Whether it's butterflies before a big meeting or an anxious rumbling that signals stress, our stomachs and our brains are in constant dialogue.
Share Your Thoughts with Us

Like us or not, we want to hear from you. Your input is important, so please give us your comments and feedback. Include your name, email address, city and state of residence and, if you are a UCLA medical alum (MD, PhD, Resident and/or Fellow), your degree(s) and graduation year(s). Letters and/or comments may be edited for clarity and/or length. Don’t be a stranger. Write to us, or post your comments on our social-media pages.

Submit letters to:
editormedicine@mednet.ucla.edu

To read U Magazine online, go to:
magazine.uclahealth.org
Forward Thinking

Changing our culture and making tough choices will be difficult, but it is essential as we prepare to meet the demands of the future.

With new leadership in place, UCLA Health and the David Geffen School of Medicine at UCLA have begun a formidable but important task: reassessing our vision, goals and strategies as we move into the future with our missions of clinical care, teaching, research and community engagement. Our goal is straightforward but ambitious: to be the role model for enabling an academic medical center to truly deliver patient-centered integrated care, leading-edge research and multidisciplinary teaching – all connected with our communities.

It has been six years since UCLA Health and the David Geffen School of Medicine at UCLA developed a strategic plan. Now, guided by the principles of integration, collaboration, effectiveness, efficiency and transparency, we are examining what we need to place us at the forefront of healthcare delivery and innovation. To be great, we have to be a unified, integrated operation, one that puts patients, students and faculty at the center of our efforts and operates as more than just a collection of departments and research units.

Placing patients at the center of our thinking requires an integration of our clinical operations. Rather than our current, often confusing matrixed system in which a patient must visit different settings to receive his or her care, we want to create an efficient and cost-effective care-delivery environment in which everything that a patient needs surrounds him or her. This has not been done in academic medicine; the first one to do it will be the role model for the rest of the country, perhaps for the world. I want UCLA to be that role model.

Achieving this goal requires us to come together in a way that values the whole more than its constituent parts. This will require a cultural change, which will be complex and difficult, but it will make us stronger and move us to a level that we can’t achieve in our current, siloed environment.

Our new Institute for Precision Health is an important example of how our research missions can integrate with this core focus on patient care. It brings together scientists from across the medical school and UCLA campus to collaborate to deliver therapies tailored to individual patients to combat their disease. We also wish to strengthen the medical school’s alliances with the other Health Sciences schools to give our students broader exposure to all facets of healthcare and build their capacity to meet higher standards for quality of care.

In administration, we need to address overlapping and redundant functions in such areas as finance, data, recruitment, retention, IT and leadership. This will lead to greater efficiency and effectiveness.

This refocusing on what is truly important brings us to transparency, which I believe is the fulcrum for all that we hope to achieve. We must be open about what we are trying to do and about the fact that we must make difficult choices. We must listen to the input of all our constituents and communities. It won’t be an easy exercise. Not only must we decide which things are most important, but we also must decide what is less important. That will be challenging. But as the famous Harvard Business School professor Michael Porter said, “The essence of strategy is choosing what not to do.”

The process is just beginning. I am hopeful that within six months, we will have our plan developed, and we will start to execute on what we’ve put forward.

Stay tuned.

John C. Mazziotta, MD (RES ’81, FEL ’83), PhD
Vice Chancellor, UCLA Health Sciences
CEO, UCLA Health
Experimental Implant Returns Hand Movement to Quadriplegic

UCLA doctors have implanted a spinal stimulator that is showing early promise in returning hand strength and movement to a California man, who broke his neck in a dirt-biking accident five years ago. Brian Gomez became one of the world’s first patients to undergo surgery for the experimental device in June 2016 at Ronald Reagan UCLA Medical Center. UCLA scientists positioned the 32-electrode stimulator below the site of Gomez’s spinal-cord injury, near the C-5 vertebra in the middle of his neck. That’s the area most commonly associated with quadriplegia — the loss of function and feeling in all four limbs.

“The spinal cord contains alternate pathways that it can use to bypass the injury and get messages from the brain to the limbs,” says Daniel Chia-Hsing Lu, MD, PhD, director of the UCLA Neuroplasticity and Repair Laboratory and the UCLA Neuromotor Recovery and Rehabilitation Center. “Electrical stimulation trains the spinal cord to find and use these pathways.”

While other devices have shown promise in treating paralysis, these approaches involved animals or relied on robotic arms. This approach is unique because the device is implanted in the spine instead of the brain and is designed to boost patients’ abilities to move their own hands. Dr. Lu likened the approach to a commute on a busy freeway. “If there is an accident on the freeway, traffic comes to a standstill, but there are any number of side streets you can use to detour the accident and get where you are going,” he says. “It’s the same with the spinal cord.”

In addition to the stimulator, doctors implant a small battery pack and processing unit under the skin of the patient’s lower back. Small enough to fit in the palm of a hand, the implant is paired with a remote control that patients and doctors use to regulate the frequency and intensity of the stimulation. “It is an ongoing process that retrains the spinal cord and, over time, allows patients to strengthen their grip and regain mobility in their hands,” Dr. Lu says.

The UCLA team performed the world’s first implant surgeries of this kind on two cervical spinal-cord-injury patients prior to Gomez. Dr. Lu and his colleagues saw an increase in finger mobility and grip strength of up to 300 percent. Dr. Lu is working with UCLA neuroscientist Reggie Edgerton, PhD, to build upon the success of their previous findings in patients with lumbar spinal-cord injuries. Their research already has made a huge difference for Gomez, who owns a coffee-roasting business in his hometown of San Dimas, California.

“I use an industrial roaster that heats up to 450 degrees, and just a few months ago, I reached up to pull a lever to empty a batch of beans after they’d finished roasting. But because I didn’t have the arm
or core strength, I burned myself,” he says, revealing the scar on his forearm. “That doesn’t happen anymore because of the strength and dexterity I’ve developed.”

People who suffer spinal-cord injuries usually have a window of only a few months to get the rehabilitation they need to maintain at least partial use of their hands, making Gomez’s improvements especially encouraging. Gomez visits a UCLA laboratory several times a week for rehabilitation exercises and to help scientists fine-tune the stimulator. The UCLA team’s goal is to improve hand function enough to allow patients to perform everyday tasks. As the technology develops, patients might expect further improvements.
Scientists at the California NanoSystems Institute at UCLA have taken a major step toward confirming an unusual theory of how some cancer cells metastasize. Their findings may lead to new strategies for keeping melanoma from spreading.

A commonly held theory about how cancer spreads is that tumor cells break off from the primary tumor and travel through the bloodstream to reach other organs, where they attach and grow into new tumors. But questions about that process have remained because circulating tumor cells in the blood sometimes have a short lifespan and because of a lack of knowledge about how the cells leave the bloodstream and attach to organs.

The research team was led by Laurent Bentolila, PhD, director of UCLA’s Advanced Light Microscopy/Spectroscopy lab, and included Claire Lugassy, MD, and Raymond Barnhill, MD, formerly of UCLA and now of France’s Institut Curie. They theorized that — in addition to the prevailing belief about how cancer spreads — tumor cells could spread through the body by a mechanism called angiotropism, meaning they could travel along the outside of blood vessels without entering into the bloodstream.

Over the past decade, Drs. Lugassy and Barnhill gathered proof that tumor cells, especially those of the deadly skin cancer melanoma, creep along the outside of blood vessels to spread cancer. They also found that the migrating cancer cells mimicked pericytes — cells that line the capillary blood vessels — which prevented the cancer cells from being killed by the human immune system. The research by Dr. Bentolila’s team marks the first time that these migrating cells have been imaged in 3D.

To do the imaging, the scientists infused blood vessels with red fluorescent dye, while human melanoma cells, which were dyed green, were injected into the brain of a mouse. They used a microscopic technique called confocal fluorescence microscopy, which provides true three-dimensional optical resolution, to create 3D images in which the dyed tumor cells and the vessels glowed under specific light. The images showed the cells begin to grow as a primary tumor at the injection site. Soon, the researchers observed the green cells spreading from the tumor and migrating along the outer surfaces of the red-dyed blood vessels.

The research by Drs. Lugassy and Barnhill on angiotropism “has questioned the assumption that all metastatic tumor cells break off and flow through the bloodstream to spread disease,” Dr. Bentolila says. If tumor cells are found circulating in the bloodstream, Dr. Bentolila says, doctors might prescribe chemotherapy. “But if the metastasizing cells are on the outside of the blood vessels,” he says, “they escape exposure to the treatment and continue to spread cancer.” The findings will enable researchers to seek new targets for deadly cancers such as glioma, glioblastoma, pancreatic cancer, prostate cancer and gynecological carcinosarcomas.

Different Types of Autism-spectrum Disorders Share Abnormal Pattern of Brain Cells

UCLA scientists and their colleagues have found evidence that an abnormal pattern of brain cells is common in people with different types of autism-spectrum disorders. The abnormal pattern discovered in the study concerns a certain type of “epigenetic mark,” a chemical modification that occurs frequently on chromosomes and helps regulate the activity of nearby genes.

The findings suggest that although autism-spectrum disorders have multiple causes, they mostly involve problems in a common set of biological pathways, which are actions among certain molecules within a cell that lead to specific changes such as turning genes on or off or assembling new molecules. The findings may lead to a better understanding of how autism-spectrum disorders arise and perhaps one day to the development of drugs that target some of these irregular pathways.

“The uniformity of this abnormal pattern in the autism samples was surprising, given that these samples were from people whose autism was known to have different causes,” says Daniel Geschwind, MD (RES ’95, FEL ’97), PhD, Gordon and Virginia MacDonald Distinguished Chair in Human Genetics. “It suggests the possibility that different factors can cause autism-spectrum disorders through a set of common pathways.”

Dr. Geschwind and his colleagues, including Shyam Prabhakar, PhD, of the Genome Institute of Singapore, evaluated brain tissue of 45 people who had autism-spectrum disorders and 49 who did not. The team mapped one specific type of epigenetic mark called “histone acetylation.”

Changes in epigenetic marks (H3K27) in three brain regions from patients with ASD—revealed shared molecular and cellular pathways.

Graphic: Courtesy of Drs. Daniel Geschwind and Shyam Prabhakar

The cortex, the most advanced brain region, is the one that appears to be most affected in autism-spectrum disorders. The abnormal pattern, which did not appear in samples from other parts of the brain, involved changes at more than 5,000 locations on the human genome. These changes mirrored findings from the team’s earlier studies. Connecting these different levels of analysis is one of the next challenges facing the researchers.

Scientists have only recently begun to conduct systematic investigations of epigenetic abnormalities in people, but they have already found that these abnormal chemical modifications contribute to cancers and other diseases. This study was the first to map this type of epigenetic mark across the genome in a human brain disease.

The team now hopes to determine which of the many epigenetic abnormalities uncovered in the study are true causes of autism-behaviors — and therefore could be potential targets for future autism drugs. Drugs that affect histone acetylation have already been developed as potential cancer treatments, and some older psychiatric drugs also influence histone acetylation; however, knowing which changes are the key to target still represents a formidable challenge.
Combating the Cellular Damage of Aging

Researchers from UCLA and the California Institute of Technology have made discoveries that might help slow, and potentially reverse, the process of aging in cells. The scientists generated new methods that allow the identification of factors that selectively remove damaged mitochondrial DNA, which will affect the process of aging at the cellular level. Aging is, in part, due to changes in mitochondria, the energy-providing powerhouses of the cell.

Mitochondria contain their own DNA, and the accumulation of mutations of mitochondrial DNA throughout a lifetime contributes to aging. There are two strategies for combating age-related diseases. One way is to fight the individual disease, and the other aims to delay the aging process to prevent or delay the onset of age-related diseases.

Mitochondria provide most of the energy for cellular operations. Cumulative damage to mitochondrial DNA contributes to age-related disorders such as Parkinson’s disease, Alzheimer’s disease, heart disease and muscle wasting and frailty. One key goal to delay or reverse aging is to reduce the ratio of damaged-to-normal mitochondrial DNA. Inherited defects in mitochondrial DNA also cause a number of devastating childhood diseases, including strokes and muscle diseases.

“We showed that we could selectively cleanse the damaged mitochondrial DNA, effectively rejuvenating them and improving mitochondrial quality,” says Ming Guo, MD (RES ’01, FEL ’02), PhD, P. Gene & Elaine Smith Chair in Alzheimer’s Disease Research and professor of neurology and pharmacology. “This strategy might someday prove useful in treating or preventing age-related diseases, as well as the general declines in cognitive function and mobility that occur with aging.”

The researchers found that by activating cellular processes known as “autophagy,” it was possible to remove 95 percent of the damaged mitochondrial DNA. In addition, Dr. Guo’s team found the activation of pathways that are crucial in preventing Parkinson’s disease also dramatically cleansed damaged mitochondrial DNA.

Studying the role that these DNA mutations have in disease hasn’t been easy, in part because of the lack of good laboratory models. For the study, Dr. Guo and her laboratory teamed up with the lab of Bruce Hay, PhD, professor of biology and biological engineering at Caltech, to create a model of mitochondrial DNA using the fruit fly Drosophila. Fruit flies are an effective system in which to study fundamental biological processes and how the breakdown of these processes leads to human diseases. Eighty percent of human-disease genes have counterparts in fruit flies. This new fly model mimics aging in young animals.

The findings demonstrate that the level of damaged mitochondrial DNA can be reduced in cells simply by boosting the body’s natural quality-control processes. Drs. Guo and Hay now plan to use the model to screen for potential drugs that have a similar impact — drugs that might rejuvenate mitochondria to improve overall cellular health.

Researchers Uncover How to Prevent Calcification of Heart Tissue

UCLA researchers have discovered that calcification of heart-muscle tissue is caused when a type of cell called cardiac fibroblasts goes awry. The scientists also found that blocking a molecular pathway in cardiac fibroblasts prevents heart calcification in mice.

In bones, cells called osteoblasts create a strong, dense matrix out of calcium and phosphate. The calcification of soft tissues — known as ectopic calcification — is abnormal and occurs with common diseases such as diabetes and chronic kidney disease, as well as with aging. But soft tissues don’t have osteoblasts, and scientists have for years sought to understand which type of cells contribute to ectopic calcification.

