

UCI Chao Family Comprehensive Cancer Center

Leading-edge research, technology and patient care

Lifesaving
cancer
care close
to home

Artist's rendering of white blood cells

UCI

魏 Chao Family
Comprehensive Cancer Center

UCI Health

Director's Message



Richard A. Van Etten, MD, PhD
*Director, UCI Chao Family
Comprehensive Cancer Center*

I'm proud to announce that we have launched an important patient service: Orange County's first adult bone marrow transplant and stem cell therapy program.

Until now, local residents with leukemia, lymphoma and myeloma who were candidates for these stem cell transplants were referred elsewhere for treatment.

That may sound like no big deal, but this life-saving treatment is arduous and time consuming. Patients are usually hospitalized for a month or more, requiring relatives to make long drives through heavy traffic to see them regularly.

Once released, patients still recovering from treatment must make the drive three times a week for follow-up.

As a blood-cancer specialist with extensive experience performing these procedures in Boston, I'm thrilled to be one of the highly qualified physicians on our Hematopoietic Stem Cell Transplant and Cellular Therapy Program team. We will also be developing advanced new cancer therapies.

Greeted enthusiastically by our patients, this program is providing world-class care and making this life-saving treatment much less of an ordeal (see page 3).

Coordinating care, research

Another major development for the cancer center is the addition of Dr. Emad Elquza as our medical director for clinical services. Elquza, an oncologist, comes to us from Banner — University Medical Center Tucson in Arizona at a crucial time. We just opened a third infusion center in Yorba Linda and have plans for another in Laguna Hills in the coming year (page 8).

At each of our three infusion centers, we weigh how much clinical research can be integrated with medical care, a vital task Elquza manages for all cancer center operations. He is making complex clinical operations run on time and rethinking our procedures in amazingly helpful ways. We're thankful he has joined us.

COVID-19 impact

This year, the COVID-19 pandemic has posed challenges for so many

of our patients. People who are undergoing or have recently had chemotherapy are at high risk of complications from the coronavirus because of their compromised immune systems. The virus appears to be especially hard on patients with blood cancers, particularly leukemia.

We are participating in a National Cancer Institute clinical trial to determine whether COVID-19 affects therapies in cancer patients who acquire the virus (page 9).

Meanwhile, we continue to provide full services and clinical trial options to our patients while taking exacting precautions for their safety and that of our staff. Until an effective vaccine or anti-viral agent can knock out the virus, we all need to observe masking, physical distancing and hand hygiene protocols.

Virtual 'Challenge'

The pandemic also meant our fourth annual Anti-Cancer Challenge went quasi-virtual, but it didn't dampen our enthusiasm or our ambitions. More people than ever participated, logging over 25,000 miles on their own and joining online events, including health webinars, leading up to the final day, Oct. 3 (page 10).

Over three years, the walk-run-ride challenge has raised about \$1.5 million, seed money for pilot projects to let investigators develop data to compete effectively for grants. It has been a worthwhile

investment, generating \$28 million in awards from the National Institutes of Health, the Susan G. Komen Foundation and others. It also has funded many of our investigators' early-phase clinical studies of drugs, devices and biomarkers.

This year, participants across the United States and Canada came together to help defeat cancer, raising \$735,000, a record. Private companies also helped underwrite the event so that every penny raised by participants will support cancer research.

Visit anti-cancerchallenge.org to see photos of this year's activities.

And don't forget to start training for next year's challenge!

