hebroni receives his MD from Dr. Kelsey C. Martin, dean of the David Geffen School of Medicine at UCLA.

Photos: (Hebroni and Entz) Courtesy of Dr. Frank Hebroni; (graduation) Juliane Backmann

I developed graft-versus-host disease, or GVHD, when the donor's immune cells mistakenly attacked my healthy cells. I remained isolated for months in a special unit of the hospital, and I needed regular blood, platelet and electrolyte transfusions. Visitors had to wear full body gowns to see me. Even now, getting around can be a struggle, as movement in my extremities is restricted, and I have necrosis in my hips, which will eventually require surgery. Unfortunately, my favorite food — sushi — is off the menu.

I returned to medical school in July 2014. After graduation, I completed my medicine internship at Harbor-UCLA Medical Center and now am in my residency. I chose to

specialize in radiology because I am a visual person who loves the fundamentals of anatomy and learning a wide array of things about the body. I also realize that other fields, such as surgery, might not make sense if my mobility gets worse.

Two years after my lifesaving bone marrow transplant, my family contacted Entz. My mother called — it was around 3 pm here, and Germany is nine hours ahead, so it was midnight there — and when he answered, he barely spoke English. My mom was saying into the phone, “Bone marrow donation! America! USA! USA!” We invited him and his daughter and her boyfriend to Los Angeles to share our Passover seder. They stayed with us for two weeks, soaking in the Southern California sites, and our families remain friends to this day.

My journey has given me a greater understanding of what patients and their families go through. Some patients have a lot of support and deal with their situation fine. Others might have to cope with things on their own. Regardless, there is no easy road to recovery. I have been on both sides, and I try to share parts of my own story when needed to give patients more faith, hope and optimism. If another doctor is struggling to relate to a patient, I might share an anecdote or hint at ways to be more empathetic. Often, as I experienced firsthand, small steps can make a big difference in a patient's life.



Dr. Frank Hebroni (surrounded by his family after receiving his MD in 2016) was born in Iran and came to the United States with his parents when he was 2 years old. He now is in residency training in diagnostic radiology at Ronald Reagan UCLA Medical Center.

Photo: Juliane Backmann

2012

The cancer retreats after one round of chemo, but with the chance it could return, a bone marrow transplant is recommended as a more permanent solution.

2013

A donor registry finds a match, Peter Entz, a 59-year-old German man, on the other side of the world.

2014

Hebroni returns to medical school in July.

2015

Two years after his lifesaving bone marrow transplant, Hebroni and his family invite Entz, his daughter and her boyfriend to Los Angeles to share their Passover seder. Their families remain friends to this day.

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Photo: UCLA Health

By promptly delivering proven stroke therapies to patients in the field, the UCLA Health Mobile Stroke Unit aims to improve patient outcomes and reduce patient long-term disability, allowing patients to lead fuller, healthier lives.