Researchers at the Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research at UCLA genetically labeled cardiac fibroblasts, the most plentiful type of cell in the heart, with a fluorescent red dye and followed the cells in mice after a heart injury. When calcification began one-to-four weeks later, the fibroblasts had clustered at the spots where calcification was occurring. The cells adopted characteristics of cardiac-tissue stem cells that then created bone-forming osteoblasts. The researchers transplanted some of these fibroblasts into healthy mice and observed calcium deposits forming around the clumps of cells.

Scientists compared the genes of mice that were prone to ectopic calcification with those that didn’t get it. They discovered that the levels of a protein called ENPP1 were especially high in fibroblasts during calcification. And when they blocked ENPP1 with a drug, they were able to prevent heart calcification.

The study, led by Arjun Deb, MD, associate professor of cardiology and of molecular, cell and developmental biology, identifies for the first time both a cell type and a molecular pathway linked to heart calcification. If the findings hold true in humans, they could lead to a pharmaceutical treatment for ectopic calcification. The researchers are collaborating with other UCLA scientists to study whether or not other types of ectopic calcification can be treated in this manner. Their findings also may help advance the understanding of other types of ectopic calcification.

“Cardiac Fibroblasts Adopt Osteogenic Fates and Can Be Targeted to Attenuate Pathological Heart Calcification,” Cell Stem Cell, November 17, 2016

Giving a Jump-start to the Brain

A 25-year-old man recovering from a coma has made remarkable progress following a treatment at UCLA to jump-start his brain using ultrasound. The technique uses sonic stimulation to excite the neurons in the thalamus, an egg-shaped structure that serves as the brain’s central hub for processing information.

“It’s almost as if we were jump-starting the neurons back into function,” says Martin Monti, PhD, associate professor of psychology and neurosurgery. “Until now, the only way to achieve this was a surgical procedure known as deep-brain stimulation, in which electrodes are implanted directly inside the thalamus.”

This is the first time the approach has been used to treat severe brain injury. Dr. Monti says the researchers expected the positive result, but he cautions that the procedure requires further study before they determine if it could be used consistently to help others recovering from comas.

The technique, called low-intensity focused ultrasound pulsation, was pioneered by Alexander Bystritsky, MD (FEL ’87), professor of psychiatry and biobehavioral sciences. The device used in the study is about the size of a coffee-cup saucer and creates a small sphere of acoustic energy that can be aimed at different regions of the brain to excite brain tissue. Researchers placed the device by the side of the man’s head and activated it 10 times for 30 seconds each during a 10-minute period. Dr. Monti says the device is safe because it emits only a small amount of energy — less than a conventional Doppler ultrasound.

Three days after the procedure, the patient had regained full consciousness and full language comprehension, and he could reliably communicate by nodding his head “yes” or shaking his head “no.” He even made a fist-bump gesture to say goodbye to one of his doctors.

If the technology helps other people recovering from a coma, Dr. Monti says, it could eventually be used to build a portable device — perhaps incorporated into a helmet — as a low-cost way to help “wake up” patients, perhaps even those who are in a vegetative or minimally conscious state.

UCLA researchers have developed a software program that simulates the response of the human thyroid hormone-regulation system to a variety of treatments and diseases. The open-source program, THYROSIM, can be used by clinicians, researchers and educators to accurately gauge the impacts of thyroid treatments and develop more effective remedies for thyroid problems.

Joseph DiStefano III, PhD, distinguished professor of computer science and medicine and chair of the UCLA Computational and Systems Biology Interdepartmental Program, developed the technology based on 50 years of research with his students. "THYROSIM offers an easy-to-use interface for a sophisticated, mathematical model of the short-term and long-term impact of thyroid diseases, treatments, hormone supplements and other interventions," Dr. DiStefano says. "This will benefit clinical and research endocrinologists and teachers, and it could result in positive changes in the use or regulation of available remedies."

The thyroid gland, located in the front of the neck, is the largest regulator of hormones in the human body. Thyroid hormones control growth, development and metabolism. Maladies associated with abnormal thyroid function include hypothyroidism, or underproduction of hormones; hyperthyroidism, or overproduction of hormones; Graves’ disease, an autoimmune form of hyperthyroidism; and thyroid cancer.

The THYROSIM program works on all common browsers. Researchers and clinicians can enter data — on shifts in the body’s hormonal production or absorption rates or changes in the dosages of hormone treatments — with the user-friendly, animated interface. THYROSIM software, which relies on a mathematical model based on comprehensive clinical data, then simulates likely responses.

The system can examine multiple sets of data at the same time for comparative analysis. It can also project the long-term impacts — up to 100 days — of individual treatment programs. Because THYROSIM is open source, researchers can adapt it for their own projects. In testing the system, researchers analyzed the impact of several over-the-counter thyroid supplements. Their findings suggest that the use of some of these products could increase the presence of hormones in blood to toxic levels — potentially causing serious harm.

"Components of THYROSIM are distributed over two computers: the client-user machine accessible via a web browser and a remote server at UCLA where the simulation computations are run," says Simon Han, a former graduate-student researcher in Dr. DiStefano’s lab who is now a doctoral candidate in bioengineering and radiology at UCLA. "By making the open-source software fully accessible, we hope to encourage others to improve it or expand its use."

"THYROSIM App for Education and Research Predicts Potential Health Risks of Over-the-counter Thyroid Supplements," Thyroid, April 20, 2016

Cutting-edge Model of Heart Helps Scientists Study New Therapies

A team of UCLA doctors, scientists and engineers has created a detailed computer model that shows how the heart’s electrical signals are affected by congestive heart failure. The “virtual heart” will help medical researchers study new drug therapies that could treat heart failure. One of the senior authors of the paper was William Klug, PhD, a UCLA mechanical and aerospace engineering professor, who was killed by a gunman in his office on June 1, 2016.
The model “can potentially help many who suffer from arrhythmias in congestive heart failure,” says Alan Garfinkel, PhD, professor of integrative biology and physiology.

Congestive heart failure occurs when the heart cannot pump enough blood. It is a leading cause of death. Patients also die at an accelerated rate from electrical disturbances called arrhythmias, the subject of the UCLA study. The model can simulate tiny, subtle changes in the heart’s cells and tissues, as well as the larger impact on the entire heart. The changes are then shown in a corresponding electrocardiogram, a tool commonly used to diagnose heart abnormalities.

The model is based on a rabbit’s heart. It can show what happens to the heart cells and tissue when the levels and flow of calcium, potassium and sodium ions — all required for the heart to work — are changed. The model also shows, for the first time, what happens to the organ when various critical chemicals and electrophysiologic components of a healthy working heart are altered by disease.

Researchers found that the other one-third of uninsured Californians were ineligible for coverage under the Affordable Care Act due to their immigration status. Using data from the California Health Interview Survey, or CHIS, the study reports that California residents without health insurance fall into four groups:

• Undocumented residents: 32 percent. Residents who do not qualify for health coverage under the Affordable Care Act, being predominantly low-income and Latino and having limited English-language proficiency.
• Those eligible for Medi-Cal: 28 percent. Adult citizens and lawfully present immigrants with incomes at or below 138 percent of the federal poverty level and children at 266 percent of the poverty level.
• Those eligible to buy coverage on the state health exchange, Covered California, with a federal subsidy to help offset costs: 31 percent. Citizens and lawfully present immigrants with incomes from 139 percent to 400 percent of the poverty level.
• Those eligible to buy health coverage on Covered California but not eligible for federal subsidy: 9 percent. Citizens and lawfully present immigrants with incomes above 400 percent of the poverty level.

Among reasons for not having insurance, the largest percentage of citizens and lawfully present immigrants (46 percent) said cost was the main reason.

High cost is the main reason those eligible for health insurance in California didn’t enroll in 2014.

“We’re a relatively high cost-of-living state,” says Miranda Dietz, a researcher at UC Berkeley and the lead author of the study. “It’s no wonder some Californians, who may be unaware they qualify for health subsidies and other programs, still find the cost of health insurance out of reach. For people who are already stretched paying their rent, filling the car to get to work and feeding the kids, figuring out how to come up with more money for healthcare on top of that is a lot to handle.”

California also has more than 1-million undocumented, uninsured residents who do not benefit from the Affordable Care Act because of their immigration status. “Hundreds of thousands of men, women and children, not to mention the workers who power California’s economy, are one health emergency away from potential financial ruin because they lack insurance,” says Nadereh Pourat, PhD, director of research for the UCLA Center for Health Policy Research. “From an economic perspective, it’s bad business to rely on workers and then not offer them equal-health protection. And from a humanitarian perspective, it’s just wrong.”

“Affordability and Eligibility Barriers Remain for California’s Uninsured,” UCLA Center for Health Policy Research and the UC Berkeley Center for Labor Research and Education, March 31, 2016

The model “can potentially help many who suffer from arrhythmias in congestive heart failure,” says Alan Garfinkel, PhD, professor of integrative biology and physiology.

Congestive heart failure occurs when the heart cannot pump enough blood. It is a leading cause of death. Patients also die at an accelerated rate from electrical disturbances called arrhythmias, the subject of the UCLA study. The model can simulate tiny, subtle changes in the heart’s cells and tissues, as well as the larger impact on the entire heart. The changes are then shown in a corresponding electrocardiogram, a tool commonly used to diagnose heart abnormalities.

The model is based on a rabbit’s heart. It can show what happens to the heart cells and tissue when the levels and flow of calcium, potassium and sodium ions — all required for the heart to work — are changed. The model also shows, for the first time, what happens to the organ when various critical chemicals and electrophysiologic components of a healthy working heart are altered by disease.

Researchers say the invention could help doctors zero in on effective new drug therapies for heart failure, because it should make it easier to understand how certain medications work and when and where in the heart they can be most effective. The study also revealed that ventricular fibrillation, a condition in which the heart beat becomes fragmented and erratic, can be caused by a slowdown in cellular processes at the top of the heart during heart failure. In addition, the researchers used their model to plan a new drug strategy against this heart-failure form of fibrillation.

“Electrophysiology of Heart Failure Using a Rabbit Model: From the Failing Myocyte to Ventricular Fibrillation,” PLOS Computational Biology, June 23, 2016

“Electrophysiology of Heart Failure Using a Rabbit Model: From the Failing Myocyte to Ventricular Fibrillation,” PLOS Computational Biology, June 23, 2016
UCLA researchers have defined how key genetic factors affect blood-forming stem cells by either accelerating or hindering the cells’ regenerative properties. The findings could one day lead to improved treatments for people undergoing common therapies for cancer such as chemotherapy and radiation.

Blood-forming stem cells, or hematopoietic stem cells, are found in the bone marrow. These cells can self-renew and, through a process called differentiation, form any type of blood cell. A healthy immune system depends on the regenerative abilities of hematopoietic stem cells.

Common cancer therapies such as chemotherapy and radiation can eliminate cancer by killing cancer cells. But these treatments also damage hematopoietic stem cells, which can impede the cells’ ability to regenerate blood, slowing the immune system and resulting in a longer, more complicated recovery for people with cancer. Previous research indicated that certain genes may alter hematopoietic stem cells’ regenerative capacity by either accelerating or hindering the cells’ ability to restore the immune system, but more research was needed to pinpoint the specific genetic activity and effects.

Researchers from the UCLA Division of Hematology Oncology and the Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research at UCLA published their findings in two studies. One of the studies focused on a gene called Grb10 that is expressed by hematopoietic stem cells. Grb10’s function was previously not known, so to better understand its role, the scientists deleted Grb10 from hematopoietic stem cells in lab dishes and in mice that had received radiation. They found that deleting Grb10 strongly promotes hematopoietic stem cell self-renewal and differentiation.

In the other study, researchers analyzed a protein called Dickkopf 1 (Dkk1). Dkk1 is produced by a gene expressed by a specific “bone progenitor” cell that is present in the “niche,” or cellular environment, that surrounds the hematopoietic stem cell. Typically, bone progenitor cells regenerate bone, but scientists had previously hypothesized that these cells also play an important role in regulating hematopoietic stem cells’ ability to self-renew and differentiate into other blood cells.

“The cellular niche is like the soil that surrounds the stem cell ‘seed’ and helps it grow and proliferate,” says John Chute, MD, professor of medicine in the Division of Hematology Oncology. “Our hypothesis was that the bone progenitor cell in the niche may promote hematopoietic stem cell regeneration after injury.”

The researchers showed that adding Dkk1 to hematopoietic stem cells in lab dishes and mice that had received radiation produced a cascade effect within the cell niche that greatly enhanced hematopoietic stem cells’ ability to self-renew and differentiate into other blood cells. Taken together, the studies uncovered two molecular mechanisms that could potentially be manipulated to increase the regenerative properties of hematopoietic stem cells and improve cancer therapy.

Scientists can now test drugs that inhibit Grb10 or test the effectiveness of administering Dkk1 intravenously to promote immune regeneration in people who have received chemotherapy and radiation or those undergoing bone-marrow transplants.

**Genetic Factors Control Regenerative Properties of Blood-forming Stem Cells**

Researchers from the UCLA Division of Hematology Oncology and the Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research at UCLA published their findings in two studies. One of the studies focused on a gene called Grb10 that is expressed by hematopoietic stem cells. Grb10’s function was previously not known, so to better understand its role, the scientists deleted Grb10 from hematopoietic stem cells in lab dishes and in mice that had received radiation. They found that deleting Grb10 strongly promotes hematopoietic stem cell self-renewal and differentiation.

In the other study, researchers analyzed a protein called Dickkopf 1 (Dkk1). Dkk1 is produced by a gene expressed by a specific “bone progenitor” cell that is present in the “niche,” or cellular environment, that surrounds the hematopoietic stem cell. Typically, bone progenitor cells regenerate bone, but scientists had previously hypothesized that these cells also play an important role in regulating hematopoietic stem cells’ ability to self-renew and differentiate into other blood cells.

“The cellular niche is like the soil that surrounds the stem cell ‘seed’ and helps it grow and proliferate,” says John Chute, MD, professor of medicine in the Division of Hematology Oncology. “Our hypothesis was that the bone progenitor cell in the niche may promote hematopoietic stem cell regeneration after injury.”

