TREATING CHRONIC PAIN WITHOUT DRUGS

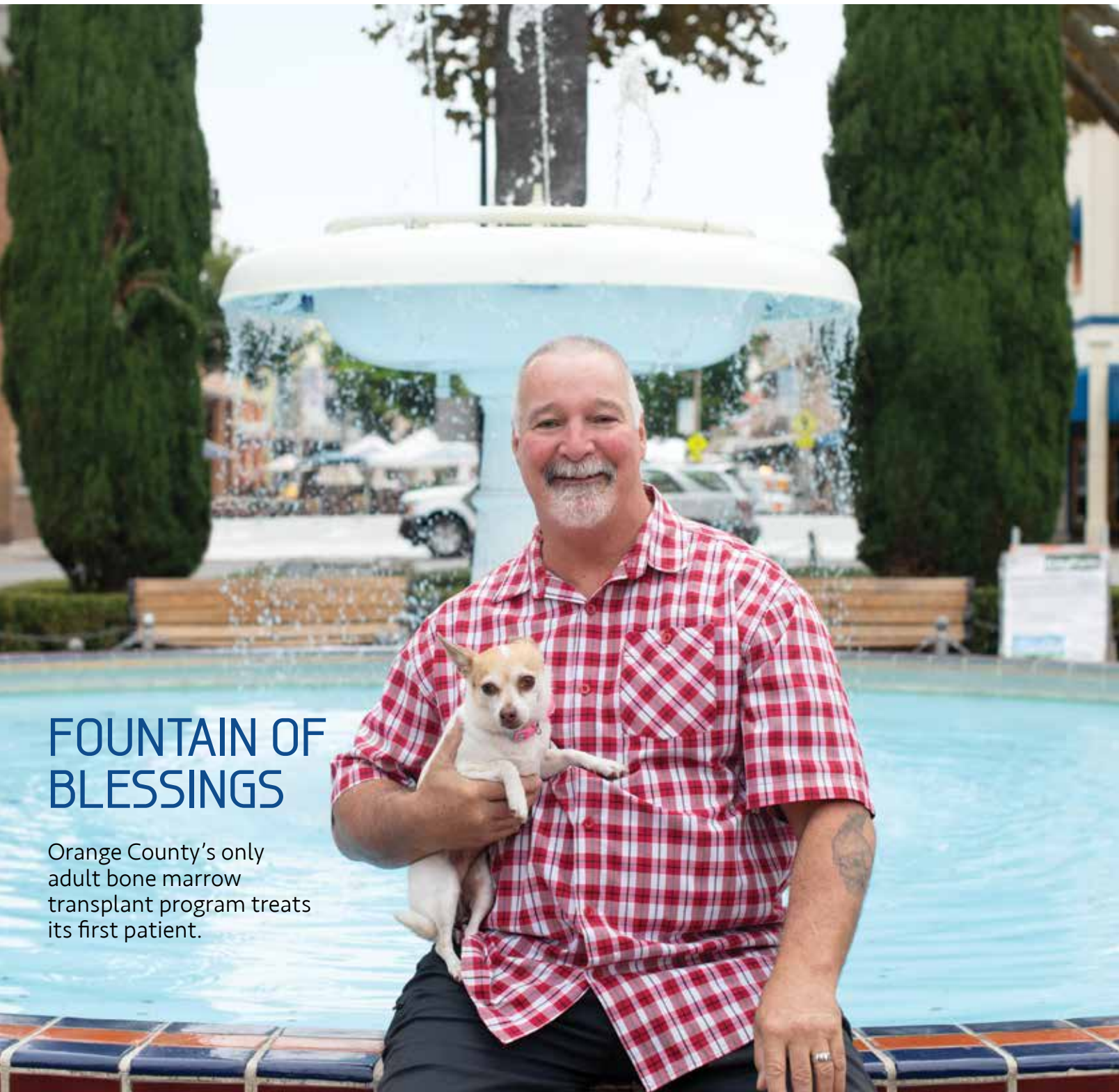
ADDRESSING THE MYSTERIES OF COVID-19

UCI Health

FALL 2020

live well

SMARTER HEALTHCARE FOR SOUTHERN CALIFORNIA



FOUNTAIN OF BLESSINGS

Orange County's only adult bone marrow transplant program treats its first patient.

THE LEADING EDGE OF CANCER CARE

Over the last decade, scientific advances have revolutionized the treatment of cancer. As a National Cancer Institute-designated Comprehensive Cancer Center, the UCI Health Chao Family Comprehensive Cancer Center is charged with helping lead the way. In this issue of *Live Well*, we are proud to announce the launch of our new Hematopoietic Stem Cell Transplant and Cellular Program, which provides bone marrow transplants to treat several types of blood cancers.

This program, the first of its kind in Orange County, illustrates the value of an academic medical center to patients. It means patients can get expert treatment close to home and also enables us to lead the region in one of the most exciting areas in cancer therapy today. Dr. Stefan O. Ciurea, an expert in hematopoietic stem cell therapy and a leading researcher in novel cellular therapies, leads the program. He previously practiced at MD Anderson Cancer Center in Houston, and we are tremendously proud that he has joined our prestigious cancer center.

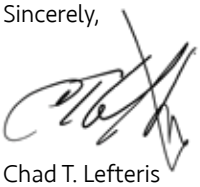
This issue highlights more of our pioneering efforts in clinical care and research. Our Discoveries column (page 3) explains an exciting advance in assessing liver health — called endoscopic ultrasound-guided portal pressure gradient — created by Dr. Kenneth J. Chang, executive director of the H.H. Chao Comprehensive Digestive Disease Center. We also explore a technique to alleviate severe pain (page 12), reflecting our long-held goal to identify and use non-opioid therapies to manage pain.

Our reach continues to grow in Orange County. Please read about our new infusion center in Yorba Linda (page 4) and a new specialty center in Newport Beach (page 17) that emphasizes science-based integrative health services.

UCI Health continues to be vigilant in responding to the COVID-19 pandemic. We are working diligently to ensure that our facilities remain the best places to give and get care. Meanwhile, our research efforts to learn more about this complex virus are rapidly progressing (page 14).

And the inspiring stories of COVID-19 patients we have cared for, like Anaheim Fire & Rescue Captain Joe Aldecoa (page 18), reaffirms our dedication to stop at nothing to advance the health and healing of our community.