Advancing the highest standards of care

1 of 51

National Cancer Institute-designated comprehensive cancer centers in the United States

200+

cancer researchers, including globally renowned oncology specialists

1,100+

patients in interventional treatment trials since 2014

600+

journal publications by cancer center researchers since 2017

400%

increase in early-phase clinical trials since 2014

\$41 million+

research funding

105,000+

outpatient visits to UCI Health cancer clinics and infusion centers in FY 2019

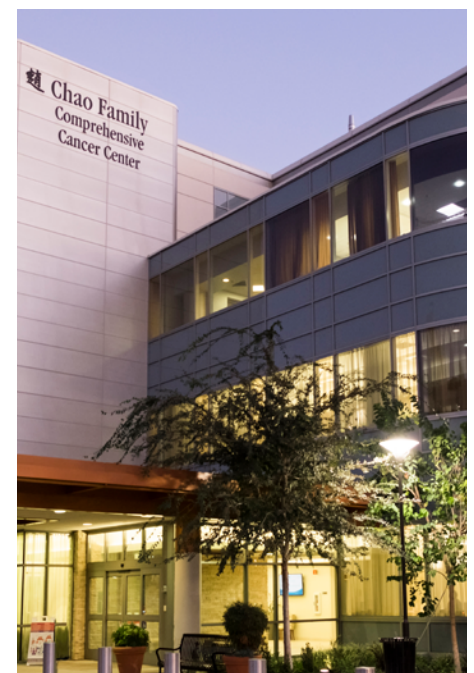
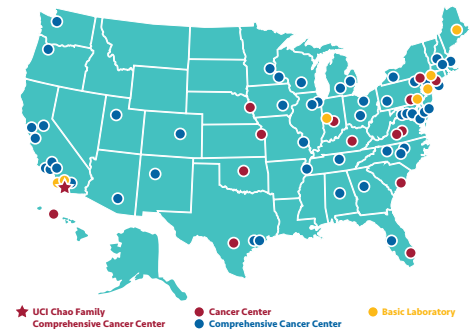
6,300+

new cancer patients in FY 2019

150+

infusion patients treated daily

National Cancer Institute-Designated Centers



A Cancer Center Designated by the National Cancer Institute

Clinical Advances

Lifesaving stem-cell transplants close to home

It's hard to overstate what the new bone-marrow transplant and stem-cell therapy program means for the future of the UCI Chao Family Comprehensive Cancer Center.

As Orange County's first adult stem-cell transplant service, our patients and their families no longer need to travel elsewhere for this life-saving treatment.

The Hematopoietic Stem Cell Transplant and Cellular Therapy Program also marks a new era of research and innovative immunotherapy options for patients with blood and other cancers.

Since 2013, the number of UCI Health patients with blood cancers such as leukemia and lymphoma who could benefit from such a transplant has

increased dramatically. Until now, we had to refer them elsewhere for the transplant.

But it's about more than convenience for these patients, said Dr. Richard Van Etten, director of the cancer center and a specialist in blood cancers. Referring them to other hospitals for transplants causes delays, too.

"There are a lot of logistical issues to get the referral set up, and insurance questions take time to resolve," he said. "Many patients don't have that time. So our stem cell program fits within our paradigm of trying to keep care close to home."

Since late May, 15 patients have received transplants, eight of them autologous (using the patient's stem cells) and seven allogeneic (using donor cells). The numbers are

expected to grow rapidly once the program is accredited in coming months.

Treatment usually begins by giving the patient high doses of chemotherapy, sometimes with radiation therapy, to kill any remaining cancer cells and bone marrow stem cells. Refreshed stem cells are infused and they settle in the bone marrow to make new blood cells.

Tumor hunters

"The allogeneic cells reset the patient's immune system," said program director Dr. Stefan O. Ciurea. "The new immune system recognizes the malignant tumor cells and attacks them."

The stem-cell transplant program also will enable the cancer center to offer more cellular therapy clinical trials for hematological malignancies and solid tumors. Among the most promising is CAR T-cell therapy, an innovative approach for certain blood cancers that is also being studied as a treatment for other cancer types. T-cells help orchestrate the body's immune response and kill cells infected by pathogens.