The researchers showed that adding Dkk1 to hematopoietic stem cells in lab dishes and mice that had received radiation produced a cascade effect within the cell niche that greatly enhanced hematopoietic stem cells’ ability to self-renew and differentiate into other blood cells. Taken together, the studies uncovered two molecular mechanisms that could potentially be manipulated to increase the regenerative properties of hematopoietic stem cells and improve cancer therapy.

Scientists can now test drugs that inhibit Grb10 or test the effectiveness of administering Dkk1 intravenously to promote immune regeneration in people who have received chemotherapy and radiation or those undergoing bone-marrow transplants.

**Genetic Factors Control Regenerative Properties of Blood-forming Stem Cells**

Researchers from the UCLA Division of Hematology Oncology and the Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research at UCLA published their findings in two studies. One of the studies focused on a gene called Grb10 that is expressed by hematopoietic stem cells. Grb10’s function was previously not known, so to better understand its role, the scientists deleted Grb10 from hematopoietic stem cells in lab dishes and in mice that had received radiation. They found that deleting Grb10 strongly promotes hematopoietic stem cell self-renewal and differentiation.

In the other study, researchers analyzed a protein called Dickkopf 1 (Dkk1). Dkk1 is produced by a gene expressed by a specific “bone progenitor” cell that is present in the “niche,” or cellular environment, that surrounds the hematopoietic stem cell. Typically, bone progenitor cells regenerate bone, but scientists had previously hypothesized that these cells also play an important role in regulating hematopoietic stem cells’ ability to self-renew and differentiate into other blood cells.

“The cellular niche is like the soil that surrounds the stem cell ‘seed’ and helps it grow and proliferate,” says John Chute, MD, professor of medicine in the Division of Hematology Oncology. “Our hypothesis was that the bone progenitor cell in the niche may promote hematopoietic stem cell regeneration after injury.”

The researchers showed that adding Dkk1 to hematopoietic stem cells in lab dishes and mice that had received radiation produced a cascade effect within the cell niche that greatly enhanced hematopoietic stem cells’ ability to self-renew and differentiate into other blood cells. Taken together, the studies uncovered two molecular mechanisms that could potentially be manipulated to increase the regenerative properties of hematopoietic stem cells and improve cancer therapy.

Scientists can now test drugs that inhibit Grb10 or test the effectiveness of administering Dkk1 intravenously to promote immune regeneration in people who have received chemotherapy and radiation or those undergoing bone-marrow transplants.
A study by researchers at UCLA has found a new, noninvasive way to predict which individuals will respond favorably to the most commonly used medications to treat depression: brain-wave recordings.

Depression is a major public-health problem and leading cause of disability that affects 17-million people in the U.S. every year. Fewer than one-third of people with the disorder find relief from depression with the first antidepressant that is prescribed for them — and patients must wait weeks-to-months to see if the antidepressant will be effective. Some people also stop taking antidepressants because of the medications’ side effects.

Researchers at the Jane and Terry Semel Institute for Neuroscience and Human Behavior at UCLA report that a simple biomarker — a pair of brain-wave recordings, or electroencephalograms, that can be performed in a doctor’s office in about 10 minutes — can predict if the person will enter remission after just one week. “Knowing whether or not a medication is going to work could eliminate weeks of waiting by the patient and get them on effective treatment more quickly,” says Andrew Leuchter, MD (RES ’84, FEL ’86), professor of psychiatry and biobehavioral sciences.

The researchers used the electroencephalogram recordings to predict recovery from depression in those taking escitalopram, a common antidepressant sold under the brand name Lexapro. Escitalopram works by increasing the levels of serotonin, a chemical messenger or neurotransmitter in the brain that helps to regulate mood. Serotonin levels in the brain also maintain the ratio between slow brain waves (so-called delta–theta activity) and faster “alpha” brain waves. The brain uses this ratio between fast and slow waves to form chemical or electrical networks that support normal mood and thinking.

Dr. Leuchter, who also is director of the Semel Institute’s Neuromodulation Division, and his colleagues reasoned that the effect of escitalopram in shifting the balance between delta-theta and alpha activity would predict the effectiveness of the drug in relieving symptoms of depression. The researchers tested if brain-wave recordings in the first week of treatment would show that the antidepressant (as compared with a placebo) corrected the frequency imbalance — and predict a beneficial effect of medication on an individual’s depression after seven weeks.

Researchers analyzed data from 194 people, 18-to-70 years old, with major depressive disorder. The individuals fell into three groups: two comprised of 70 and 76 patients, each treated with escitalopram for seven weeks, and a third group of 48 patients treated with a placebo (the groups receiving escitalopram were part of separate studies evaluating the effectiveness of escitalopram compared with other types of antidepressants). All of the patients were given an electroencephalogram before starting and after one week.

Subjects who showed a large shift toward producing more delta-theta waves after one week were less likely to enter remission with escitalopram treatment. Conversely, those who shifted toward producing more alpha oscillations after one week with escitalopram treatment were significantly more likely to find relief from their depression. Brain-wave shifts did not predict treatment outcomes in patients given a placebo. The researchers next plan to use brain-wave recordings to evaluate other antidepressant medications, as well as cutting-edge, non-medication treatments such as transcranial magnetic stimulation, a magnetic method used to stimulate small areas of the brain.

“Escitalopram but Not Placebo Modulates Brain Rhythmic Oscillatory Activity in the First Week of Treatment of Major Depressive Disorder,” Journal of Psychiatric Research, October 7, 2016
CARE for the HIV Community

The UCLA Center for Clinical AIDS Research and Education (CARE) provides state-of-the-art medical care and conducts clinical trials for people living with HIV and AIDS. CARE staff go to community centers, support groups and research symposia to present updates and educational sessions on current treatment, research and prevention. In addition to being a multidisciplinary outpatient clinic, CARE conducts clinical investigations and clinical trials in all areas of HIV therapeutic research and co-infections and provides HIV education and training. CARE’s clinical trials are open to anyone who meets the enrollment criteria. Study visits are free, and upon completion of the study, CARE tries to link participants to ongoing treatment and care.

For more information, go to: uclahealth.org/care-center

Top Right: Dr. Jennifer Chang offers support to a patient. Bottom Left: Dr. Ardis Moe (left) reviews a chart with Dr. Chang. Bottom Right: (From left) Drs. Margrit Carlson, Ronald Mitsuyasu, Moe and Alen Voskanian.

Photos: Courtesy of Robert Hernandez/UCLA Health Marketing
Ranked #1 in Los Angeles and #1 in California
Over 160 neighborhood clinics

Making your health a priority is easier than ever. With over 160 primary and specialty care clinics, UCLA doctors are where you need us, when you need us.

Ranked No. 5 in the nation and consistently ranked Best in the West by *U.S. News & World Report*, UCLA Health offers world-changing medical care right here at home, tailored to fit you and your active life. Because whatever the specialty, we specialize in keeping you doing what you love.
Kelsey C. Martin, MD, PhD, the new dean of the David Geffen School of Medicine at UCLA, didn’t set out to become a physician. Driven by her interest in human behavior, she studied English and American language and literature as an undergraduate at Harvard. It wasn’t until she was serving as a Peace Corps volunteer in Central Africa that her passion for medicine was ignited. There, she organized an outreach program and wrote grants to fund measles vaccinations, which led to a dramatic reduction in the disease in the village where she was working. It was a profound turning point, one that led her to medical school, in a joint MD/PhD program at Yale, and postdoctoral work in neuroscience at Columbia. She came to UCLA in 1999 as assistant professor in psychiatry and biological chemistry and became chair of the Department of Biological Chemistry. Her research focuses on how the brain stores memories.

After a number of senior administrative roles, Dr. Martin was named interim dean in 2015 and assumed the role of dean in July 2016. “I view this role almost as a service,” she says. “UCLA is my community. The faculty are my colleagues. The students are my colleagues and trainees. I really care about this school, and I want to do what I can to make sure that it continues to thrive.”

Dr. Martin, who recently was elected to the National Academy of Medicine, is the first woman dean of UCLA’s medical school, and she is among only a handful of women to lead a medical school in the United States. Of the 120 campuses that responded to a recent survey by the Association of American Medical Colleges, just 19 (three of them in the University of California — UCLA, UC Riverside and UC Davis) had women deans. Dr. Martin spoke with U Magazine editor David Greenwald.

As we begin our discussion about the future, let’s start with a look at the past. In 2016, we lost Dr. Sherman M. Mellinkoff, who was the second dean of the school of medicine. What have you learned from those deans who have come before you, and how has it informed your vision for the future?

Dr. Kelsey C. Martin: I never had the pleasure of meeting Dean Mellinkoff, but I was incredibly lucky to have been able to read a 1,000-page transcript of an oral history that he gave in the early 2000s. I feel that I learned a lot about what it meant to be a dean. He was very honest about the things that were frustrating to him, the things that were fun, the things that he cared about. When you start in
As a faculty member, I’m a basic scientist, and basic science is about problem solving. ... That’s a great model for the role I’m now in.

What have been pivotal moments in your life and your career that have prepared you for this role?

Dr. Martin: Different parts of my life have prepared me in different ways. As a Peace Corps volunteer, for example, I had to go into a village where there was no infrastructure, no institutions, and figure out on my own how to do the job I came to do, to set up a public-health program. I had a motorcycle to get around, but there were no repair shops, so I had to learn how to do motorcycle repair. I think that experience of being 21 years old and figuring out how to solve problems, that helped prepare me for this new role. As a faculty member, I’m a basic scientist, and basic science is about problem solving. It’s about gaining as much information as one can about any question and then synthesizing that information in a way that allows one to understand a path forward. That’s a great model for the role I’m now in, dealing with a large, complex organization of people. In addition, I was involved in running the MD/PhD program for eight years, and I learned a
lot from that about how to work with students who have very different needs and desires and goals and also how to work with the faculty. As a chair, I learned more about how UCLA works as an academic organization.

You have mentioned your background in basic science, and that is an important priority for you now as dean.

Dr. Martin: I am inspired that we are at a place that puts a priority on basic science as well as clinical care. I deeply believe that they inform each other. In order to develop transformative new clinical care, we need to invest in basic discovery science. It’s important for us to have the whole spectrum of research activities — from the purely investigational, which provide the early seeds of discovery that are essential to future advances, to the translational. And it is important to have our basic scientists communicate with clinicians, because then they become aware of all of the biological problems that might underlie disease, and they might become inspired to identify a cure or a solution.

In what other areas do we need to put our focus?

Dr. Martin: It is important that we focus a lot of our energy on social medicine — the interplay between economic conditions and health and healthcare — and the social aspects of clinical medicine.

Each new dean comes in with a vision for the school. What is yours?

Dr. Martin: I want for us to focus on the highest quality scholarship in every arena that we work in. There are a few areas that I feel are critically important for us, and those are in what’s called precision health. How do we, in this modern world where we have tools and technologies that allow us to gain so much information about individuals and about populations, leverage that to tailor healthcare to individual patients? How do we make sense of all that information so that we can really develop a new kind of medicine? It brings together a lot of people who are here, and it’s a burgeoning field that is attracting a lot of young scholars. We’ve launched an interdisciplinary Institute for Precision Health, headed by Dr. Daniel Geschwind, with the goal of bringing together many different parts of this campus and many different departments in the medical school. That’s a unifying principle that isn’t just UCLA; it also connects us to the other UC campuses because we share electronic medical records, and precision health is largely based on data from large populations, which we can achieve when the social determinants of health. Our students are very focused on getting through school, but they also come in with incredible passion for serving the community. We must make sure that we give them those opportunities and that we maintain that humanitarian mission that they have. Our raison d’etre will, of course, always be to provide outstanding care to our patients, and so the training and support of outstanding physicians always will be a major priority for the medical school.
we come together as a system. I also believe we can build strength by partnering with other schools on this campus, including with our other health schools — public health, nursing, dentistry. It is one of my goals to increase our inter-professional training. We all have the same goal, to improve health, so it would be wonderful to join forces so that we can accomplish the most that’s possible, for our students and for the people we serve.

The David Geffen School of Medicine at UCLA is among the best medical schools in the country. Where do you see opportunities for us to reach greater levels of achievement?

Dr. Martin: One thing to do is continue to recruit the best people possible — both faculty and students. To do that, we need to get better at telling our story, about how we talk about our science, about how we advance our faculty and the recognitions that they receive. I would like to create an environment here in which there is a real concentrated sense of excellence. For the medical school, that means focusing more on our research mission. I think we need to nurture the basic-research part of our mission more.

Dr. John C. Mazziotta, vice chancellor for UCLA Health Sciences and CEO of UCLA Health, has identified six research themes around which to organize our efforts: cancer; cardiovascular medicine; metabolism; immunity, inflammation, infection and transplantation; neuroscience; and regenerative medicine. Talk some about the theme you know best, neuroscience.

Dr. Martin: There will be a floor in our new South Tower of the Center for the Health Sciences that will be exclusively for neuroscience — psychiatry, neurology, neurosurgery, neurobiology — that will enable all the outstanding elements to be clustered together as a strong, unified group that will inspire each other by their thinking and their research. The goal is to break down the boundaries and allow knowledge to flow and encourage more cross-fertilization. The results of this kind of interlocking research will, I believe, be extraordinary. The brain is an organ, and I think that until we start looking at it as an organ system in a more integrated, unified way, we’re not going to make the kinds of advances that are necessary to move clinical neuroscience forward in the future.

You begin your deanship as the school of medicine opens a new, state-of-the-art student-education facility, Geffen Hall. How do you envision the impact that Geffen Hall will have on the school’s educational mission?

Dr. Martin: The opening of Geffen Hall is very exciting. It really will provide a heart, a center, for our students. Before this new building, our training program was distributed across a number of locations. Now, Geffen Hall will be an academic home for our students, a home that is focused on medical education. It is a very communal, open space, with lots of areas for sitting and working and eating and interacting among students and faculty. The classrooms and lecture halls are designed as active-learning spaces, with stations for students to work together in small groups and lots of new technology for simulation and virtual-reality-type learning. It really is designed and set up for this new generation of students. It also is situated right at the southern portal of the university, and I think that’s a wonderful opening to the campus.

“I want for us to focus on the highest quality scholarship in every arena that we work in.”