Sincerely,



Chad T. Lefteris
Chief Executive Officer
UCI Health

UCI Health

CHIEF EXECUTIVE OFFICER, UCI HEALTH
Chad T. Lefteris

EXECUTIVE MARKETING DIRECTOR
Brian M. O'Dea

PUBLIC INFORMATION OFFICER
John Murray

MANAGING EDITOR
Kristina Lindgren

DESIGN, EDITORIAL & CONTRIBUTORS
Moon Tide Media

ART DIRECTOR
Michelle Villas

GRAPHIC DESIGNER
Nikki Smith

EDITOR
Shari Roan

COPY EDITOR
Laura Watts

BRAND PUBLISHER
Hannah Lee

For comments or questions, contact
UCI Health Marketing & Communications at
333 City Blvd. West, Suite 1250, Orange, CA 92868
714-456-5496

NEW DIAGNOSTIC TOOL AIDS BATTLE AGAINST LIVER DISEASE

WRITTEN BY MELANIE ANDERSON

An innovative method for measuring blood pressure in the liver — the single best parameter for assessing liver health — has emerged from research at UCI Health. As cases of nonalcoholic fatty liver disease (a condition characterized by excess fat in the liver) rise due to America's obesity epidemic, this diagnostic tool could help millions.

"If you tell me what your liver pressure is, I can tell you how likely you are to die of liver disease, to have liver cancer, to need a transplant in the next five years," says Dr. Kenneth J. Chang, executive director of the UCI Health H.H. Chao Comprehensive Digestive Disease Center, who developed the new technique called endoscopic ultrasound-guided portal pressure gradient (EUS-guided PPG).

In the eight years since Chang began researching ways to test liver pressure, nonalcoholic fatty liver disease — which has a benign form called simple fatty liver and a harmful form called nonalcoholic steatohepatitis (NASH) — has become increasingly common.

"In 2020, NASH has overtaken hepatitis as the No. 1 reason Americans need a liver transplant," he says. "It's now the most prevalent cause of liver disease, cirrhosis and liver death."

By knowing their liver blood pressure, patients can act early enough to reverse liver disease progression and avoid a transplant through weight loss, medication and avoiding alcohol. This reading is hard to get because the standard test for portal hypertension (high blood pressure in the liver) required an incision in the neck. It's also an indirect method, since one of two key blood vessels that contribute to an accurate reading can't be reached from outside the liver.

Chang, a world-renowned leader in interventional endoscopy, previously had developed minimally invasive techniques for imaging and performing needle biopsies of the liver and pancreas with the aid of endoscopic ultrasound, which involves guiding tubes with an imaging device and needle through the mouth into the digestive tract. Knowing that EUS provides clear images of both key liver blood vessels, he began investigating how to use the technology to test portal hypertension.

"If we can attach a pressure gauge to the tiny needle, measure the pressure directly and then take the needle out — there's no cutting in the neck. It's just a scope in the stomach. The patient is completely under anesthesia, and it takes about 15 to 20 minutes."

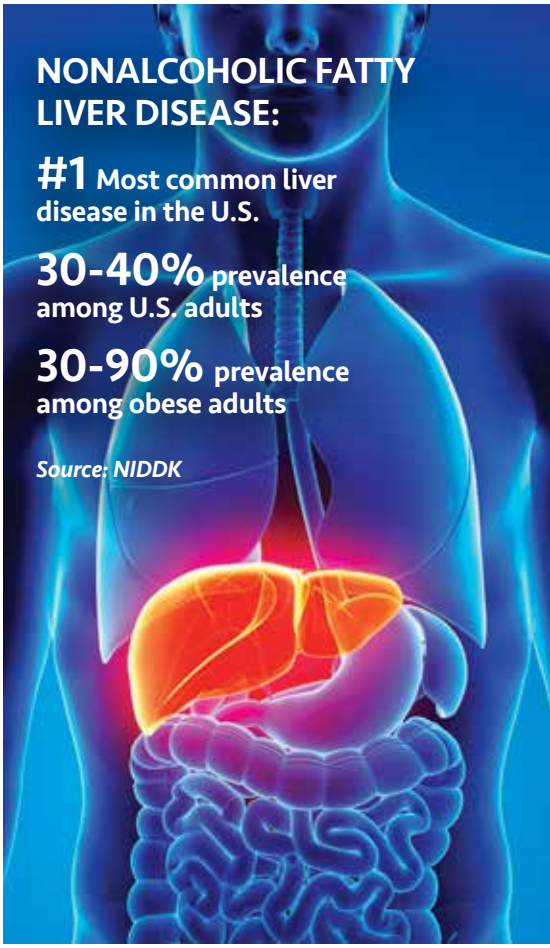
Using a handheld pressure gauge, Chang initially studied the procedure in pigs. "We found that the pressure reading was accurate even down to the smallest needle. We compared that with the pressure reading they were getting from the catheter going through the neck vein and it was identical," he says.

Next, Chang led a pilot study in humans and showed the procedure could be done safely and accurately. The U.S. Food and Drug Administration recently approved the device, which was developed in partnership with Cook Medical.

"UCI is now leading a worldwide, multicenter trial to make sure that the experience we have shown here would be similar anywhere in the world," he says. "We're also providing training for key doctors from around the United States, Europe and Asia so they can acquire the skills to help patients all over the world."

The novel coronavirus pandemic has necessitated virtual training and ironically allowed even more physicians to learn the procedure, Chang says.

Within a few years, Chang expects EUS-guided PPG to be offered at major U.S. hospitals. "We've developed something truly disruptive, groundbreaking and innovative," he says. "It's unreal that it went from just an idea to becoming a device and now a strategy to fight liver disease." ■



Learn more about digestive disease treatment at ucihealth.org/digestivedisease

MARKING TWO DECADES AS ONE OF AMERICA'S BEST HOSPITALS

For the 20th straight year, *U.S. News & World Report* has recognized UCI Medical Center as one of America's Best Hospitals. It is ranked No. 5 in the Los Angeles metropolitan region.

The rankings, which recognize hospitals that excel in treating the most challenging patients, also identified several UCI Health programs that are among the nation's best. These include gynecology at No. 16, urology at No. 24, nephrology at No. 43 and geriatrics at No. 45. Other UCI health programs were ranked as high-performing, including cancer, GI and GI surgery, neurology and neurosurgery, orthopedics, pulmonology and lung surgery.

"This 20th consecutive recognition as one of America's Best Hospitals is a testament to the excellence of our physicians, nurses, therapists and support staff, and reflects the best of academic medicine," says UCI Health CEO Chad Lefteris. "As Orange County's indispensable healthcare resource, UCI Health plays a critical, unduplicated role in improving the health and well-being of our region."

UCI Health also achieved the highest rating possible in five common adult procedures and conditions identified by *U.S. News*:

- Abdominal aortic aneurysm repair
- Chronic obstructive pulmonary disease (COPD)
- Colon cancer surgery
- Heart failure
- Lung cancer surgery

Over the last two decades, UCI Medical Center is the only Orange County hospital consistently rated among America's best by *U.S. News*. The annual Best Hospitals rankings and ratings, now in their 31st year, are designed to help patients and their doctors make informed decisions about where to receive care for challenging health conditions and common elective procedures. For the 2020–2021 report, *U.S. News* evaluated more than 4,500 medical centers nationwide in 25 specialties, procedures and conditions.