Specialized expertise

Transplanting hematopoietic stem cells is a highly complex procedure and requires considerable staff expertise and special facilities. Ciurea, Van Etten and two other physicians are trained in the field,

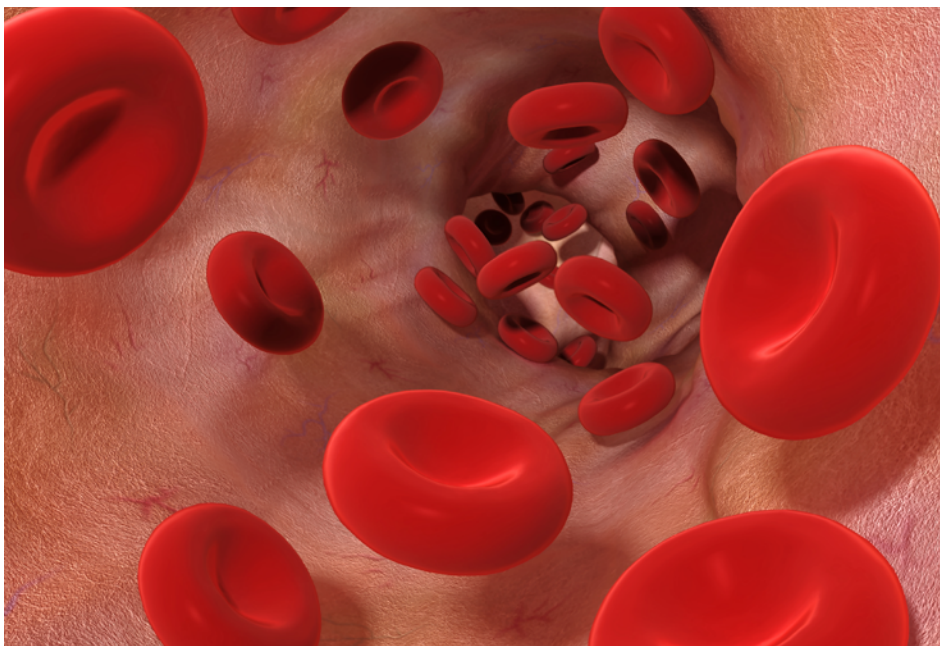


Illustration of red blood cells flowing through a vein

as is a staff of nurse specialists, pharmacists and other support personnel. UCI expects to complete construction of a facility on the Irvine campus next year to process cellular therapies.

“By its nature, this is a very risky treatment with many components,” Ciurea said. “We have to collect the stems cells and store them in a cell therapy lab. You also need a specialized lab to process them.”

Lengthy process

That’s why the procedure is typically performed only at academic medical

centers or National Cancer Institute-designated comprehensive cancer centers such as UCI’s. The entire treatment usually requires the patient to be hospitalized for at least a month.

Patients’ families had to travel an hour or more to Los Angeles or San Diego to visit. Once released, patients had to return often for follow-up testing and care. Distance made the recovery process that much more trying.

“When these patients leave the hospital, they are not completely

well,” Van Etten said. “They are very fragile and need to be seen three times a week by the team, and more frequently if there is an emergency. It’s a logistical nightmare for patients.

“We want to keep their care at UCI. Our patients want to stay with UCI physicians.”

[Read about our first patient at ucihealth.org/dan-ferguson](http://ucihealth.org/dan-ferguson)

Program physicians



Stefan O. Ciurea, MD,

directs the Hematopoietic Stem Cell Transplant and Cellular Therapy Program at the Chao Family Comprehensive Cancer Center.

Before joining UCI, he served for more than a decade on the faculty of MD Anderson’s Department of Stem Cell Transplantation and Cellular Therapy, where he pioneered the use of haploidentical donors for transplantation and a promising new approach using natural killer (NK) cells to decrease relapse after transplant.

A professor of hematology/oncology at the UCI School of Medicine, Ciurea is the author of more than 150 publications and over 10 book chapters. He is a frequent speaker at conferences around the world.

His research interests include improving outcomes of hematopoietic stem cell transplants and developing CAR T and NK cell therapies for cancer patients.