“I ... believe we can build strength by partnering with other schools on this campus, including with our other health schools. ... We all have the same goal, to improve health, so it would be wonderful to join forces so that we can accomplish the most that’s possible, for our students and for the people we serve.”
Gut
Just past midnight on September 26, 1983, Lt. Colonel Stanislav Petrov, a member of the Soviet Air Defense Forces serving as the command-center duty officer for a nuclear early-warning system, faced a decision with unimaginable consequences. Cold War tensions were running hot. Barely more than three weeks earlier, the Soviet Union had shot down Korean Air Lines Flight 007 as it was en route from Anchorage, Alaska, to Seoul, South Korea, killing all 269 passengers and crew aboard the Boeing 747. They claimed that the plane was on a spy mission and represented a deliberate provocation by the United States. And now, in the bunker outside of Moscow where Petrov was stationed, alarm bells blared as Soviet satellites detected five U.S. ballistic missiles heading toward the USSR. Was this a real nuclear attack warranting retaliation? Or was it a false alarm? Millions of lives potentially hung in the balance, as Petrov gazed at a screen that ominously flashed “launch” “launch” “launch.” He had only minutes to decide.

Thirty years later, long after the Cold War had ended and the incident was declassified, Petrov reflected on his fateful decision to ignore the signal coming from the satellite detection system — which, of course, had turned out to be erroneous. The launch-detection system was new and prone to error, Petrov recalled. And if the U.S. were launching an attack, why would it send only five missiles? While he couldn’t know for sure, Petrov said, he ultimately made the decision based on “a funny feeling in my gut.”

In his book The Mind-Gut Connection: How the Hidden Conversation Within Our Bodies Impacts Our Mood, Our Choices, and Our Overall Health (Harper Collins, 2016), Emeran A. Mayer, MD, retells Petrov’s story, and he notes how many historic and present-day decision-makers have cited unspecified feelings in their gut as tipping the balance on a difficult call. To many of us, these “gut feelings” leading to “gut decisions” represent instincts with no basis in reasoned thought. But Dr. Mayer, professor of medicine, physiology and psychiatry and biobehavioral sciences and director of the UCLA Oppenheimer Center for Neurobiology of Stress and Resilience, has other ideas. Acting on his own inclinations developed as a medical student, he has spent the last 40 years building a scientific case for the inextricable link between the brain and the gut, often calling into question the conventional medical wisdom.
“THE GUT,” DR. MAYER SAYS, “CONVERSES WITH THE BRAIN LIKE NO OTHER ORGAN.

When people talk about going with their gut feelings on an important decision, what they’re referring to is an intuitive knowledge based on the close relationship between our emotions and the sensations and feelings in the gastrointestinal (GI) tract.”

These gut sensations go in both directions. “When you eat too much or have certain fatty foods, the changes in your gut can affect your mental state,” Dr. Mayer notes. “And when you feel ‘butterflies’ or
a rumbling in your stomach when you’re nervous, or knots in your stomach when you’re angry, your mental state is affecting your gut.”

Dr. Mayer and the growing number of colleagues at UCLA and around the world who are interested in the mind-gut connection have been buoyed by the emerging evidence coming from studies of the gut microbiome — the 100-trillion-or-so bacteria and other microbes that make their home in our intestines. Research (mostly in the laboratory, but some in humans) suggests that emotions can affect the gut microbiota, and that, conversely, certain gut microbes can be mind-altering.

Yes, the gut has its essential roles to play in digestion and metabolism. But as Dr. Mayer suggested in an interview with Scientific American in 2010: “The system is way too complicated to have evolved only to make sure things move out of your colon.”

Dr. Mayer is convinced that the brain-gut axis isn’t a linear system, as it is often still viewed, but a circular-feedback loop operating through multiple communication channels. One of the most common channels is via activation of the vagus nerve, which extends from the gut lining to the brain stem. But interactions also can occur between the brain and the immune system (the gut hosts the majority of the body’s immune cells) and between the brain and the endocrine system. When the communication channels go awry for one of a variety of reasons — including poor diet, stress or illness — the result can be physical-health problems such as digestive disorders and obesity or mental-health issues such as anxiety or depression. It’s no coincidence, Dr. Mayer notes, that most patients with anxiety or depression also have abnormal gastrointestinal function.

**DR. MAYER’S INFLUENCE IN SHEDDING LIGHT ON THE MIND-GUT CONNECTION**

extends well beyond his own work; he has consulted with researchers looking at the relationship from a variety of vantage points. “Emeran has a unique ability to communicate across different levels of analysis — from the cellular to the physiological to the psychological to the behavioral,” says Nancy Zucker, PhD, director of the Center for Eating Disorders at Duke University. “That enables researchers to better see the clinical and translational implications of our studies.”

Dr. Zucker has sought Dr. Mayer’s counsel on studies of the impact of gut-brain interactions on people with eating disorders and has collaborated with his group in studies of patients with anorexia nervosa. She is pursuing the hypothesis that a hypersensitivity to gut sensations fuels the disorder. “The widely accepted narrative is that these are individuals with a biological vulnerability, and
the environment brings it out,” Dr. Zucker says. “We believe that this vulnerability starts below the neck, and that it is neurological.”

Well before the current “decade of the microbiome,” Michael D. Gershon, MD, broke new ground with his book The Second Brain (Harper, 1998), referring to the collection of approximately 100-million neurons in the gut that constitute the enteric nervous system and act both independently and interdependently with the brain in our head. While it’s no help in matters of philosophy, poetry and other forms of deep thought, Dr. Gershon noted, this second brain and how it interacts with the first one is a key factor in our physical and mental well-being.

The gut remains an underappreciated organ even by many scientists and physicians — perhaps because it isn’t pleasant to look at or think about, suggests Dr. Gershon, who continues to serve as chairman of the Department of Anatomy and Cell Biology at Columbia University. “What Emeran Mayer and others are finding is that there is a whole world of microorganisms that live in the gut,” he says, “and that they are not just evil bacteria but are companions in life.”

WHEN DR. MAYER WAS AN MD/PHD STUDENT IN THE 1970S in Germany, he began to wonder if there was more to the brain-gut connection than was commonly believed. While participating in hospital rounds, he saw patients for whom extensive diagnostic testing had failed to reveal a cause of their chronic pain. Conditions characterized by chronic diarrhea, constipation, nausea and vomiting were common then and now, but rarely was the brain suspected as a factor under a prevailing view that the body consisted of independently operating parts. “I had always been very interested in psychology,” Dr. Mayer says. “Seeing these patients further enhanced my interest in the possibility of a mind/body connection.”

Finding a sponsor for such ideas wasn’t easy. The resistance was such that Dr. Mayer initially had a hard time finding a laboratory and mentor for his dissertation, until finally he was taken in by a cardiovascular physiologist interested in the impact of mental stress on blood flow to the heart. Convinced by that experience that his theories could be studied scientifically, Dr. Mayer switched to the GI tract — and to the most obvious chronic disorder for his research, irritable bowel syndrome (IBS). An estimated one-in-seven people are believed to have IBS, which causes symptoms that can include abdominal pain, bloating, gas, constipation and diarrhea. Today, there is an evolving consensus that a brain-gut disorder is at play, but that was far from the mainstream opinion when Dr. Mayer was starting his career.

Over the next several decades, Dr. Mayer’s research group became a leader in the use of brain imaging in human volunteer subjects to delineate the interactions between the mind and the gut in IBS and other brain-gut disorders (commonly referred to as functional gastrointestinal disorders), never losing sight of the big picture. “There are now more than 30 classified syndromes, and although the symptoms are different depending on what part of the gastrointestinal tract is affected by the dysregulation, the underlying mechanism is probably the same in all of them,” Dr. Mayer says. “Emeran’s group was the first to use imaging to show that people with IBS are hyper-vigilant to the signaling coming from the gut, which makes them more susceptible to pain,” says Yvette Taché, PhD, professor of medicine, co-director of the UCLA Oppenheimer Center for Neurobiology of Stress and Resilience and associate director of the CURE: Digestive Diseases Research Center at UCLA. “It was the first recognition that there was a brain component to this disease state.”

Dr. Taché also has been a pioneer in unraveling brain-gut interactions in gastrointestinal disorders — in her case, through laboratory studies beginning in the 1980s that contributed to a new understanding of how stress can lead to gut dysfunction. Dr. Taché’s group was the first to establish the importance of corticotropin-releasing factor in stress-related gut-function alterations. That finding was followed by the discovery of other peptides involved in transmitting information between the gut and the brain in a way that affects neurobehavioral and digestive functions.

“There wasn’t even a descriptor for brain-gut interactions at the American Gastroenterology Association annual meeting when we were contributing those initial findings,” Dr. Taché notes. “Now, it’s widely recognized, and as the new kid on the block, the gut microbiome is taking this field of study to a new level.”
DR. MAYER SPLITS HIS TIME BETWEEN RESEARCH AND A CLINICAL PRACTICE

in which he has seen thousands of patients with various brain-gut disorders. He notes that emotions can have a profound effect on how the GI tract handles incoming food. “The setting of the table in your gut is different if you’re angry vs. if you’re happy vs. if you’re anxious,” he says.

For people whose brain-gut axis is chronically off-kilter, the problem extends both top-down and bottom-up. On the one hand, reactions to stress and emotions are supercharged. At the same time, these individuals are typically more sensitive to gut-generated signals, whether from food sensations or from feelings in their stomach and intestines. Dr. Mayer and his colleagues have found that the programming for this dysfunction occurs early in life. “We feel pretty strong, based on our clinical and research experience, that people who have a genetic predisposition, have been given antibiotics or have experienced adverse life events during their first few years, when the microbiome is being established and the brain is developing, are more vulnerable to the development of IBS symptoms under stress or following a GI infection later in life,” Dr. Mayer says.

Even today, Dr. Mayer encounters resistance among other medical professionals to the notion that the mind and the gut are so interconnected. He believes this is driven, in part, by the way the healthcare system is structured. “I have patients referred to me who have undergone extensive repeated diagnostic evaluations with every possible technology, when what you really need to do is spend an hour talking with the patient to understand that it’s most likely a brain-gut disorder, and we’re better off trying integrative therapeutic interventions rather than wasting time and money on additional invasive procedures,” he says.

Over the years, plenty of patients complaining of chronic pain that defies diagnosis have heard some variation of “it’s in your head.” As it turns out, the location wasn’t off, even if there was a fundamental misunderstanding of the underpinnings. “A big portion of the pathophysiology is in the brain — but the proper focus should be on the mechanisms, not the psychology,” Dr. Mayer says. “When you explain it to patients that way, they get it. It’s not the same as hearing a frustrated gastroenterologist tell them, ‘I’ve done all the tests and I think it’s in your head.’”
Accordingly, mental-health professionals have an important — and underutilized — role to play in helping these patients. “We know from the imaging studies that there is a failure of the brain’s cortico-limbical control mechanisms to restrain the stress-response and emotional-arousal systems, and cognitive behavioral therapy can retrain the prefrontal cortex to strengthen these inhibitory influences,” Dr. Mayer says. “It’s certainly not a miracle cure, but it has been shown in well-controlled studies to be superior to any medication that’s currently available.” Variants such as mindfulness-based stress reduction also have proven effective, says Dr. Mayer, with some imaging studies showing structural and functional changes in the brain as patients symptomatically improve.

EVEN AS HE WAS FOCUSED ON BRAIN-GUT DISORDERS SUCH AS IBS, Dr. Mayer always had an eye on the broader implications of brain-gut communications. The new frontier of microbiome research has fundamentally reset the brain-gut-research equation and shifted his attention to bigger-picture questions. With the aid of advanced mathematical modeling, systems biology and the most powerful tools of molecular biology, Dr. Mayer and investigators at the Oppenheimer Center are just beginning to understand the interactions between the body’s two main regulatory organs — the gut microbiome and the central nervous system — and the implications for physical and mental health.

The study of gut microbiota has introduced a new dimension to scientists’ understanding of the mind-gut link. “You could almost say the microbes sit at the interface between the brain and the gut, and anything that goes on in our brain will influence their behavior,” Dr. Mayer says. “On the other hand, the microbes also respond to what we eat. So now we have to think about an integration of food-related metabolites and emotional- and stress-related behavior changes in microbes, resulting in a mix of metabolites and signaling molecules that in turn influence the nervous system.” Now, for example, in addition to studying the brains of people with brain-gut disorders who undergo cognitive behavioral therapy, Dr. Mayer and his group are looking at whether or not the same individuals show a corresponding change in their gut microbiome.

“We have been cohabiting with these bacteria for hundreds of thousands of years, and we have developed a relationship we haven’t even started to understand,” observes Claudia Sanmiguel, MD (FEL ’14), program director of the Ingestive Behavior and Obesity Program in the UCLA Vatche and Tamar Manoukian Division of Digestive Diseases. In that role, she studies the relation of brain-gut interactions in the development of obesity. Inspired by Dr. Mayer’s imaging studies showing brain differences in GI disorders, Dr. Sanmiguel is conducting studies of patients both before and after weight-loss surgery in an effort to better understand the impact of changes in the gut microbiome on eating behaviors and the ability to lose weight.

“We are seeing that the connections between changes in gut-microbiome metabolites and changes in the brain in obese people are quite significant,” she says. “Our hope is that learning more about the type of gut microbiota and the related metabolites that are conducive to weight loss could lead to better nonsurgical treatments for obesity than the field has been able to develop up to this point.”

While little has come out of gut-microbiome research in the way of therapies thus far, much intrigue surrounds the growing number of animal studies suggesting that manipulating the composition of bacteria in the gut could affect brain health and disease. “In animal models, we’re seeing that changing the microbiome can produce substantial effects on their behavior, as well as differences in the structure and activity of brain cells,” says Elaine Hsiao, PhD, assistant
professor of medicine and integrative biology and physiology. “That is inspiring a great deal of effort to better understand what it is that bacteria or other microbes are doing to affect the brain and how they communicate with each other.”