INFUSION SERVICES EXPANDING TO YORBA LINDA

The UCI Health Chao Family Comprehensive Cancer Center now offers the full complement of patient infusion services in Yorba Linda. The six-chair infusion center provides patients in north Orange County and nearby communities with convenient, timely access to treatment. The infusion center was designed to provide a tranquil, healing space for patients undergoing chemotherapy.

Services include both chemotherapy infusion and non-chemotherapy treatment and hydration, as well as lab draws. Lab processing is available and patients may also receive care at an adjacent multispecialty clinic. The infusion center is open by appointment Monday through Friday, 7:30 a.m. to 5 p.m. For more information, call 888-544-8235.

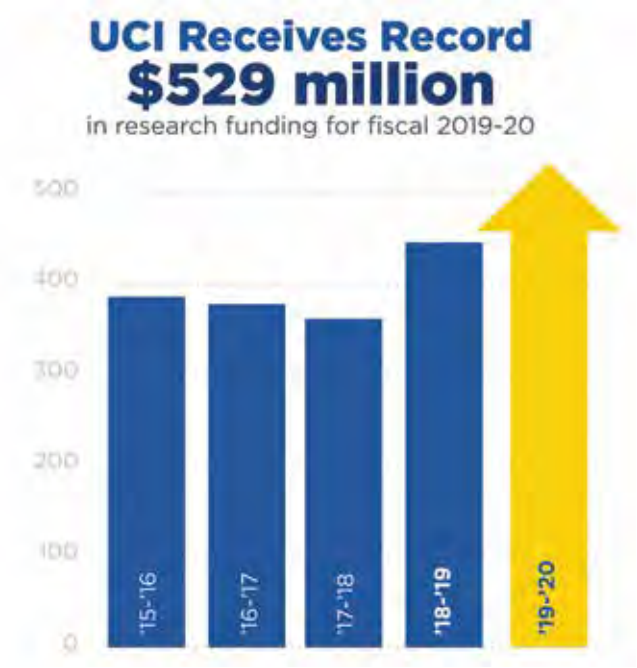
UCI RESEARCHERS ACHIEVE FUNDING RECORD

UCI researchers garnered the most funding in campus history, according to a final tally for the 2020 fiscal year ending June 30. The university reported receiving $529 million in research grants and contracts, an increase of about 20% over the previous year.

The funding — awarded by federal and state agencies, leading foundations and forward-thinking companies — reflects strong and burgeoning support for UCI's top-ranked faculty, first-rate facilities, diverse and talented student body, and community-based programs, says UCI Chancellor Howard Gillman.

Biomedical researchers were highly rewarded for a range of leading-edge work. The School of Medicine received $190 million, accounting for 36% of UCI's 2019–20 total and representing a second year of more than 20% growth. The Chao Family Comprehensive Cancer Center — Orange County's only National Cancer Institute-designated comprehensive cancer center — secured $44 million for basic, translational and clinical research, a 75% increase from the previous year.

"The health and well-being of our local and global communities depend on the leading-edge, evidence-based care we provide every day," says Dr. Steve Goldstein, vice chancellor for health affairs. "UCI offers the very best to our patients because we advance the frontiers of knowledge through groundbreaking research. UCI is the region's only academic health center, and year-over-year growth in external funding is one tangible indicator that we lead the way with empowering discoveries while we train the diverse, healthcare workforce of the future to carry on that legacy."



SHEDDING LIGHT ON MOSQUITO BITES

Mosquito-borne illnesses plague many parts of the world, including the United States. UCI School of Medicine researchers have discovered a possible way to help combat the pesky — and even dangerous — insects.

Studies led by Todd Holmes, PhD, a professor in the Department of Physiology and Biophysics, found that night-biting versus day-biting species of mosquitoes are behaviorally attracted and repelled by different colors of light at different times of day. That means it may be possible to use light to control their biting behavior — without using harmful pesticides.

Bug zappers, which emit ultraviolet light, have long been used to control mosquitoes. But Holmes and his colleagues found that timing and light spectra are important to controlling specific species. They studied a type that bites in the daytime (Aedes aegypti, the yellow-fever mosquito) and those that bite at night (Anopheles coluzzii, a malaria-vector mosquito).

The study found distinct responses to ultraviolet light and other colors of light between the two species. Researchers also found that light preference is dependent on the mosquito's sex and species, the time of day and the color of the light. The paper was published in the journal *Current Biology*.

"Light is the primary regulator of circadian rhythms and evokes a wide range of time-of-day-specific behaviors," Holmes says. "By gaining an understanding of how insects respond to short-wavelength light in a species-specific manner, we can develop new, environmentally friendly alternatives to controlling harmful insects more effectively and reduce the need for environmentally damaging toxic pesticides."

Much is riding on the success of the research. It is estimated that diseases spread by mosquitoes have contributed to the deaths of half of all humans.

CHECK YOUR HAND SANITIZER BRAND CAREFULLY

Hand sanitizers are an important part of a consumer's arsenal to prevent COVID-19. However, in the rush to bring enough hand sanitizers to the market, some harmful products have popped up. The U.S. Food & Drug Administration (FDA) has recalled and imposed import bans on dozens of brands found to contain methanol, commonly known as wood alcohol.

The FDA has banned or recalled more than 100 brands contaminated with methanol, which is dangerous if ingested. Many were manufactured in Mexico and sold at major retailers, including Walmart, Target, Costco and Sam's Club, among others. One product labeled Hello Kitty by Sanrio — packaged in bottles shaped like Hello Kitty's head and aimed at children under 6 — is especially alarming.

"The fact that this is marketed to appeal to young children is concerning because it might increase the risk that a child, if not supervised properly, could ingest it," says Dr. Jeffrey R. Suchard, director of medical toxicology at UCI Health. "If you happen to have this product, for your future safety and that of your child, you should probably get it out of your house."

Hand sanitizers with methanol are more life-threatening than those that aren't contaminated, but no one should drink any hand sanitizer and all such products should be are kept out of young children's reach.

The FDA also recommends avoiding hand sanitizers that:

- Contain less than 60% to 70% ethyl or isopropyl alcohol
- Claim to prevent the spread of viruses such as COVID-19
- Claim to provide prolonged protection
- Labeled "approved by the FDA." The FDA does not approve hand sanitizers

UCI HEALTH CHAPLAINS ESSENTIAL TO COVID-19 CARE"

The COVID-19 pandemic is taking an emotional and spiritual toll — on patients fighting the disease in solitude, on families unable to be with their ailing loved ones and on the caregivers working valiantly to prevent traumatic medical crises and death.