Pamela S. Becker, MD, PhD,

is co-leader of the cancer center’s Systems, Pathways and Targets program. A specialist in acute myeloid leukemia (AML) stem-cell transplantation, she comes to UCI from the University of Washington, where she developed game-changing precision medicine protocols to boost blood cancer treatments and expand the spectrum of drugs that may benefit patients.

Her research studies include the mechanism of cell adhesion-mediated chemotherapy resistance in AML, hematopoietic stem cell gene therapy for an inherited disorder of DNA repair, and precision therapy for AML and multiple myeloma, based on high-throughput drug sensitivity testing.

Becker, a UCI School of Medicine professor of hematology/oncology, is the author or co-author of more than 170 publications and an in-demand speaker at national and international conferences.



Deepa Jeyakumar, MD,

an associate professor of hematology/oncology at the UCI School of Medicine, was instrumental in launching the Hematopoietic Stem Cell Transplant and Cellular Therapy Program. She specializes in treating hematologic malignancies, including leukemia, lymphomas, myelodysplastic syndromes and myelomas.

Jeyakumar earned her medical degree at Temple University’s Lewis Katz School of Medicine in Philadelphia, followed by an internal medicine residency at the University of Illinois Medical Center in Chicago. She completed a fellowship in hematology/oncology at Tufts Medical Center in Boston and a fellowship in bone marrow transplantation at Stanford University.

She is the author or co-author of numerous publications, posters and abstracts, and a chapter on acute myelogenous leukemia in a leading book on care for cancer survivors.

Translational Research

From bench-to-bedside: creating new cancer therapies

Many community hospital cancer centers provide fine care. But institutions like the UCI Chao Family Comprehensive Cancer Center have key differences, including a bench-to-bedside approach that offers the most advanced patient care.

Leading-edge research starts in university laboratories, where scientists are developing new cancer treatments. Those researchers then work with doctors at National Cancer Institute-designated comprehensive cancer centers such as UCI's to devise a clinical trial to test a therapy in patients.

Comprehensive cancer centers work with community physicians, hospitals and clinics to help prevent cancer. They also study cancer patterns and patient survival rates in their region – in this case, Orange County and surrounding areas.

"We're developing new cures, testing



David Fruman, PhD

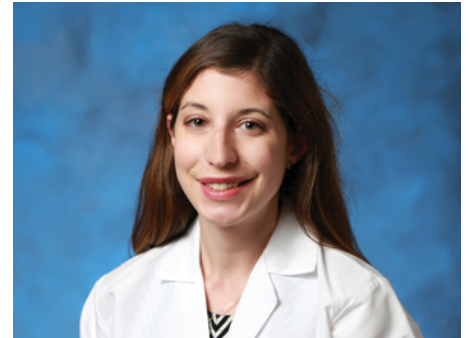
them in the clinic, and especially trying to address the needs of our community," said David Fruman, PhD, the cancer center's associate director for basic science and a UCI professor of molecular biology and biochemistry. "For example, in our outdoors-oriented community, melanoma is much more prevalent. There also are some cancers that are seen more in Latino and Asian populations, which have a large presence here."

Fruman and Dr. Elizabeth Brém, a cancer center oncologist, are researching the combination of a cancer drug with statins normally used to treat high cholesterol.

Called venetoclax, the cancer drug is approved for patients with chronic lymphocytic leukemia and acute myeloid leukemia.

"This drug was designed to flip a switch that induces cancer cells to kill themselves and doesn't affect healthy cells very much," Fruman said. "It was a pretty spectacular success, but it's not a cure. It makes patients feel better, and it can give them remission, sometimes for a long time."

Fruman and Brém, a blood cancer specialist, are studying whether statins make the treatment more effective after finding that venetoclax patients who also took statins were nearly twice as likely to have a complete response than those who weren't taking statins.



Elizabeth Brém, MD

"Millions of people take them," Fruman said of statins. "They're relatively safe and inexpensive."

The next step is to show the combination's effectiveness in a clinical trial, as well as how long remission may last and whether there are any side effects. It's the kind of work that brought Brém to the UCI cancer center.