While at Caltech in 2013, Dr. Hsiao and her colleagues contributed to the intrigue with research showing that autism-like behavior could be produced in the offspring of mice they treated with a viral mimic during pregnancy. These offspring, which were found to have altered gut bacteria, showed reduced autism-like behaviors when treated with a health-promoting bacterium. Dr. Hsiao’s UCLA lab continues to follow up on those findings with studies of the impact of microbiome changes on behaviors related to autism and other neurological disorders, including depression and epilepsy. “The promise in all of this research is that we are learning that microbes are part of normal human biology,” Dr. Hsiao says. “Although we have a long way to go, the possibility of developing microbe-based therapeutics for mental and physiological disorders is exciting.”

The same year that Dr. Hsiao and colleagues were attracting attention in the scientific community with their autism findings, Dr. Mayer and Kirsten Tillisch, MD ’97 (RES ’99, FEL ’04), associate professor of medicine, made their own headlines with the first evidence that beneficial bacteria ingested in food could affect human brain function. In an early proof-of-concept study of healthy women, they found that those who regularly consumed probiotics through yogurt showed changes in the brain’s responsiveness to an emotional attention task. Dr. Mayer remains skeptical that this will any time soon lead to certain diets being prescribed as primary brain therapy, but he believes a better understanding of the impact of the interactions between gut bacteria and the brain could lead to dietary and other interventions early in life — perhaps even during development in the womb — when the gut microbiome is under construction.

WITH THE CAVEAT THAT MUCH MORE REMAINS TO BE LEARNED, Dr. Mayer does offer several practical recommendations in his book. These include getting in touch with one’s gut feelings, engaging in mindfulness-based anxiety-reduction strategies and adopting a largely plant-based, whole-foods diet. He also advises steps for managing pre- and postnatal stress, along with early-childhood nutritional interventions to head off mind-gut-axis disorders and build/preserve microbiome diversity in children.

“Because the GI tract is so prominent, we know that the gut microbiome is a big part of encoding these experiences,” Dr. Mayer says. “It may be that the brain acts like a supercomputer, with access to millions, or billions, of gut reactions that we’ve had from the day we were born, and draws from those experiences to tell us within milliseconds what decision is most likely to suit us.”

This theory of instinctive decision-making will be difficult to prove, Dr. Mayer acknowledges. But his gut tells him it’s the most likely candidate.

Dan Gordon is a regular contributor to U Magazine.
THE FIRST R

BY DAVID GEFFNER • PHOTOGRAPHY BY PETE BOHLER
The Paramedic Program in the David Geffen School of Medicine at UCLA is one of the toughest in the nation, and the instructors training the next generation of lifesavers wouldn’t have it any other way.
There’s a moment in his riveting memoir *Lights & Sirens — The Education of a Paramedic* (Berkley Books, 2015) when Kevin Grange, about to begin clinical rotations in a busy emergency room, wonders if he has what it takes to complete paramedic school. UCLA instructor Nanci Medina tells him everyone knows that “paramedic school goes from hard to harder to hardest.” A few pages later, Grange is challenged to insert his first IV line on a patient with HIV, perform his first intubation on a malnourished homeless woman, and not only ventilate a 7-month-old baby with a Do-Not-Resuscitate (DNR) order, but also assess why an infant would have a DNR in place. When the medic who brings the baby in says “history of brittle-bone disease,” Grange writes, referencing the hundreds of classroom hours he received at UCLA, “the DNR made sense. [The baby] had ... a congenital bone disorder ... his shortness of breath was likely caused by underdeveloped lungs, and ... chest compressions would shatter the precious boy to pieces.”

Few professions demand such diverse skills — in life-and-death scenarios — as those required of a paramedic, who often is a patient’s first entry point into a vast, intimidating healthcare system. And since 1970, when Daniel Freeman Memorial Hospital, in Inglewood, California, implemented the first nationally accredited training program for paramedics, UCLA has been at the forefront of educating and training in prehospital care.

In fact, UCLA’s EMS (Emergency Medical Services) providers began getting emergency medical training on campus in the late 1970s. A decade later, the UCLA Center for Prehospital Care (CPC), which now is part of the David Geffen School of Medicine at UCLA, was established. Developed at little or no cost to the university, the CPC became the broad-leaved tree from which UCLA’s Paramedic Program (which is completely self-funded) would branch out.

“In 1999, Daniel Freeman Hospital’s program was closing, due to budgetary issues,” explains Heather Davis, director of UCLA’s Paramedic Program since 2008 and former education-program director for the L.A. County Fire Department. “UCLA agreed to supply the curriculum and educators, and [Freeman] would provide the building. [In 2015] we moved into a new facility near LAX.”

Davis was the program’s first clinical coordinator and an instructor, working under the leadership of Baxter Larmon, PhD, one of the program’s founders. (Bill Dunne, the current director of emergency preparedness, safety and security for UCLA Health, was the program’s first director.) Davis, who was National EMS Educator of the Year in 2006 and California EMS Authority Educator of the Year in 2010, says many people don’t understand the difference between an EMT (emergency medical technician) and a paramedic. “Most EMTs receive less than 200 hours of training,” she explains, “and none inside a hospital. They’re considered basic-life-support providers who can do things like CPR, AED, oxygen administration, hemorrhage control and the care of patients with medication if it’s already present.”

In contrast, UCLA paramedics train for at least 1,200 hours, including more than 200 hours inside a hospital, where, Davis notes, “Students do high-risk procedures such as intubation and have supervised bedside encounters in the ER, OR, pediatrics, labor and delivery, cadaver lab and preschool. California requires a minimum of 480 hours in the field,” she continues, “so UCLA paramedic students will
When we look at the performance of UCLA students on the cognitive exam, it’s obvious how robust their program is.”

“UCLA’s Paramedic Program is Not for the Faint of Heart.” (All L.A. City firefighters who become medics go through it.)

Students are challenged by daily quizzes in physiology, pathophysiology and pharmacology, as well as eight major block exams, where expulsion is a real possibility. Two failed exams, failure on a retaken exam, failure on the final exam or failing any skill three times or seven different skills one time all will result in termination. Grange writes that it’s like “college finals week that lasts for nine months.”

Critical thinking is at the core of the program, which culminates in an internship of 20 shifts, each lasting 24 hours, with preceptors (typically with a fire department squad or rescue ambulance) who grade students on everything from determining the mental status of a gunshot victim to the cleanliness of the department’s ambulance after a day of lifesaving.

Steven Rottman, MD, a UCLA emergency-medicine physician and a CPC co-founder, says the academic foundation is what sets UCLA’s program apart. “While it may have been easier to train people in a skill set with algorithms to follow when evaluating a patient, our focus has been exclusively on education,” he says. “With that comes the science and literature to support it to empower our paramedics with a broader knowledge base and the ability to critically think in any situation.”

Severo Rodriguez, PhD, executive director and CEO for the National Registry of EMTs, agrees with UCLA’s approach. The 12,000 paramedics who gain national certification through his organization each year must take a two-part test: computer-based cognitive tasks and hands-on psychomotor tasks.

“When we look at the performance of UCLA students on the cognitive exam, it’s obvious how robust their program is,” Dr. Rodriguez states. “But what really stands out is the psychomotor portion and how well UCLA students understand when and why a skill is done, and how to troubleshoot the many different
responses to an intervention. Bottom line: UCLA paramedic students are incredibly well-prepared."

Ask any graduate about the beating heart of that preparation, and they’ll point to longtime faculty leader Brian Wheeler, who mixes humor, passion and personal experience to make each moment relevant for students from diverse backgrounds. L.A. Fire Department medic Senay Teklu, a program graduate, recalls a lecture given by Wheeler that focused on specific environmental emergencies, like drowning or hypothermia. "He deferred to students who had lifeguard experience to talk about what they’ve seen and experienced," Teklu recalls. "I’m from a hot, humid state [where such emergencies are common], and he referenced my own background. Because Mr. Wheeler made the subject matter so personal, it made me want to be the best medic that I could be."

Grange cites specific calls (in the five years since he’s left paramedic school) that were successful because of Wheeler’s lectures. "I’ve caught a heart attack in a diabetic woman with vague, nonspecific symptoms and an epidural brain bleed in a patient who was initially fully alert and oriented and prevented more than a few very sick kids from falling into decompensated shock," he says. "On some of these emergencies, I’ve caught subtle — yet critical — symptoms that weren’t picked up by other paramedics on-scene who had not been trained by Mr. Wheeler."

Key Wheeler phrases that UCLA graduates say still guide them today include: "If you don’t have an airway, you have nothing;" “If you’re not two steps ahead with a pediatric [patient], you’re eight steps behind;” and, perhaps the most meaningful of all, encouraging human compassion for every patient, "The paramedic badge means we don’t judge."

SADLY, THAT LAST AXIOM HAS BEEN PUT TO THE TEST IN RECENT YEARS as demands on prehospital-care workers have grown more complex. From Sandy Hook to Orlando, Dallas and San Bernardino, paramedics have increasingly responded to “mass-casualty events,” sometimes even having to save the life of a perpetrator. Dr. Morocco recalls a mass shooting, two decades ago at a Jewish seniors facility in the North San Fernando Valley, where police kept medics from entering the area. “Our former chair [of UCLA Emergency Medicine] Marshall Morgan said it was unconscionable that the medics weren’t allowed to assist the shooter, who was wounded by police and who ultimately bled to death,” Dr. Morocco recounts. “[Morgan] got a lot of pushback for his comments at that time; but not from anyone in emergency medicine. We all understand the job of the medic is totally binary. They want to extract the patient to get the best care — on their rig or in our hospital — as soon as possible. They don’t care if you’re a good or a bad guy.”

Joshua Binder, a former clinical coordinator for UCLA’s Paramedic Program and now an L.A. County fire captain based in Hawthorne, explains that the approach to such mass-casualty events was formalized in the 1980s. “Never become part of the incident,” Binder says. “As we saw with Columbine in the 1990s, first-responder medics were kept behind a perimeter in … the ‘cold zone.’ Patients who might have been saved bled to death.”

Now, Binder says, “Once the police have cleared areas, medics are brought into the ‘warm zone’ for immediate lifesaving measures and removal to triage, even though the shooters may not have been neutralized. The job’s always been inherently dangerous … but this is another level of risk. Paramedic educators don’t shield students from what could await them.”

Dr. Larmon says that UCLA has been working with the State of California to pilot the expansion of the paramedics’ scope of practice and their locations to help fill gaps in the healthcare system. “This initiative is known as Community Paramedic and/or Mobile Integrated Healthcare Delivery,” Dr. Larmon explains. “UCLA delivered the education program to support all 13 pilot programs operating throughout the state and is testing two pilots in our community. The plan is to decrease the burden on 9-1-1 providers and impacted emergency departments, while improving the experience of patients by decreasing wait times in EDs and improving the total cost of healthcare.”

Dr. Hendey says UCLA paramedics are a true “extension” of the emergency department out into the community. “One of the best examples,” he says, “is a patient having a cardiac arrest. If that person is 10 minutes from our hospital, and they get no care in the field, their chance of survival is very slim. But if they’re lucky enough to have a trained paramedic arrive on the scene within a few minutes and perform CPR and defibrillation, that life will be
saved. The same is true with anaphylactic reactions or severe asthma attacks, particularly with very young children. We see patients already improving as they arrive in the ED because of the treatment that medics gave in the field.”

**WHILE EMERGENCY PHYSICIANS LIKE DRS. HENDEY AND MOROCCO WILL GO INTO A NURSE’S BASE STATION** in the hospital to communicate directly with medics on their trucks, that wasn’t always the case. Dr. Larmon remembers a time when paramedics could only ask doctors or nurses for treatment protocols at one of the 37 different base stations in L.A. County that received emergency calls, resulting in 37 different protocols. “In 1988, L.A. County went to a single protocol [the focus of Dr. Larmon’s master’s degree],” he recalls. “From there, Standing Field Treatment Protocols were developed that relied on evidence-based medicine, and paramedics could begin to care for patients without making base-station contact.”

Program director Davis says UCLA paramedic students have experiences that are unique to being trained at a top teaching hospital — such as attending Grand Rounds or observing a full human-anatomy dissection. "Within the first four weeks of their training, our students put their hands into a human chest cavity [to better understand blood dumps from a catastrophic injury or how the vessels get constricted, leading to lack of a radial pulse],” Atilla Uner, MD (RES ’97, FEL ’99), CPC associate medical director, says. “Our program’s not for everybody. But with a completion rate of 90 percent, and a greater-than-90-percent pass rate on the national licensing exam, the added rigor is clearly worth it.”

Dr. Hendey notes that many paramedic-training programs do not have such advantages. “They can’t get inside an operating room, learn hands-on in a Simulation Lab or shadow faculty and residents of the exceptional quality we have here,” Dr. Hendey says. “In many places, paramedics have traditionally been an afterthought. But here, they’re part of our department, with great educators like Baxter Larmon and Steve Rottman who have made a career out of teaching pre-hospital care.”

And, as the profession has evolved, UCLA educators have helped lead their students into sub-specialties, like critical, hazmat, aeromedical, tactical, wilderness and event care. Another area, community paramedicine, “includes paramedics as educators” to train the next generations of paramedics, Dr. Larmon explains. That program was pioneered at UCLA.

Davis, a former snowboarder from Colorado who worked in high-altitude rescue and emergency care, says friends have asked why she gave up her passion for saving lives in the field to come work at UCLA. Her answer is always that L.A. County paramedics take care of 14-million people, “and each class of 42 students that leaves UCLA has the opportunity for an enormous impact on their different communities,” she says with obvious pride. “Sure, I could go back to the truck, but then my numbers would be much more limited. The reach and potential to better how prehospital care is delivered is so much greater teaching at UCLA.”

UCLA-trained L.A. County firefighter Pat Hanrahan is proof of that. He once responded to a 9-1-1 call and found an infant not breathing and the family saying the baby was choking. Finding a clear airway, Hanrahan asked to see what the infant had choked on. He was shown a medication patch for fentanyl, a powerful narcotic that was not routinely used in L.A. County at the time, and the effect of which might have been unfamiliar to a non-UCLA-trained paramedic. “Pat realized the medication had been absorbed by the baby’s mucous membranes and that he was in respiratory arrest, not choking,” Davis recounts. “Pat called for Narcan [the antidote to fentanyl], and by the time they got to the hospital, the baby was breathing and fine. The family thanked the physician at the hospital for saving their baby, and he said: “I didn’t save your baby. The paramedics did!”