UCI Health chaplains Pirjo Carlisle and Patrick Thompson know this all too well. They are on the front lines, providing unflagging spiritual and emotional support to those in need.

The way chaplains interact with patients, caregivers and families has changed dramatically during the health crisis. They must wear full personal protective equipment and can't hold a patient's hand or hug the patient's family members. Carlisle and Thompson have used all their creativity to comfort those in need and turned to technology to bridge the gap. UCI Medical Center supplies iPhones and iPads so patients and their families can see and talk to each other by video conference and phone calls.

"The devices have been a huge blessing, and I'm glad the families have some way to interact, but it's just not the same as having your loved ones physically present," says Thompson, who has ministered to patients for three years.

According to Carlisle, more than 60% of her work as a chaplain involves attentive, empathetic, active listening. This has become even more important during the pandemic.

"When patients are able to verbalize their fears and worries, this immediately has a positive effect on their physical health," she says. "I encourage people to cry. When they are able to express their grief and pain through tears, the body becomes more relaxed and the medicines are received better."

Their dedication and personal sacrifice do not go unnoticed. "Pirjo and Patrick view their work as chaplains as a true calling, and this dedication to their practice drives them mentally, physically, emotionally and spiritually," says Brad Giafaglione, UCI Health director for patient experience. "They make themselves available at all hours for our patients, families and staff members."

Chaplain Pirjo Carlisle, left, leads healthcare team in a moment of prayer.

EXERCISING SAFELY IN A PANDEMIC

Many Americans are complaining of putting on weight since the start of the pandemic. The need to social distance has kept many people at home and away from gyms and playgrounds.

But there are ways to exercise safely during the pandemic, says Dr. Brian Y. Kim, a UCI Health family physician and sports medicine specialist. Exercise will help with weight control, overall fitness and the psychological and stress-related consequences of the pandemic.

He suggests the following for exercising safely outdoors:

- Keep hikes and bike rides to groups smaller than 10
- Stay with people from your household if you need company
- Stay at least 6 feet from others
- Wear a mask
- Refrain from touching your eyes, nose or mouth
- Avoid high-touch surfaces if possible
- Carry hand sanitizer with you

"When you encounter people out there, be conscious of maintaining distance," Kim says. "Give people space as you pass them. And if you come to a crosswalk signal, press it with your elbow instead of your hand."

For children: Consider YouTube exercise videos for kids at home or simple games in the yard with a soft plush ball. Teens can ride bicycles and use home treadmills or exercise bikes.

For seniors: Regular exercise is crucial for older adults, not just for health but also to reduce stress levels, says Dr. Lisa Gibbs, medical director of the UCI Health SeniorHealth Center. "The hardest thing about COVID-19 is that a lot of older people with illnesses have had to suffer alone," she says. "

ALCOHOL USE ON THE RISE DURING PANDEMIC

Nationwide surveys show an increase in sales of alcoholic beverages compared to figures from one year ago. UCI emergency room doctors also report an uptick of patients whose medical problems or injuries seem linked to alcohol consumption. As the pandemic continues, doctors say it's prudent to assess your intake of alcohol and focus on good health.

"Alcohol in moderation is fine," says Dr. Bharath Chakravarthy, a UCI Health emergency medicine physician and UCI School of Medicine associate professor who studies substance abuse. "But drinking to excess can make it easier to become infected."

According to Chakravarthy, excessive alcohol use can reduce the ability of the body's immune system to fight disease — not the best way to protect yourself against severe effects from COVID-19 infection. It also contributes to a host of health conditions affecting the liver, heart and brain.

With the lack of social connection, loss of familiar lifestyle, financial pressures, fear of becoming infected and more, people are turning to the bottle to deal with stress — even binge rinking."People are trying to find a way to cope with what's appening to them in these challenging times," according to Chavravarthy. "There's a perception that alcohol is going to relieve anxiety. It gives us the false sense that we're feeling relaxed. Even with one or two drinks, we don't sleep as well, we're dehydrated, we're less likely to exercise. Drinking actually makes stress worse."

Instead of drinking, focus on optimizing your mental health and your physical body as much as possible, he says. Instead of reaching for the bottle when feeling stressed, he tries to think about other people.

"In the midst of all this tragedy, if you can focus on other people, you won't feel alone."

Behaviors that may indicate a person has a drinking problem:

- Drinking alcoholic beverages daily
- Having more than several drinks a day

Binge drinking is defined by the U.S. Centers for Disease Control and Prevention as having five or more drinks in two hours for men and four or more for women.

When Dan Ferguson learned he needed a bone marrow transplant, he was overjoyed to discover he could be treated near his home in the City of Orange.

Day Zero on the Road to Cancer Remission

UCI Health and a multiple myeloma patient hail the start of Orange County's only adult bone marrow transplant program.

WRITTEN BY SHARI ROAN | PHOTOGRAPHED BY LAUREN PRESSEY

Dan Ferguson was relieved and grateful when he learned he could undergo a transplant that would likely cure him of multiple myeloma, a type of cancer that arises in bone marrow.

However, the 62-year-old flatbed truck driver was far less enthused when he realized he'd have to get treatment in Los Angeles — some 50 miles from his home in Orange. And it would require multiple outpatient visits to prepare for the transplant, several weeks in a hospital and dozens of follow-up appointments.

"I knew I had a better chance of remission with a bone marrow transplant, but I didn't want to go to L.A. if I didn't have to," he says. "It's a mess to drive there."

The previous two years had not been kind to Ferguson. In 2017, he broke seven bones in a motorcycle crash. His cancer diagnosis came in August 2019. In early 2020, after he completed four months of chemotherapy, his oncologist told him UCI Health was opening Orange County's first adult bone marrow transplant program — and Ferguson could be its first patient.

On May 22 — what he calls "day zero of my new life" — Ferguson had the transplant of bone marrow stem cells and his physicians say he is recovering well. He still expresses joy that he received treatment 15 minutes from his home "in a hospital with a view of Angel Stadium!"

At the UCI Health Chao Family Comprehensive Cancer Center, Orange County's only National Cancer Institute-designated comprehensive cancer center, Ferguson's case was celebrated too. The bone marrow transplant program is the first of its type in Orange County, providing patients who can benefit from stem cell transplants the convenience of receiving high-quality treatment close to home. The Hematopoietic Stem Cell Transplant and Cellular Therapy Program also opens the way for the cancer center to develop and offer innovative immunotherapy options for patients with blood and other cancers.