"I only looked for positions at comprehensive cancer centers," she said. "I have a background in lab research, but I knew that wasn't where my skills were best used. I wanted to find somewhere where I could team up with a laboratory-based colleague."

A comprehensive cancer center isn't just attractive to researchers. It provides real benefits to patients.

"In a community hospital, patients would get whatever the standard of care is," Fruman said. "But a patient may have a disease that doesn't respond to the standard treatment. You have a better chance of getting more advanced treatment at a

comprehensive center. And you have access to other experts in the field of cancer care, including specially trained nurses and social workers.”

Some community hospitals are involved in clinical research but usually not first-in-human trials, Brém said. And community oncologists are often generalists who treat breast, colon, lung, blood and other cancers. At a

comprehensive cancer center, oncologists are highly specialized for specific types of cancer and actively participate in seminal research.

Brém is involved in several current clinical trials, including first-in-human phase 1 studies and national trials in blood cancers. They also have approval to test whether statins boost the effects of venetoclax in a phase 1 trial with

up to 15 patients. Phase 1 trials typically examine whether a new drug or combination is safe for further study.

“Even though it’s a safety trial, we’ll get some clue of its efficacy,” Brém said. The study is now recruiting patients.

For more information, contact Brém at ebrem@hs.uci.edu.

Community Outreach



Recipients give thanks for relief supplies.

LOVE for Orange County's neediest

The cancer center’s Community Outreach and Engagement Office (COE) has joined forces with Orange County groups to create Love Our Vulnerable and Elderly (LOVE) to meet the needs of seniors and others hard-hit by COVID-19.

LOVE, a coalition of nonprofit community organizations and COE,

seeks donations of food and basic necessities as well as volunteers, to deliver to the elderly, disabled and immunocompromised.

Because these people are at higher risk for serious complications from COVID-19, they must shelter at home, making them more dependent on others to bring them food and supplies. The homeless are also vulnerable, both to the virus and economic disruptions caused by the pandemic.

Through its go-fund-me page, LOVE already has received donations of more than \$28,000 toward its \$50,000 goal. Many community members also have donated materials and volunteered their time and services through www.oclove.org, the group’s website.

Last May 12, COE staff members and other LOVE volunteers came together to package and distribute donated relief supplies, all while

observing masking and physical distancing safety precautions.

LOVE partners include such Orange County organizations as Southland Integrated Services Inc., Korean Community Services, the Vietnamese American Cancer Foundation and Advance OC.

No new events are planned at this time due to COVID-19. However, the collaborative continues to receive supplies pledged through the LOVE website. A volunteer team of drivers will arrange pickup of donated supplies and distribution to community agencies that provide services to these vulnerable populations.

For more information and to donate, please visit www.oclove.org

Shared Resources

UCI acquires powerful cancer research tool

UCI cancer researchers now have access to the latest Helios mass cytometry system, one of only six such academic instruments in California and the only mass cytometer in Orange County.

With the Helios mass cytometry system, researchers can conduct deep profiling of translational and clinical research samples across a range of cell surfaces and intracellular markers.

The acquisition was made possible by the generous support of the UCI Chao Family Comprehensive Cancer Center, the Sue & Bill Gross Stem Cell Research Center, the UCI Office of Research and the UCI schools of Medicine and Biological Sciences.

Using novel cytometry by time-of-flight technology (CyTOF), Helios is able to profile 40 to 50 markers at a time, providing the most in-depth characterization of a single cell at the protein level.

Moreover, the CyTOF probes are labeled with heavy metals, resulting in little spectrum overlap and mitigating issues associated with multi-channel fluorescence flow cytometry.

Unlike traditional flow cytometers, CyTOF detects several different metal-tagged molecules within a group of cells. The molecules are then detected by the mass differences of the metal tags in a process similar to mass spectrometry.