David Geffner is a magazine editor and freelance writer in Los Angeles. This article has been adapted and printed with permission from UCLA Magazine, where it was published in the October 2016 issue.
As a puffy cloud of vapor streams from its smokestack and its whistle sounds, the gleaming, miniaturized locomotive chugging along the track recalls an era that is nearly a hundred years in the past. A scaled-down version of a historic train that once traveled along the Rhine River from Holland to Switzerland, it rolls through a tabletop landscape that fills an upstairs room in the home of Joaquin Fuster, MD, PhD. Instead of the strict timetable of its heyday, this downsized facsimile operates on a haphazard schedule that accommodates his need for playful diversion.

Most diverting of all, Dr. Fuster admits, with a mischievous smile, are train-wreck moments. Like when the locomotive and its luxury passenger cars derail while exiting from a papier-mâché-mountain tunnel into a make-believe Tyrolean world. “I’ve seen plenty of crashes, especially in tunnels,” he says as he reaches across an idyllic mock-Alpine scene to right the train. His movements are very deliberate, to avoid knocking over a plastic marching band and dozens of would-be passenger figurines that are posed to board. “This requires steely nerves,” says Dr. Fuster, who knows a thing or two about nerves. He is among the world’s foremost authorities on the brain, memory and the workings of the prefrontal cortex. “One little thing goes haywire, like a bad neuron might, and it throws the whole thing off.”

Dr. Fuster easily identifies links between his scientific passion — he trained in his native Spain and since 1960 has been at UCLA, where he now is emeritus distinguished professor of psychiatry and biobehavioral sciences with a raft of publications that include a half-dozen books and scores of influential academic papers — and his lifelong enthusiasm for trains. Trains figure in his past, and they serve to reflect the science to which he devotes his life. “Trains and the brain both work with conditional codes, the confluences of many factors that all must work fluidly together,” he says.

As he fiddles with switches that can send a model diesel train whizzing past an electric one, he analyzes what is literally at play before him: a transport system that has all its requisite lights, bells and whistles flashing, ringing and warning in sequence. “It’s a system. It works like a brain,” he says. “There has to be order for it to work right.”

Both brains and trains have fascinated him for decades, and he wistfully confides, with the twinkling eyes of a child showing off what might be the greatest Christmas present ever, that, “I was always in love with model trains, since I was a little boy.” His uncle Joseph was an engineer for the national railroad after the Spanish Civil War and helped foster his hobby. “I was already interested in trains. When I was 19 and still in medical school, I would go to see the trains at the station in Barcelona. I will never forget the mist in winter months, the mixture of smoke and fog and those trains coming in very slowly, majestically,” he says.

His father was a psychiatrist (and a medic on the Republican side in the Spanish Civil War), and he operated a small private psychiatric hospital in the large home that the family rented on the outskirts of Barcelona. “My family is steeped in medicine,” Dr. Fuster says. “I have lost count of the number of physicians in our last four generations — somewhere between 15 and 20, several in academia. Included in the list are my grandfathers, my father, my brother and my son. I have often told my psychiatry residents that I started my own residency at an early age and under a superb attending physician. Indeed, my father, who in due time became university chairman (at the University of Barcelona), was widely reputed to be one of the best teachers of psychiatry in Spain.”
Dr. Fuster’s own interest in cognition began after he graduated from medical school and was continuing his training in Innsbruck, Austria. It was there, he says, that the “brain bug bit me hard.” His newfound enthusiasm “piggybacked on my learning of English” as he practiced by reading issues of the Journal of Neurophysiology and came across the papers of such world-renowned neuroscientists as H.W. Magoun. “I was utterly fascinated by the subject,” he says. The connection between his budding interest in brain science and his love of trains was bolstered further by the nightly passage of the fabled Orient Express, which he could hear from his bedroom window.

Trains also hold significance for him because of their connection to geography. “They link countries together, and my wife and I have a love of different countries, cultures and languages.” That love is so deep that they speak a different language with one another each weekday: Italian on Monday, French on Tuesday, Spanish on Wednesday, German on Thursday and English on Friday. On weekends, they converse in Catalan. “That’s when we fight, in our native tongue, of course!” he brightly chimes.

All these activities are taking place in the area of his brain in which he is a leading expert, the prefrontal cortex. “It’s really the vanguard of evolution,” he says of this portion of the brain. “It is really what makes us human. It is what opens us to our future — purpose, intention, creation and freedom. All these things are the prerogative of the human.”

The overturned train now righted and set securely back on the track, Dr. Fuster starts it rolling again on its fantasy journey. “It’s got a built-in program for lights and switches. But this all requires human intervention,” he says, with an all-too-human expression of bemused chagrin, as a moment later, the train derails one more time.

Robin Keats is a freelance writer in Los Angeles.
Shirah Vollmer, MD ‘86 (RES ’90, FEL ’91), is a psychoanalyst and a board-certified child and adult psychiatrist. She has been a faculty member at the David Geffen School of Medicine at UCLA and is a faculty member of the New Center for Psychoanalysis, the Los Angeles Institute and Society for Psychoanalytic Studies and Loyola Marymount University (LMU). She also is an instructor at UCLA Extension, where she teaches continuing-education courses to psychologists, social workers and family therapists. She serves on the mental-health advisory board of the Venice Family Clinic and has a private practice as a child, adolescent and adult psychiatrist and psychoanalyst.

I have spent most of my adult life learning at UCLA. It started when I was a freshman and has continued through 25 years of teaching UCLA family-medicine residents about biobehavioral aspects of primary care. I have come to find that my experience is broad and deep, enabling me to share with my students a perspective that they value tremendously. Many are not familiar with developmental disabilities and the nuances of autism, for example, and they may mistake children with anxiety as having autism. Clarifying the differences is critical to the well-being of the child and his or her family. Without all of my rotations in community settings, the Veterans Health Administration and in private and tertiary-care hospitals, I could not offer the understanding of how populations can differ, not just in economic opportunities, but also in mental-health issues. How do I express gratitude for this training? I teach. I pay it forward.

The Marital and Family Therapy Department at LMU offers students a program that leads to a Master of Arts degree in marital and family therapy with specialized training in clinical art therapy. Students are trained to integrate their visual-art backgrounds with psychotherapeutic skills as they work with a variety of clients, including children, adolescents, adults and families. The training fully prepares students to become practicing marital and family therapists committed to utilizing art processes in their work as psychotherapists. Some of these patients are on medication, or need to be on medication, so the students also need to understand which patients to refer for psychotropic medication and how to communicate with the prescribing physician about the impact of the medication on the art, therapy and mental apparatus of the patient. That is where I enter in the curriculum. It is my job to help them understand the armamentarium of drugs that we use to help people with their mental distress.

“How do psychotropics change the art?” I question my students as I teach them about psychopharmacology. “What about the clock test for dementia?” I ask, wondering if they can decipher how one’s brain deteriorates as evidenced by the deterioration in their clock drawing, a cognitive-screening instrument. It is my privilege to ask these questions of eager student artists, who want to coach artistic output in their patients in order to ameliorate the suffering they see in children, adolescents and adults, many of whom are underprivileged and have little access to mental-health interventions.

The students, endlessly interesting themselves, seek the inner world of their patients through an artistic expression, allowing a springboard to deeper exploration and mental healing. As a psychoanalyst, I would say that these therapists are bypassing the conscious and heading toward unconscious thought processes through artistic expression. They will learn that drugs can change the art, and art can change how the drugs are perceived. I am thrilled to be a part of their education.
Erick Madrigal, MD '08, is board-certified in family medicine. He completed his residency at White Memorial Medical Center in East Los Angeles before returning to his hometown of Porterville, California. He serves as a mentor for the Porterville Unified School District Academy of Health Sciences and the Porterville College Chicanos/Latinos for Community Medicine organization. He also provides job-shadowing and volunteer opportunities for students interested in careers in medicine. Dr. Madrigal is a preceptor for physician-assistant and nurse-practitioner programs across the country, and he also is a preceptor for family-medicine residents. In 2013, he joined forces with two fellow Bruins, Luis Ontiveros, MD '06, and Joel Ramirez, MD '08, to open Living Water Clinic. Dr. Madrigal’s goal and passion are to give back, serve and become a champion for faith-based organizations.

Since our clinic’s inception, our mission has been a Biblical one — “do to others what you would have them do to you.” What initially began as a personal spiritual journey blossomed into an entire community’s voyage. With four sites in the Central Valley, I can honestly say that without our patients’ support and prayers, any success would have been difficult to achieve. Patients comment on “feeling something different” from the minute they walk into our offices, and they have said, “I love coming here, not because I like being sick, but because I feel comforted by the atmosphere.” In spite of the challenges all small-group private practices face, both at the individual level and at the corporate level, it is our greatest passion to uphold our mission unconditionally with every patient, co-worker, friend and family member. Although I welcome the discussion of faith and healing with every encounter, my hope is that compassion and love are at the root of every interaction.

The expression of our Biblical foundation is soft, subtle and gentle, and it can be felt by patients the moment they enter our waiting rooms. Our decor may contain Scripture, the music played throughout the clinics is Christian and books offered in the lobbies focus on health and faith. All of this sends a message to patients that they are welcome to discuss how their faith and spirituality affect their health decisions. We want to incorporate as many resources as possible in their healing. Mind, body and spirit are commonly referenced in the mainstream, but what people often forget is that no one lives in a vacuum — we all have an impact on others and others have an impact on us, even if it is indirect. For this reason, we try to touch on our patients’ close interpersonal relationships or how their social or spiritual community — or lack thereof — affects their health. When we ask them about their support system, they usually tell us it is family and church, and so we try to build on that. Our aim with every patient encounter is to live and breathe our slogan: “Where Love is Healthcare.” But the bottom line is to promote healing in any way we can, even if it’s not through medical interventions.

In the moments when the seriousness of working in a private practice recedes, it is a true blessing and pleasure to be working with my UCLA Bruin family united in a common vision — something I began appreciating while volunteering with Patrick Dowling, MD, MPH, and Michelle Bholat, MD (RES ’95, FEL ’96), MPH, through the UCLA International Medical Graduate program. I also had the pleasure of working with another Bruin classmate, Felipe Sanchez, MD ’09 (RES ’12), who recently served as medical director for the Emergency Department at Sierra View Medical Center in Porterville. Porterville is Bruin strong — even our clinic manager is a UCLA Bruin!
Honoring the Philanthropy of the Manoukians

On November 10, 2016, UCLA Chancellor Gene D. Block welcomed more than 60 family members and friends of Tamar and Vatche Manoukian, along with UCLA faculty and staff, to a celebration of the Manoukians’ generous philanthropy. The evening honored the couple’s landmark gift to the Division of Digestive Diseases in the David Geffen School of Medicine at UCLA that will provide unrestricted funds to accelerate research, innovative clinical care and educational priorities. In recognition of their leadership philanthropy, the division was named the UCLA Vatche and Tamar Manoukian Division of Digestive Diseases, making this the first division naming in the David Geffen School of Medicine at UCLA. Also in honor of the Manoukians, the university named 100 UCLA Medical Plaza the Vatche and Tamar Manoukian Medical Building.

“We have come to give our deepest thanks to two visionaries, Tamar and Vatche, both extraordinary people,” Chancellor Block said. He explained that UCLA’s significant accomplishments require the support of the community, and “this event is the latest example of the unbreakable bonds we have with our friends.”

Chancellor Block then introduced Dr. John C. Mazziotta (RES ‘81, FEL ‘83), vice chancellor of UCLA Health Sciences and CEO of UCLA Health, who added his thanks to the Manoukians for their gift. “It is so important to us, and it has more meaning than just a name on a building,” Dr. Mazziotta said. “It is part of what we want to build here, the future of medicine. It’s a wonderful opportunity for us to take your generosity and turn it into ideas, actions and plans that will help thousands and millions of people, because the research that is done at UCLA is transmitted throughout the world.”

Dr. Eric Esrailian (FEL ’06), co-chief of the Vatche and Tamar Manoukian Division of Digestive Diseases and Lincy Foundation Chair in Clinical Gastroenterology in the David Geffen School of Medicine at UCLA, followed Dr. Mazziotta and thanked Dr. Gary Gitnick, co-chief of the Vatche and Tamar Manoukian Division of Digestive Diseases and The Fran and Ray Stark Foundation Chair in Digestive Diseases; UCLA faculty; UCLA’s leadership team; and the Manoukians. “It’s unbelievable to have a family like this give such an endorsement to a public university. I can’t express how grateful I am to them,” Dr. Esrailian said.

The evening concluded with a special performance of Armenian music by the VEM Quartet and mezzo-soprano Danielle Bayne, all students in the UCLA Herb Alpert School of Music.

For more information, contact Laurel Zeno at:
(310) 825-1980
Top: (From left) Aram Manoukian, Siran Manoukian, Vatche Manoukian, Tamar Manoukian and Karnig Manoukian in front of the newly named building. Middle: (From left) UCLA Chancellor Gene D. Block, Cindy Crawford, Dr. John C. Mazziotta and Dr. Eric Esrailian. Bottom Left: Dr. Ray and Ghada Irani. Bottom Right: (From left) Maurice Marciano, Mareva Marciano and Paul Marciano.

Photos: Todd Cheney/UCLA Photography
UCLA Neurology Celebrates the Silton Family’s Philanthropy and the Inaugural Silton Chair Holder

To be “as useful as possible in helping to solve the problems associated with Parkinson’s disease,” Fred Silton made a pledge to the Department of Neurology in the David Geffen School of Medicine at UCLA to establish the Fred Silton Family Chair in Movement Disorders. During a special ceremony on January 9, 2017, at the UCLA Meyer & Renee Luskin Conference Center, the department celebrated the Silton family’s gift and the appointment of Dr. Jeff M. Bronstein (MD ’88, PhD ’88, RES ’92), professor of neurology and director of the Movement Disorders Program, as the inaugural chair holder. Silton and Dr. Bronstein, along with their families and friends, attended the event.

Silton, who has lived with Parkinson’s for 17 years, shared his faith in Dr. Bronstein, saying, "He is a doctor with a heart and a mission who gives his patients relief now and hope for the future.” The Silton family also expressed their confidence in Dr. Bronstein to “continue to make scientific breakthroughs as a result of this gift.”