"No one was providing this service to the people of Orange County before our program, meaning they had to travel to surrounding centers," says Dr. Stefan O. Ciurea, professor of clinical medicine and program


Dr. Stefan Ciurea


Dr. Richard Van Etten

director. Ciurea was recruited from the renowned MD Anderson Cancer Center in Houston to lead the program. "Orange County is a very big county with more than three million people. We needed to have a transplant center."

The program — which uses hematopoietic cells, immature stem cells found in bone marrow and blood — also marks a milestone in the growth of the Chao Family Comprehensive Cancer Center's blood cancers program, says Dr. Richard Van Etten, director of the cancer center and a professor in the division of hematology/oncology at UCI School of Medicine. Since 2013, the number of UCI patients being treated for blood cancers like leukemia and lymphoma has increased dramatically.

"But many of our patients need stem cell transplants as part of their treatment," he says. "We've had to refer them to programs in Los Angeles. The problem is it causes delays. Apart from the distance, there are a lot of logistical issues to get the referral set up, and insurance questions take time to resolve. Many patients don't have that time. The stem cell program fits within our paradigm of trying to keep care close to home."

Day zero of a long journey

Stem cell transplants are used to treat several types of cancer that arise in the blood or lymphatic systems, such as leukemia, lymphoma and multiple myeloma. But the procedure is challenging and can only be performed at high-level institutions, usually academic medical centers or National Cancer Institute-designated comprehensive cancer centers such as UCI's.

Typically, treatment begins by administering high doses of chemotherapy to the patient, sometimes with radiation therapy to kill any remaining cancer cells as well as stem cells in the patient's bone marrow. Treated stem cells are then infused after chemotherapy to replace those that have been destroyed. The transplanted cells settle in the bone marrow to make healthy new blood cells.

"We are resetting the patient's immune system," Ciurea says. "The new immune system recognizes the malignant tumor and attacks it."

Patients undergo either an autologous stem cell transplant — which means they use their own stem cells — or an allogeneic transplant with stem cells from a donor whose bone marrow has certain characteristics that match the patient's.

Ferguson underwent chemotherapy to reduce the amount of cancer cells in his bone marrow, then began the transplantation process at the cancer center. After many exams and tests to ensure his safety, he had a five-hour procedure to collect his stem cells.

A few days later he checked into the hospital at UCI Medical Center for a 23-day stay. There he received the high-dose chemotherapy and then his refreshed bone marrow cells.

"They were confident I would be a great candidate for a bone marrow transplant, and I was excited about it," he said. "The chemotherapy was tough. I had some side effects, such as a rash on my chest. But I kept telling myself it could be worse."

The joyful send-off party the bone marrow transplant team gave Ferguson was a high point. However, a few days later a fever landed him back in the hospital for a five-day stay. Finally, he went home and began working to recover his strength and stamina.

Transplanting hematopoietic stem cells is challenging and requires considerable staff expertise and special facilities, Ciurea says. Four UCI physicians are trained in stem cell transplantation as are nurse specialists, pharmacists and support personnel. Next year, UCI Health expects to complete construction of a facility on the Irvine campus to process cellular therapies.

"By its nature, this is a very risky treatment," he explains. "There are many components. We have to collect the stems cells and store them in a cell therapy lab. You also need a specialized lab to process these cells."

Moreover, the patients are highly immunocompromised, Van Etten says. Treatment typically requires a four- to six-week hospitalization in isolation to keep them alive and responding to the transplanted cells.

"When they leave the hospital, they are very fragile and need to be seen three times a week by the transplant team, more frequently if there is an emergency," Ciurea says. "It is a logistical nightmare for patients who have to travel long distances for care. That's why we want to help patients keep their care at UCI."

The future of cancer care: cellular therapies

In addition to hematopoietic stem cell transplants, UCI Health researches and offers other cellular treatments. Cellular therapies involve collecting a particular type of cell from the blood, re-engineering the cells to fight cancer and giving the treated cells back to the patient. Among the most prominent cancer cellular therapies is chimeric antigen receptor T cell therapy (CAR T-cell).

While only a few CAR T therapies are approved for use by the Food and Drug Administration, intense research is ongoing worldwide to expand it to other types of cancer, including solid tumors. The research has proven difficult. Now, UCI Health researchers are joining the fight.

"My vision — and Dr. Ciurea's — is to do the basic research and development of

"THE STEM CELL PROGRAM FITS WITHIN OUR PARADIGM OF TRYING TO KEEP CARE CLOSE TO HOME."

these approaches in the lab and extend them into clinical practice," Van Etten says.

Ciurea is already a leader in a type of therapy known as natural killer cell therapy. He has a decade of research experience in the field and has authored several scientific papers to advance the concept.

"This is a type of cell that is present in everyone's blood," he says. "It's a component of our immune system that specializes in eliminating tumor cells. I believe this is an upcoming therapy and, I hope, the next FDA-approved cellular therapy."

Van Etten praises the expertise Ciurea brings to UCI. "He came from the largest program in the country. He was incredibly effective there and has a wealth of clinical and translational experience. He is the perfect person to lead our program."

Ciurea is also working on strategies to reduce the risk of relapse, which occurs in some patients following hematopoietic stem cell transplantation. "Relapse is the main cause of transplant failure," he says, noting that outcomes have improved over the years as physicians have learned to treat infections and found better ways to match allogeneic stem cell transplant patients.

"Having a way to decrease the relapse rate is a huge step for transplantation and a huge step for cancer therapy in general because this can be applied to other areas of oncology," Ciurea says. "For the first time since the beginning of transplantation in the 1960s, we might find a way to decrease the relapse rate."

Ferguson has faith in his UCI Health team. "I have great hope the cancer is not going to come back," he says. "At UCI, they have done everything to make sure I'm OK and feeling good." ■

With his hip improving after the transplant surgery, Ferguson is now able to walk his dog Zoey.

Learn more about the Hematopoietic Stem Cell Transplant and Cellular Program at ucihealth.org/bone-marrow-transplant

A Non-Drug Solution for Pain

Peripheral nerve stimulation helps some patients avoid medications and surgery.

WRITTEN BY VICTORIA CLAYTON | PHOTOGRAPHED BY KRISTIN ANDERSON

When his local orthopedic surgeon told Mike Kilfoy that surgery on his left shoulder would help his chronic pain, he knew better. "I told him I wouldn't make it through that," says Kilfoy.

A decade ago, the Costa Mesa resident had not one but two rotator cuff surgeries on his right shoulder. "The pain I went through then to recover wouldn't be worth it now, based on the amount of improvement I received," says Kilfoy, who is 74 and has additional health concerns these days — he battles Parkinson's disease and diabetes.

His only option to reduce the severe shoulder pain seemed to be prescription painkillers. Kilfoy started with one or two Vicodin, a prescription opioid, each day. Six months later, he sometimes needed three or four pills just to bring his shoulder pain down to a bearable level.