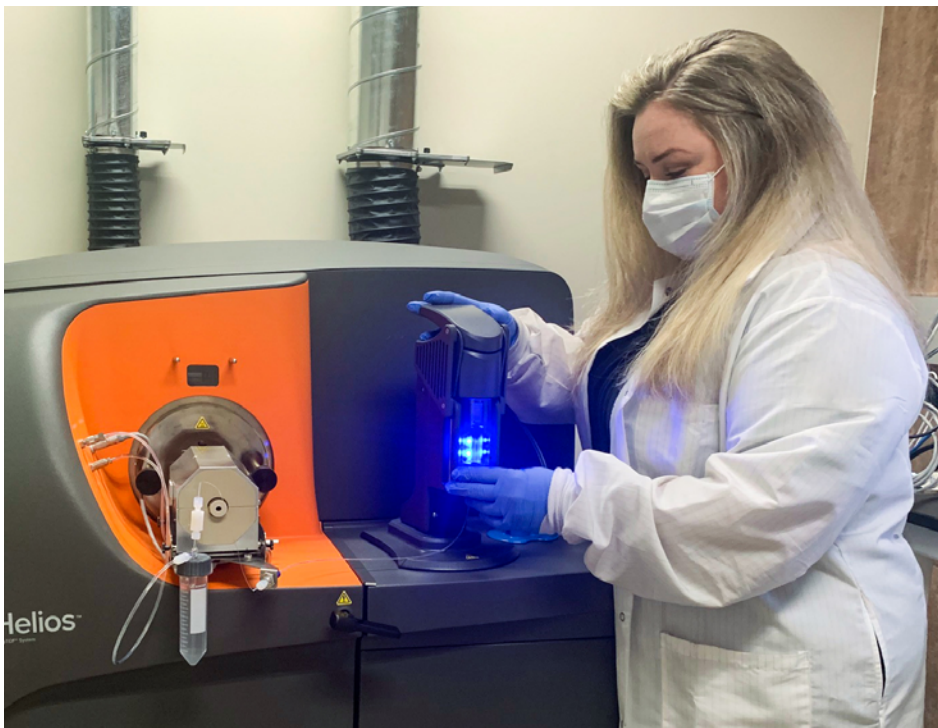
Advances with mass cytometry have uncovered potential disease biomarkers and immune signatures of patients before and after treatment with immunotherapies.

This can help guide a course of treatment, predict how a patient may respond to therapy and ultimately improve clinical outcomes.

Helios is housed in the Stem Cell Research Center Flow Cytometry Core Facility at Gross Hall on the university campus in Irvine. The core facility team offers technical assistance and a CyTOF® reagent storehouse to facilitate easy integration of Helios technology with existing research programs.

The team also provides data analysis services to maximize the Helios platform's utility to UCI researchers.

Learn more about Helios: Contact Vanessa Scarfone at vanessa.s@uci.edu or 949-824-0274.



Vanessa Scarfone with the Helios mass cytometer

New Faculty



Emad Elquza, MD, MBA

We are pleased to welcome Dr. Emad Elquza to the UCI Chao Family Comprehensive Cancer Center as its medical director of oncology services. He also was recently named interim executive director of ambulatory care for UCI Health.

In his cancer center role, Elquza supervises all outpatient and inpatient cancer services and the expansion of UCI Health cancer services to meet the needs of the region's diverse patient population. He also is charged with fully integrating the cancer center's clinical care and research missions.

He comes to UCI from Arizona's Banner – University Medical Center Tucson, where he was medical director of clinical oncology.

His research focus includes novel treatments for patients with pancreatic cancer and mobilizing stem cells in bone marrow transplant patients. He is the author or co-author of numerous publications and abstracts.



Sunmin Lee, ScD, MPH

Sunmin Lee, a professor of epidemiology in the UCI School of Medicine, is co-leader of the cancer center's Cancer Control program. A social epidemiologist, Lee designs and implements culturally and linguistically appropriate trials to reduce health disparities.