The chair will support Dr. Bronstein’s research into Parkinson’s disease, its genetic and environmental causes and the development of more effective treatments for this and other movement disorders. “The vision that Fred had in making this incredible donation allows me the long-term ability to take risks,” said Dr. Bronstein. “This bonds us forever in our efforts to find a solution to Parkinson’s.”

For more information, contact Pamela Thompson at:
(310) 267-1837

Top: (From left) Dr. S. Thomas Carmichael (FEL ’01), chair of the UCLA Department of Neurology; Dr. Jeff. M. Bronstein; and Dr. Kelsey C. Martin, dean of the David Geffen School of Medicine at UCLA. Bottom: Inaugural Silton Family Chair holder Dr. Jeff M. Bronstein (left) and Fred Silton.

Photo: Todd Cheney/UCLA Photography
Continuing its mission of education and community outreach, UCLA’s cardiovascular leadership held three events in fall 2016. Dr. Kelsey C. Martin, dean of the David Geffen School of Medicine at UCLA, along with the cardiovascular leadership team, welcomed 125 community members and faculty to Rhythm of the Heart, a reception and dinner on September 1, 2016, held at the UCLA Meyer & Renee Luskin Conference Center. UCLA rolled out its theme concept of six interdisciplinary research priorities of the David Geffen School of Medicine at UCLA. The mission of the Cardiovascular Theme at UCLA is to pioneer innovation and discovery to prevent, detect and cure cardiovascular disease — the No. 1 killer in the United States. Following dinner, BPM, a rock-blues-jazz band whose members are UCLA cardiologists, led by Dr. James N. Weiss (FEL ’81), chief of the Division of Cardiology and Chizuko and Nobuyuki Kawata Chair in Cardiology, provided heart-pounding music.

The following day, nearly 400 scientists, physicians and students from across the country attended the inaugural UCLA Cardiovascular Symposium at the Luskin Center. The intensive, one-day symposium, organized by UCLA Drs. Reza Ardehali and Luisa Iruela-Arispe, featured preeminent U.S. cardiologist-scientists and introduced the Cardiovascular Theme to attendees. The event included an overview of UCLA cardiovascular medicine and research and presentations covering leading-edge scientific discoveries by nine global leaders in the field. Ninety-five graduate students, postdoctoral fellows, clinical residents, clinical fellows, project scientists and early-career faculty participated in a poster session during the symposium to present their research.

On September 14, UCLA invited the public to learn about the groundbreaking discoveries in cardiovascular research at the introductory UCLA Innovations in Cardiovascular Research Community Update. Held in the newly renovated South Tower research space of the UCLA Center for the Health Sciences (CHS), Dr. Stephen Smale, vice dean of medical research in the David Geffen School of Medicine at UCLA, as well as the Cardiovascular Theme leadership team, led by Dr. Yibin Wang, professor of anesthesiology, physiology and medicine, and Dr. James N. Weiss, welcomed 60 guests. The new Cardiovascular Theme space in the South Tower in CHS will feature eight state-of-the-art research laboratories. UCLA faculty Drs. Ira Hofer; Richard Shemin, Robert and Kelly Day Chair in Cardiothoracic Surgery; Karol Watson (RES ’92, FEL ’97, PHD ’98) and Thomas Vondriska covered various topics, including “Revolutionizing Medicine through Big Data” and “Personalized Medicine and Discovery Science at the Frontier of Cardiovascular Health.”
Attendees at the 2016 Visionary Ball, held at the Beverly Wilshire Hotel on October 27, 2016, helped raise more than $1.2 million to benefit the Department of Neurosurgery in the David Geffen School of Medicine at UCLA. Hosted by Emmy Award-winning television personality Larry Wilmore, the event supports the department’s crucial research initiatives.

“We are excited to celebrate our amazing honorees and raise funds to advance the most sophisticated neurosurgical treatments in the nation,” said Dr. Neil A. Martin, former chair of the UCLA Department of Neurosurgery and W. Eugene Stern Chair in Neurosurgery, who left UCLA at the end of 2016. “Our joint efforts will further our ability to help more patients and their family members with some of the most complicated neurological disorders.”

Edie Baskin Bronson and Susan Dolgen, longtime supporters of the Department of Neurosurgery, served as event co-chairs. Mark Burnett and Roma Downey, honored last year with the Visionary Award, returned to serve as honorary co-chairs. Guests enjoyed dinner, award presentations, patient testimonials and a performance by UCLA graduate and contestant on The Voice India Carney.
The Visionary Award went to Michael V. Lewis, CEO and co-founder of RealD. Lewis’s leading-edge advances in visual technology have been used for robotic medical procedures and to pilot the Mars Rover and pioneer digital 3-D cinema.

Dr. Linda M. Liau (RES ’97, FEL ’98), director of the UCLA Brain Tumor Program, vice chair of research and professor and interim chair of the Department of Neurosurgery, was honored with the Medical Visionary Award. Dr. Liau and her research team have developed the first personalized brain-cancer vaccine in the United States, made by isolating a specific immune cell in the patient and combining it with the patient’s own tumor tissue.

Writer, producer and director Donald P. Bellisario received the Courage Award. Bellisario created/produced a number of television series, including Magnum P.I. and NCIS, and is the recipient of a star on the Hollywood Walk of Fame. The Rodney Respect Award went to Emmy Award-winning comedian Jon Lovitz. His television and film credits include The Wedding Singer, Saturday Night Live and The Simpsons.

For more information, contact Victoria Medford at:
(310) 267-9475
For more information about the Visionary Ball, go to:
visionaryball.org
More than 2,000 guests enjoyed a fun-filled day celebrating the 17th Annual Mattel Party on the Pier on September 25, 2016, at the Santa Monica Pier. Benefiting UCLA Mattel Children’s Hospital, the event is an ongoing partnership with Mattel Inc. and highlights its commitment to improving the lives of children.

Attendees were treated to unlimited rides, and game booths were filled with Mattel toys donated by the company. New event highlights included a Kid’s Fun Lounge with performances by the BeatBuds, complimentary glitter tattoos by Skechers and a cookie-decorating station sponsored by Ralphs. The VIP area, hosted by the Toys “R” Us Foundation, served a lunch donated by Wolfgang Puck Catering and featured music, dance contests and exclusive giveaways. Celebrity guests included Brooke Burke, Tom Arnold, Dodger alumni, actress Ava Kolker and the cast of Girl Meets World, Rico Rodriguez of Modern Family and many others who greeted fans, volunteered at the game booths and posed for photos at the new interactive selfie station.

“Mattel Party on the Pier is an annual, signature fundraising event and a truly special day for the children who experience our care, their families and all who attend,” said Dr. Sherin U. Devaskar, physician-in-chief of UCLA Mattel Children’s Hospital and Mattel Executive Endowed Chair in Pediatrics. “For the past 16 years, the proceeds from Mattel Party on the Pier have generously supported—and 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 our event committee, hosts and sponsors for all their hard work and dedication.”

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

Row 1: (From left) Dr. Devaskar with Party on the Pier committee members Masha Chase, Hillary Milken, Loris Lunsford, Mia Janick, Jeanie Bertman, Melissa Mitchell and Stephanie Sandler (front). Row 2 Left: Johnese Spisso, president of UCLA Health and CEO of the UCLA Hospital System (left), and Richard Dickson, chief brands officer at Mattel Inc. Row 2 Right: Bob Goodwin, executive director, Mattel Children’s Foundation, director, Mattel Corporate Affairs (left) and Hillary Milken, Mattel Party on the Pier event chair. Row 3: (From left) Actresses Riele Downs, Hana Heyes and Reiya Downs played games with guests at the Mini Hoops Booth. Row 4 Left: Party on the Pier attendee with Mattel’s life-size Blaze truck model. Row 4 Right: (From left) Former Major League Baseball players Lee Lacy, Billy Ashley and Dennis Powell. Row 5: Actresses Olivia Rodrigo (left) and Madison Hu played a round at the Top Glow Booth.

Photos: (rows 1, 2, and 4) Vince Bucci; (rows 3 and 5) Rachel Murray/Getty Images for UCLA Mattel Children’s Hospital
On September 27, 2016, Revlon held its annual philanthropic luncheon in support of the Revlon Women’s Health Mission at the Chateau Marmont Hotel in Hollywood. The celebrity-attended event honored Dr. Dennis J. Slamon (FEL ’82) for his outstanding achievements in cancer research. Dr. Slamon serves as director of the Revlon/UCLA Women’s Cancer Research Program and director of Clinical/Translational Research at the UCLA Jonsson Comprehensive Cancer Center. He is professor of medicine, chief of the Division of Hematology-Oncology, executive vice chair for research for UCLA’s Department of Medicine and the Bowyer Professor of Medical Oncology in the David Geffen School of Medicine at UCLA. Revlon Chairman Ronald O. Perelman and Revlon CEO and President Fabian Garcia presented Dr. Slamon with a $1-million contribution for the Revlon/UCLA Women’s Cancer Research Program to advance its groundbreaking efforts toward eradicating cancer.

For more information, contact Margaret Steele at: (310) 794-5244
UCLA Health System Board Meeting Delves into Precision Health

**UCLA Health System** Board members and guests convened at Ronald Reagan UCLA Medical Center on November 9, 2016, for the board’s fifth annual meeting. 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 program on the power of precision health to transform patient care. Following opening remarks by Dr. Mazziotta and Gluck, Dr. Clara Lajonchere, deputy director of the newly founded UCLA Institute for Precision Health, spoke about goals for the interdisciplinary institute and how collaboration between the David Geffen School of Medicine at UCLA and UCLA Health will open new frontiers in how UCLA cares for patients and the community. Advancing the university’s patient-centric precision-health initiative requires a database that integrates enormous amounts of information about such areas as lifestyle, environment, genomics and medical histories. This will enable researchers to identify disease patterns that will lead to more personalized approaches in clinical care.

Dr. Daniel Geschwind (RES ’95, FEL ’97), senior associate dean and associate vice chancellor of precision health, presented his vision for the institute, collaborative agendas at UCLA and the institute’s potential for finding treatments and cures for a wide range of diseases by “providing the right treatment, for the right patient, every time.”

Volunteers from UCLA’s People-Animal Connection greeted guests at the reception following the event, and guests were invited to participate in the precision-health initiative by registering for the database at one of the mobile consent stands.

**For more information, contact Nora Bok at:**
(310) 267-0050
In 2013, longtime UCLA friends Susan and David Wilstein contributed the first gift to benefit the new California Rehabilitation Institute — now open and located on the site of the former Century City Hospital. At the time, David Wilstein, a partner in the company that owns the building, said, "This property will be used to introduce some of the nation’s best medical-rehabilitation programs, right in our backyard." The Wilsteins' commitment to neurologic rehabilitation expanded to include the endowment of two chairs to support teaching, research and clinical activities in rehabilitation medicine. Now, UCLA neuro-rehabilitation faculty members Drs. Bruce Dobkin (RES ’77) and David Alexander have been named the Susan and David Wilstein Chair in Medicine and the Susan and David Wilstein Chair in Rehabilitation Medicine, respectively.

Dr. Dobkin, founder and director of the UCLA Neurological Rehabilitation and Research Program, professor of neurology in the David Geffen School of Medicine at UCLA and co-director of the UCLA Stroke Program, is one of the preeminent specialists in the field of neuro-rehabilitation. He recently collaborated with the UCLA engineering faculty to develop wearable sensors to remotely monitor the quality of arm and walking/cycling activities of patients following stroke. At the California Rehabilitation Institute, he continues his translational work to test pharmacologic interventions that may enhance skills learning during motor and cognitive practice, as well as the application of cellular interventions to augment recovery in highly impaired persons.

"I look forward to using the funding provided by the generosity of the Wilsteins to continue to train outstanding researchers and clinicians and to fund outside-the-box pilot studies in an ongoing effort to improve outcomes for those who are disabled by devastating brain and spinal cord diseases," Dr. Dobkin said.

Dr. Alexander is a professor in the Department of Neurology at the David Geffen School of Medicine at UCLA and served as the medical director for UCLA’s Neurological Rehabilitation and Research Unit from 2008 until 2016, when he transitioned to become the medical director of the California Rehabilitation Institute. In this role, he formulates and implements policies for the treatment of patients, as well as for the hospital’s quality-assurance and risk-management programs. He also is engaged in the development of national performance measures for hospitals and physicians, with the goal of reducing the gap between evidence-based practice and actual practice. Dr. Alexander co-authored one of the first data-based analyses of scientific evidence, "Post-Stroke Clinical Practice Guideline," which ushered in the modern era of evidence-based medicine, and has authored multiple national clinical-practice guidelines on stroke and stroke rehabilitation. "It is an honor to receive the Susan and David Wilstein Chair in Rehabilitation Medicine, which will enhance the vital work we are doing at the institute," he said.

For more information, contact Pamela Thompson at: (310) 267-1837
UCLA Launches UCLA National Clinician Scholars Program

On September 23, 2016, UCLA celebrated four decades of success in training clinicians to improve health and health services for local and national communities through the Robert Wood Johnson (RWJ) Clinical Scholars Program and formally launched the new interprofessional UCLA National Clinician Scholars Program (NCSP) that succeeds it. The NCSP, made possible by support from numerous campus and community partners, including a lead $5-million gift from an anonymous philanthropist, is in its inaugural year of training early-career physicians and nurses through a highly customized, two-year program that places them directly in community settings to mitigate health disparities and address healthcare challenges in Southern California.

Dr. John C. Mazziotta (RES ‘81, FEL ‘83), vice chancellor of UCLA Health Sciences and CEO of UCLA Health, served as emcee for the event, which included a symposium, an awards dinner with entertainment from Tony Galla and an alumni picnic the following day. UCLA Chancellor Gene D. Block presented Dr. Robert H. Brook, professor of medicine and health services at UCLA and founding director of the RWJ Clinical Scholars Program at UCLA, with an award for his more than 40 years of service. The evening also honored Dr. Stuart Gilman, director of Advanced Fellowships and Professional Development at the Veterans Affairs Office of Academic Affiliations; Loretta Jones, founder and CEO of Healthy African American Families; and Dr. Martin Shapiro (RES ’78), retired, former professor of medicine and chief of the Division of General Internal Medicine and Health Services Research in the David Geffen School of Medicine at UCLA, for their roles in the RWJ Clinical Scholars Program legacy.