When tests showed a concerning rise in his liver enzymes, likely due to the drug, his doctor referred him to the UCI Health Center for Pain and Wellness, led by Dr. Shalini Shah.

Chronic pain afflicts one in three Americans, according to the U.S. Institute of Medicine, and that number is growing as the population ages. Many people seek alternatives to surgery and drugs for pain relief. They try biofeedback, meditation, physical therapy and other methods. "But ultimately, many still require some form of prescription medication," Shah says.

In 2017, opioid prescriptions were written for almost 58 in every 100 Americans. The same year, an estimated 1.7 million people in the United States suffered from disorders related to opioid prescriptions. But pain management specialists had little to offer unti now.

"We are entering a new frontier with a minimally invasive, non-permanent medical device that has the potential to reset nerve pain," Shah says.

UCI Health is the first provider in the area to offer SPRINT Peripheral Nerve Stimulation (PNS), which even Shah — an ever-cautious scientist — is willing to call "a major breakthrough" in drug-free, surgery-free pain management. "It's a relatively young technology so we're still looking at longer-term outcomes, but right now I'm very excited," she says.

The first step is an office visit to determine if the patient's pain is likely to be relieved by nerve stimulation. Shah and her fellow pain specialists use ultrasound to locate the nerve associated with the pain then inject a concentrated local anesthetic. If the pain goes away, they have found the nerve responsible.

At a second office visit, a hair-thin nerve stimulation device is implanted through the skin. It takes about 30 minutes to place and program the device's energy settings. The patient then goes home with a small battery-operated remote to control the amount of stimulation sent to the nerve to quell the pain.

After 60 days, the lead is removed. Data shows that about 75% of patients can have sustained pain relief for 12 months or even longer. Indeed, after treatment, Kilfoy's left shoulder is almost pain-free. He is nearly done with the 60-day treatment on his right shoulder and seeing equal success so far.

The results also have been a huge relief to Kilfoy's wife, as Parkinson's has reduced his mobility. "It's really hard to watch someone in pain and not be able to do anything to help," says Mary, who is his primary caregiver. "This has been amazing."

Now, she says, her husband can comfortably read, watch television, putter around their yard and enjoy weekly visits with their daughter.

At one point in his life, Kilfoy headed up two companies. He surfed, drove and rebuilt hot rods and traveled. Parkinson's took away his ability to enjoy activities, says Mary, but not his adventurous spirit.

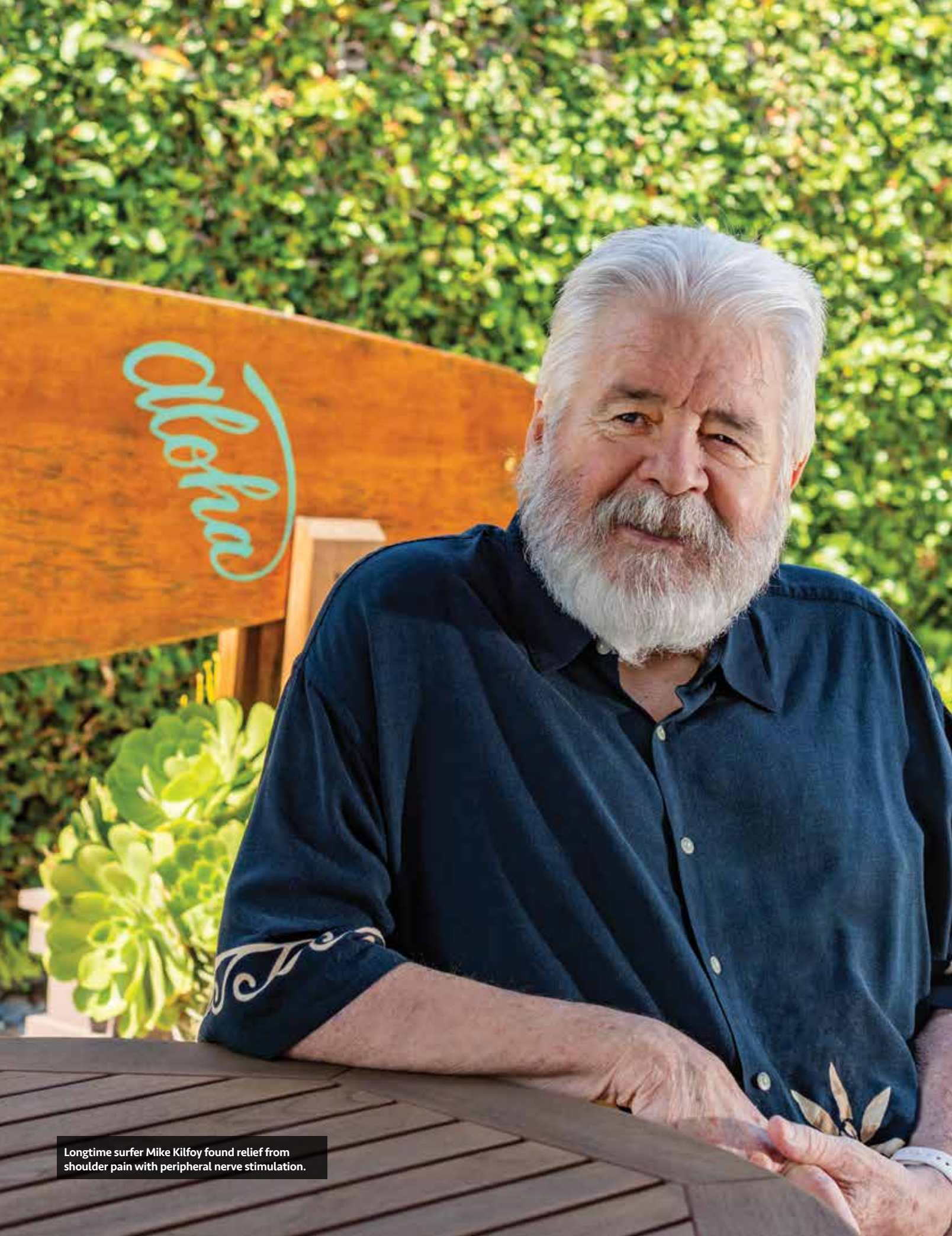
"SPRINT is a newer procedure, and some people may be hesitant to try anything new. Not Mike. He is always up for doing something new, especially if there's a chance that he can help other people by trying it."

Shah says SPRINT has been shown to provide relief for pain in the knees, low back and pelvic area, as well as post-amputation pain. The treatment, which has been approved by the U.S. Food and Drug Administration, is now covered by Medicare and major insurers.

Shah is tracking patient outcomes and looks forward to publishing long-term results on the safety and effectiveness of SPRINT PNS to relieve acute and chronic pain.

"For many patients, conservative options such as medications and physical therapy are still the mainstay, " Shah says. "However, the future looks bright with technology like peripheral nerve stimulation for patients who want to avoid drugs and have a reliable way to relieve their pain." ■

Learn more about managing pain at ucihealth.org/pain



Longtime surfer Mike Kilfoy found relief from shoulder pain with peripheral nerve stimulation.

Philip Felgner, director of the UCI Vaccine Research & Development Center, and his team are analyzing blood samples from Orange County residents to determine the prevalence of coronavirus antibodies.

UNDERSTANDING A VIRUS

Biophysicist Philip Felgner's research aims to protect us from COVID-19.

WRITTEN BY NANCY BRANDS WARD | PHOTOGRAPHED BY BY STEVE ZYLIUS / UCI

As the world continues to struggle with the novel coronavirus pandemic, the research of scientists like Philip Felgner, PhD, has never been more critical. The UCI School of Medicine professor of biophysics and physiology is an expert on vaccines, infectious diseases and adaptive immunity. Earlier in his career, his landmark discovery led to a new class of immunizations called DNA vaccines and "lipofection" DNA transfection technology, the most widely used approach for introducing nucleic acid into cultured cells. Today, Felgner directs the UCI Vaccine Research and Development Center. *Live Well* spoke with him about his team's efforts to test and understand the antibody response of people exposed to the novel coronavirus.

How do antibodies protect against future infection?
When a person is exposed to SARS-CoV-2 — the virus that causes COVID-19 — the body's immune system creates antibodies to it. The next time a person is exposed to the virus, those antibodies bind to the virus and help eliminate it from the body.

You've developed a test for detecting antibodies to SARS-CoV-2 and other respiratory viruses. How does it work?
Our COVID-19 Coronavirus Antigen Microarray Technology tests for the presence of antibodies to SARS-CoV-2, other coronaviruses and different viruses that cause respiratory infections. Blood from a finger stick is tested and results are available in a few days.

What can you learn by analyzing different groups of people for SARS-CoV-2 antibodies?
We're looking not just at exposure to SARS-CoV-2 but also to other respiratory viruses that cause flu-like symptoms. A person's past exposure to different types of viruses and disease proteins may lead to different responses to this virus. It could account for

why older people are more susceptible to severe symptoms. Also, an understanding of the spread of antibodies within a community may help us determine how well the protective measures we're taking — working at home, closing restaurants and large gathering places — are succeeding. We would expect to see fewer antibodies in a population if most people are taking these precautions.

Using this microarray, your lab analyzed samples from UCI healthcare workers and found some exciting results. What did you learn?

Of 1,405 personnel, about 10% had antibodies, indicating that they'd been exposed to the virus. Not all those with antibodies reported having COVID-19 symptoms. So it's promising that people can develop an antibody response to this virus without experiencing symptoms. It's also encouraging that relatively few hospital employees had antibodies and that we didn't see wider evidence of exposure in our healthcare workers.

You've also tested people in Orange County for antibodies. Are the results in?

We're analyzing 3,500 samples from a cross-section of people in Orange County for a project led by Bernadette Boden-Albala, PhD, dean of the UCI School of Public Health, with the Orange County Health Care Agency. The blood samples are from people at 10 drive-through testing sites in the county. Findings will be coming in the fall.

If a person has antibodies to the virus, does that mean they can't get COVID-19 again?

No. Respiratory infections are notorious for not developing the same kind of immunity we get from exposure to or vaccines for measles or polio. The antibody responses we are measuring are not long-lasting; they decay over time. To build a more durable immune response requires more exposures. However, antibodies to SARS-CoV-2 from a previous exposure may mean people will have less severe symptoms the next time they're infected with the virus.

If having COVID-19 doesn't protect people from getting it again, what are we aiming for?

The number of people with antibodies to SARS-CoV-2 is creeping up very slowly. We're looking forward to the time when 50% of people have antibodies through exposure and vaccination. That level of herd immunity will confer some protection from infection and reduce the severity of the disease.

What do you see in the future to help manage the pandemic?

I hope we'll be able to make these microarray antibody tests widely available using a simple snap of a cell phone camera to take an image and send it to a lab for analysis. I envision using those images to test for antibodies induced when people are exposed to the virus, giving a better picture of the virus' spread. ■

UCI biophysicist Philip Felgner shows microarray cards used to test blood for antibodies to SARS-CoV-2 and other viruses.

This photograph and above by Michael Der

Learn more about COVID-19 at UCI Health at ucihealth.org/covid-19

EVENTS

UCI Health is proud to sponsor community events that support a variety of health conditions. Attend a virtual conference or listen to an information lecture.

NEWPORT BEACH LIBRARY 'MEDICINE IN OUR BACKYARD' LECTURE SERIES
Learn about your health in online lectures from these physicians and scientists:

Oct. 26 | COVID-19: What Can We Expect Next Thomas C. Cesario, MD

Nov. 16 | HPV-related Throat Cancer: An Emerging Epidemic and Public Health Crisis, Allen M. Chen, MD, and Tjoson Tjoa, MD

Presentations are held online via Zoom, beginning at 4 p.m. Virtual doors open 10 minutes before the lecture starts. Admission is free with registration. Visit nbplfoundation.org/content/Medicine-in-Our-Backyard.html to register. Questions? Email programs@nbplfoundation.org or call 949-717-3818.

GAVIN HERBERT EYE INSTITUTE COMMUNITY LECTURE SERIES
Learn about the causes, symptoms and treatments of eye-related conditions at our free, online lectures.

Nov. 17 | Everything your doctor won't tell you about cataracts, Matt Wade, MD; Glaucoma: What you need to know about this infamous killer, Ken Lin, MD, PhD

Jan. 19 | What you need to know about dry eye syndrome, Olivia Lee, MD

Lectures are held online at 7 p.m. To register for these events, visit eye.uci.edu/lecturersvp.html or call 949-824-7243. A confirming email will provide the event link.

UCI HEALTH CLASS CANCELLATIONS

The COVID-19 pandemic has led to the cancellation of most of our in-person classes, seminars, lectures and support groups. Some of the classes have moved online. For more information, visit ucihealth.org/events or call 657-282-6357.

We look forward to resuming a full slate of educational programs for Orange County residents as soon as public health officials determine it is safe to hold gatherings.

DONORS SUPPLY CRITICALLY NEEDED BLOOD

Hundreds of blood donors flocked to the Honda Center, where UCI Health partnered with the Anaheim Ducks to host seven mobile blood drives this summer to meet a critical need due to COVID-19. Ducks mascot Wild Wing and Dr. Minh-Ha Tran, medical director of UCI Health transfusion services, kept things light for donors, who contributed more than 300 units of blood. To give blood at UCI Health, visit ucihealth.org/donateblood

Dr. Minh-Ha Tran and Wild Wing prepare for the blood drive.