For more information, contact Laura Pescatore at: (310) 825-1288

Celebrating UCLA’s Leaders of Tomorrow Scholars

On November 7, 2016, faculty leaders from the David Geffen School of Medicine at UCLA joined UCLA Leaders of Tomorrow Scholarship recipients at an annual dinner. The event provided an opportunity for the scholars to share their medical-school experiences, career goals, aspirations and the overall impact this scholarship has had on their lives.

The UCLA Leaders of Tomorrow Scholarship, a full-tuition, merit-based award, has empowered 40 aspiring physicians and scientists to pursue careers aligned with their personal passions, unburdened by debt, and has helped enhance the school’s reputation and competitiveness. Since its establishment in 2012 by an anonymous donor, the UCLA Leaders of Tomorrow Scholarship has inspired additional giving to medical-student scholarships. In 2016, in an effort to increase student support, the anonymous donor committed to matching donations made to any medical scholarship with a special gift of equal size, up to a total of $1 million, to the UCLA Leaders of Tomorrow Scholarship. This matching campaign surpassed its goal by raising $1.2 million for the next generation of medical students.

For more information, contact Chelsea Bollea at: (310) 825-5328
Class of ’76 Alumni Celebrate 40th Reunion, Raise Money for Medical Scholarships

On October 22, 2016, the David Geffen School of Medicine at UCLA Class of 1976 celebrated its 40th reunion with a weekend of activities, including a private tour of UCLA’s new medical-education building, Geffen Hall, a meet-and-greet with current medical students and a lecture by Dr. Kenneth Kizer, distinguished professor at the UC Davis School of Medicine and the Betty Irene Moore School of Nursing at UC Davis and director of the Institute for Population Health Improvement at UC Davis Health System. Alumni gathered for dinner at the LUXE Hotel and took a tour of the J. Paul Getty Museum.

In the months leading up to the reunion, classmates raised more than $55,000 for the Medical Alumni Association (MAA) Class of 1976 Scholarship — established in recognition of the class’s efforts that have raised more than $226,000 for student support since graduation. At the reunion, class leader Dr. Steven Jobst spoke about the shared commitment among their classmates to support the next generation of UCLA medical students. “Thank you to the many classmates who have contributed,” Dr. Jobst said. “We hope year by year to significantly raise the level of the Class of 1976 Scholarship Fund.”

Class leader Dr. Vena Ricketts also spoke, saying, “To whom much is given, much will be required. UCLA has left an indelible footprint on our lives, and I believe it is imperative that the Class of 1976 demonstrate, through our actions, the importance of giving back and making a difference in the lives of future generations of medical students attending the David Geffen School of Medicine at UCLA.”

For more information, contact Chelsea Bollea at: (310) 825-5328

Running for Research

The 19th Annual LA Cancer Challenge kicked off Halloween celebrations on Sunday, October 30, 2016, on the UCLA campus. Proceeds from the 5K and 10K walk/run, sponsored by the Hirshberg Foundation for Pancreatic Cancer Research, benefit the UCLA Agi Hirshberg Center for Pancreatic Diseases.

The event featured a Fit Family Expo with a Halloween Kids Zone, including a bounce house and pumpkin arts and crafts. Attendees enjoyed music and entertainment, food and beverages, as well as health and fitness booths. First-, second- and third-place finishers in each age category received a medal and a Big 5 Sporting Goods gift card. The organizers encouraged children to participate by holding the “Kids Can Cure Fun Run” for children ages 2 to 7, and a children’s costume parade.

Since 1998, the LA Cancer Challenge has raised more than $7.3 million for pancreatic-cancer research. The 20th annual event will be held on Sunday, October 29, 2017, at UCLA.

For more information, contact Gretchen McGarry at: (310) 794-4746
Switzer Prize Will Recognize Excellence in Research

The David Geffen School of Medicine at UCLA has established the Switzer Prize, an international award that recognizes excellence in basic-science research. The prize is named in honor of Irma and Norman Switzer, who made a landmark bequest of $50 million to the David Geffen School of Medicine at UCLA in 2014. The school created a fund to advance medicine and health, and as a tribute to the Switzers, the UCLA Center for the Health Sciences Plaza was renamed the Irma and Norman Switzer Plaza.

The Switzer Prize honors scientists who have made revolutionary discoveries in the basic biological and biomedical sciences that have the potential to transform the understanding of health and disease. Nominations are open to national and international candidates from any institution and may be made by individuals or institutions. “I am delighted to institute the Switzer Prize because basic biomedical research is critical to the mission of the David Geffen School of Medicine at UCLA,” said Dr. Kelsey C. Martin, dean of the David Geffen School of Medicine at UCLA. Dr. Kathrin Plath, professor of biological chemistry, will chair the Switzer Prize selection committee. The recipient of the 2017 Switzer Prize, to be named in spring 2017, will receive a $25,000 honorarium and deliver the first annual Switzer Prize lecture at the David Geffen School of Medicine at UCLA in fall 2017.

High School Seniors Honor Loved Ones with Cakes for Cancer

Facing the death of a loved one is never easy, and for Marymount High School senior Abby Nathanson, losing her beloved aunt Jodi to non-small-cell lung cancer was very difficult. After 18 months of fighting the disease, Jodi, known for her love of creating sweet treats and for her warrior-like attitude and determination to beat one of the deadliest cancers in the world, lost her life at the age of 53, leaving behind a son and daughter. To cope with the loss, Abby Nathanson decided that the best way to honor her aunt’s memory was to continue her aunt’s passion of baking cakes. Nathanson founded Cakes for Cancer and donates proceeds from the sale of the cakes to the UCLA Jonsson Comprehensive Cancer Center (JCCC) to benefit lung-cancer research.

“Tawatch my aunt go through the cancer fight for more than a year, and I don’t want other people to go through that,” said Nathanson. “My hope is that all the money raised will help doctors find a cure for this horrible disease.”

Nathanson asked her friend Ruby Garland to help launch Cakes for Cancer by starting a club at their high school to recruit fellow students. The teenagers were amazed when 116 girls volunteered. “When Abby told me about the fundraiser, I immediately wanted to help,” said Garland, vice president of the Cakes for Cancer school club. “I’ve experienced a similar loss of a family member to bone cancer.”

Most of the cakes have a variety of designs on them and the slogan Cakes for Cancer written on the top with frosting. The teens sell the cakes at school or the Pacific Palisades Farmers Market. In less than a year, the girls raised more than $10,000.

Nathanson’s passion for her fundraiser has grown stronger in the past few months, following her grandmother’s late-stage lung-cancer diagnosis. “My grandmother’s heart-wrenching diagnosis emphasizes the importance of funding cancer research, so that doctors can find a cure,” Nathanson said.

The money raised from Cakes for Cancer helps fund early experimental research and ideas that might not otherwise be supported through traditional sources. Nathanson, Garland and the Cakes for Cancer club are making a difference — or, as they say, “Baking a Difference!”
In Memoriam

**Frank M. Fenton**, former mayor of Beverly Hills, passed away August 4, 2016, after a long and courageous battle with Parkinson’s disease. Fenton was an active community leader, civic activist and successful finance professional. He and his wife Judie were longtime supporters of UCLA and generous donors. In 2010, the Fentons helped establish the Fenton Family Clinical Coordinator in the UCLA Department of Neurology to help patients and their caregivers cope with the challenges of chronic neurological diseases. Judie, an experienced fundraiser and political-campaign strategist, organized an annual fundraiser to support the Fenton Coordinator position, which remains a valuable resource for patients with Parkinson’s disease and their families and caregivers. “Frank was an amazing person,” said Dr. Jeff M. Bronstein, Fred Silton Family Chair in Movement Disorders and director of the Movement Disorders Program at UCLA. “He and Judie have helped so many by sponsoring this critical patient-advocate position.” Together, the Fentons created a legacy of service to their community. Their impact at UCLA endures, as family and friends continue to show their love and support with gifts in his memory. Fenton leaves behind his beloved wife, children, and grandchildren and his dedicated caregiver Daisy Soto and her family.

**Norman C. Lapin**, a longtime friend of the UCLA Department of Neurology, passed away on October 29, 2016. He was 63 years old. Lapin was born in Baltimore, Maryland, and had more than three decades of experience in the healthcare industry. Notably, he was a founding principal of Physicians Surgery Centers, LLC (PSC). During his tenure, Lapin was involved in the development of more than 18 surgery-center ventures with physicians, and he subsequently managed the centers’ business operations. Prior to PSC, Lapin held a senior financial-executive position with BMJ Medical Management, Inc., where he developed new relationships with medical groups and managed their business operations. Lapin was a mathematics and accounting genius who enjoyed playing poker, vacationing in Cabo San Lucas, Mexico, watching college football and helping other people. He provided significant support for UCLA Neurology’s ataxia research, directed by Dr. Susan Perlman (RES ’79, FEL ’80). He is survived by many loving family members and friends.
We lost a giant of medicine last year, a healer who was not a physician but whose work has saved countless lives. Paul Terasaki, PhD, was a pioneer in transplant medicine and the father of tissue typing. He was 86 years old when he died. His legacy continues in the lives of the patients now and in the future who are touched by his innovation and brilliance.

Among those patients was a child whose case was one of the most challenging of my career. I first met Dr. Terasaki in 1970, when 3-month-old Maurice Elias came to UCLA following oral thrush — a common fungal infection — that developed into pneumonia, but which, in spite of antibiotics, would not resolve. Our X-ray and biopsy studies revealed that the child had *Pneumocystis carinii*, a rare fungus that causes pneumonia only in immunocompromised patients. Further studies showed a small thymus gland, low gamma globulin levels and poorly functioning lymphocytes, all indicating that the child had no immunity — severe combined immunodeficiency (SCID), better known as “baby-in-the-bubble syndrome.”

A bone-marrow transplant was the only hope for Maurice, but the procedure had only been done successfully in a SCID patient once before. For it to be successful, we needed a donor with lymphocytes that exactly matched Maurice’s cells. Unlike red blood cells, however, for which there are only four types, lymphocytes — known as human leukocyte antigen (HLA) types — have several thousand variations. Our best chance of finding a perfect match would be from a sibling with common parents.

Enter Dr. Terasaki. At UCLA, he pioneered HLA typing, establishing a typing laboratory here in 1969. When I contacted him about Maurice, he told me to bring blood samples from the child, his parents and his four siblings. I hand-delivered samples to his laboratory because I wanted to meet him in person.

Dr. Terasaki, a bespectacled, soft-spoken man, greeted me warmly. Before telling him about Maurice, I asked about his own background — he was born and grew up in the Boyle Heights area of Los Angeles and during World War II was interned for three years with his family in Arizona’s Gila River Relocation Camp — and how he ended up, with a PhD in zoology from UCLA but no medical degree, as a professor in the Department of Surgery. He was hired by the department, he told me, to study ways to prevent graft rejection of kidney transplants. Following a postdoctoral year in London with Sir Peter Medawar, who shared the 1960 Nobel Prize in Physiology or Medicine for identifying HLA, Dr. Terasaki returned to UCLA to develop methods for HLA typing.
Dr. Terasaki initially said he was optimistic about finding a matched donor among Maurice’s four siblings, but repeated typing resulted in three different results, none matching his parents or siblings. “It’s never happened before,” he said. “Don’t do a transplant.”

I delivered the sad news to the parents and sent the child home on antibiotics, antifungals and weekly gamma globulin injections. Maurice remained sickly, and he was back in the hospital at nine months of age with persistent vomiting. The fungal infection had extended down his esophagus, preventing him from swallowing. I called Dr. Terasaki again about finding a donor. He requested more blood, so we sent him three more small samples. He typed Maurice repeatedly, and up to 16 different types showed up (a normal result has only four: two from each parent). After comparing all these results, Dr. Terasaki noted that three types showed up repeatedly, and that these were identical to those of his 13-year-old sister Tami.

“I think Tami might be a match,” Dr. Terasaki told me. “We can test that by mixing their bloods together to see if Tami’s cells recognize Maurice’s cells as being foreign.” One week later, he said, “I think Tami is a perfect match. But I can’t be 100 percent sure.”

Maurice’s parents agreed to go forward with the transplant. The child’s father, a Hollywood actor and stuntman, had kept his co-workers informed about his child’s illness, and now one co-worker told a LIFE magazine reporter of the proposed transplant, and LIFE contacted the parents to see if they would agree to a story about Maurice before, during and after the procedure. So with a LIFE photographer present, Tami was admitted to the hospital, where a hematologist used a large-bore needle to extract four ounces of marrow from her hip and breast bones. The cells were taken to Maurice’s crib and injected into his abdominal cavity, from where they would migrate to the liver, spleen and bone marrow.

Two weeks passed, and the candida in the child’s mouth spontaneously disappeared. Then, a crash, as Maurice developed signs of graft-versus-host reaction. But two weeks later, after various rounds of therapy, he improved, and follow-up tests showed that the graft had taken. We sent Maurice home, apparently cured.

What a milestone this case would be. Maurice’s transplant was the first of more than 4,000 similar transplants to be done at UCLA for children and adults, and the procedure, which today is known as stem-cell transplant, also is used in other diseases, including leukemia, lymphoma and genetic diseases such as sickle cell anemia. The UCLA tissue-typing laboratory founded by Dr. Terasaki is busier than ever.

Dr. Terasaki retired from UCLA in 1999. Fifteen years earlier, he and eight of his former students founded One Lambda, which developed tissue-typing trays and reagents for other transplant units. Not long after he retired, Dr. Terasaki established the Terasaki Foundation Laboratory to study and solve the problem of organ-transplant rejection and failure. And there’s also the Terasaki Center for Japanese Studies and an endowed chair in the UCLA Department of Surgery. The Terasaki Life Science Building, for which he and his wife were major contributors, is named in his honor.

He was a man of great vision, warmth and generosity. Maurice and all the patients who have benefited from his contributions owe him a deep debt of gratitude, and we, his colleagues and friends, owe him our deepest respect.
In her research, Dr. Kelsey C. Martin, the new dean of the David Geffen School of Medicine at UCLA, explores the process of plasticity: how networks of brain cells store memories about experiences and, in turn, how those experiences rewire the brain.