UCI HEALTH CLINIC IN ANAHEIM OPENS NEW HOME

Orange County dignitaries turned out for a ribbon-cutting ceremony at the new home of the UCI Health Family Health Center — Anaheim. After 43 years in one location, area patients are now being served in a modern new building. Dr. José Mayorga, who gave attendees a tour, leads the Anaheim center and its sister facility in Santa Ana, which together form the oldest Federally Qualified Health Center (FQHC) in Orange County.

Dr. José Mayorga leads a tour of the center.

ANTI-CANCER CHALLENGE

Eight weeks of virtual fitness challenges and health webinars led up to the first-ever virtual UCI Anti-Cancer Challenge ride, run and walk on Saturday, Oct. 3.

Participants from as far away as Florida, New York and Alberta, Canada, raised funds to help UCI Health Chao Family Comprehensive Cancer Center researchers who stop at nothing to defeat cancer. Many companies added their support as sponsors and research partners.

The 2019 UCI Anti-Cancer Challenge was held on the UCI campus. This year, participants chose their own location.

NEWPORT BEACH RIBBON-CUTTING CEREMONY

UCI Health leaders, Newport Beach city officials and community supporters commemorated the opening of UCI Health — Newport Beach at a ribbon-cutting ceremony on Aug. 18, 2020. Providers at the new facility adjacent to Fashion Island emphasize healthcare that focuses on all aspect of a person's life to get to the root causes of illness and determine the most appropriate treatments and therapies.

Services include integrative health, concierge care and specialists in cardiology, gastroenterology, pain management and sports medicine, as well as acupuncture, massage therapy, naturopathic medicine, mindfulness and yoga.

Community leaders help celebrate Newport Beach center's opening.

Services at UCI Health — Newport Beach emphasize integrative care.

Anaheim paramedic captain Joe Aldecoa talks with his sons, Ethan, center, and Ryan, lower right.

Photography by JP Cordero

COVID-19 AND THE LONG CLIMB BACK

In the early days of the novel coronavirus outbreak, paramedic captain Joe Aldecoa and his colleagues with Anaheim Fire & Rescue transported COVID-19 patients from several nursing homes to hospitals for treatment. In late May, Aldecoa, 46, developed symptoms of the illness, despite wearing the full complement of protective gear on his calls. He was one of seven firefighters at his downtown station who were sickened by the virus. The Whittier man spent four weeks at UCI Medical Center before being discharged in late June, severely weakened and with a portable oxygen tank. He is working hard to regain his strength and lung function. The father of three is grateful he's alive — and he has words of advice for anyone who will listen.

"My paramedic partner was the first to test positive. We were going on COVID-19 calls to nursing homes. The nurses there were covered from head to toe in protective gear including respirators. We wore our N95 masks and our department's protective gear. The nursing homes had areas with COVID-19 patients blocked off with plastic sheets. It's hard to say where we contracted the virus.

My partner was the first to come down with a fever. I sent him home on a Friday. On Sunday, May 31, I started getting a headache and body aches. On Thursday, my fever shot up to 105, my oxygen stats were dropping and I was coughing up blood. I got scared.

I asked a buddy to take me to the ER at UCI. A chest X-ray showed my lungs were filled with fluid. They decided to admit me. That was June 4. Shortly after that I was moved to intensive care for about a week. The days are a blur. It was pretty nerve-racking. Eventually, I improved enough to move to a regular floor. But I couldn't take deep breaths.

In late June, they said I could go home if I watched my oxygen levels and proved I could walk far enough to get up the 14 steps to my girlfriend's apartment without getting fatigued. When I got released, it took me five minutes to climb those 14 steps. Before I got sick, I could run up the stairs in a 20-story building with 80 to 100 pounds of fire gear without getting winded. Since my release, I've improved substantially — it now takes me 10 seconds to climb the 14 steps.

Fighting COVID-19 was scary. You're by yourself — no visitors. You get pretty down because you're so unsure of the outcome. But my doctors and nurses had great bedside manners. I'd ask for something sweet and they would bring me Italian ice. I could tell they really cared.

I took all the precautions and followed all the recommendations to avoid the virus, and I still got sick. Even if it's not you who gets sick, you could give it to your loved ones. Stay home, minimize your exposure to people, wear your mask, wash your hands and maintain your distance. I'd always been fit, but now I'm struggling to regain my health. This virus is real. We all need to take it seriously."

— Joe Aldecoa

Learn about the UCI Health COVID-19 response at ucihealth.org/covid-19

CHOOSE A HEALTHY TOMORROW

WITH COVID EXPECTED TO LINGER, TAKE CARE OF YOUR HEALTH TODAY.

Establishing a strong relationship with a primary care doctor is the smartest step you can take to stay healthy.

UCI Health primary care doctors manage your health, offer same-day care and virtual visit options, and connect you to more than 500 leading specialists within our network.

As the only academic health system in Orange County, we don't just practice medicine — we create it. That means we offer you and your family unparalleled, science-based care.

Whether you see one of our doctors in a virtual visit or at one of our convenient locations across Orange County, we stop at nothing to deliver the care you and your family need to protect your health today and always.

UCI Health

ucihealth.org/choose
844-310-9750

BEST HOSPITALS U.S.News NATIONAL 2020-21

MAGNET RECOGNIZED

NCI Designated Comprehensive Cancer Center

UCI Health

333 CITY BLVD. WEST, SUITE 1250
ORANGE, CA 92868–2990

NONPROFIT ORG.
U.S. POSTAGE
PAID
SANTA ANA, CA
PERMIT NO. 1106

BEST HOSPITALS U.S.News NATIONAL 2020-21

NCI Designated Comprehensive Cancer Center

CONNECT WITH US

ucihealth.org

We are brilliant together

At UCI Health, we are driven by our mission: Discover. Teach. Heal. We believe corporations play a vital role in helping to advance this mission. Corporate leaders share our passion for the well-being of the communities in which we all live, work and play.

The UCI Health Corporate Partners program establishes philanthropic partnerships that have a transformative impact on the future of healthcare. When you partner with UCI Health, you help advance medical breakthroughs and develop personalized, leading-edge care for our community and beyond.

We would like to acknowledge our esteemed UCI Health corporate partners who have contributed more than $100,000 in the last year.

To get involved, please contact UCI Health Advancement at ucihealthcorppartner@uci.edu

BRILLIANT FUTURE
THE CAMPAIGN FOR **UCI**

Abbott · Allergan · abbvie · CURE · COOK MEDICAL · LUMITRON TECHNOLOGIES · MEDNAX · Anaheim Ducks · MFLEX · GLOBUS MEDICAL · SANOFI GENZYME