She has worked on studies funded by the NIH and the CDC to increase colorectal cancer screening, hepatitis B screening and vaccination, and breast cancer survivorship among Asian Americans. She comes to UCI from the University of Maryland's School of Medicine.



Thomas Milner, PhD

Thomas Milner, the director of the UCI Health Beckman Laser Institute & Medical Clinic, is the cancer center's co-leader of the Biotechnology, Imaging and Drug Development program. His research focus is on optical imaging methods and laser surgery to diagnose and treat disease.

He holds 55 patents for medical instruments that have helped better detect and diagnose such illnesses as glaucoma and heart disease, and treat many skin conditions. A professor in biomedical engineering and surgery, he comes to UCI from the University of Texas at Austin.

Other new cancer center members include:

- **Fangyuan Ding**, PhD, Biomedical Engineering
- **Cholsoon Jang**, PhD, Biological Chemistry
- **Arash Rezazadeh Kalebasty**, MD, Hematology/Oncology
- **Gina Lee**, PhD, Microbiology & Molecular Genetics
- **Melissa Mao**, MD, Surgery
- **Zahra Pakbaz**, MD, Hematology/Oncology
- **Maheswari Senthil**, MD, Surgery
- **Xiaoyu Shi**, PhD, Developmental and Cell Biology
- **Seunghyun Sim**, PhD, Chemistry
- **Jennifer Valerin**, MD, PhD Hematology/Oncology
- **Liangzhong (Shawn) Xiang**, PhD, Radiological Sciences

News

Prestigious grant awarded

The UCI Chao Family Comprehensive Cancer Center received its first-ever administrative supplement to the NCI P30 Cancer Center Support Grant to improve access to early-phase clinical trials for minority and underserved populations.

Clinical trial participants should represent all patients who will benefit from medical products. Racial and ethnic minorities are underrepresented in clinical research, which is a concern because people of different ages, races and ethnicities may react differently to medical products.

The supplement of \$785,000 was awarded based on the cancer center's demonstrated commitment to and success in enrolling minority patients in clinical trials, the robust research infrastructure of its Stern Center for Cancer Clinical Trials & Research, and the faculty's expertise with early-phase clinical trials.

The award gives cancer center investigators access to the NCI's Experimental Therapeutics Clinical Trials Network, its portfolio of early-phase, precision-medicine trials and resources to conduct community outreach activities. In the first year of these early-phase trials, the team must enroll 24 patients, half of whom must be a racial or ethnic minority.

The multidisciplinary team, led by the Stern Center's medical director,

Susan M. O'Brien, MD, includes oncologists who specialize in blood, GI, genitourinary and lung cancers, radiation oncologists, the Office of Community Outreach & Engagement and the Vietnamese outreach program.

Cancer and COVID-19

The UCI Chao Family Comprehensive Cancer Center is participating in a nationwide study of the effects of COVID-19 on patients being treated for cancer.

The study seeks to determine whether the viral infection disrupts cancer therapy and results in worse outcomes. Cancer patients are considered more vulnerable to serious illness from the virus because of their treatment or the disease itself.

The NCI's longitudinal study aims to follow 2,000 U.S. patients undergoing cancer treatment who test positive for SARS-CoV-2 within 14 days of enrollment.

O'Brien, who is also the cancer center's associate director, is the principal investigator at UCI.

Speaking out on leukemia and lymphoma

The future of frontline therapies for chronic lymphocytic leukemia (CLL) is highlighted in a four-part video series featuring O'Brien, the cancer center's associate director and national expert in leukemias.



Susan M. O'Brien, MD

Presented by CURE® Speaking Out, a national platform for patients, caregivers and advocates, the series titled "Understanding Chronic Lymphocytic Leukemia" gives an overview of the disease, its signs, symptoms and risk factors, as well as emerging treatments, long-term survival with the disease and how to join a clinical trial.

"Currently we have so many great options for frontline therapy of CLL, we can find an option that is right for any patient," said O'Brien, who is also the national spokesperson for the Leukemia & Lymphoma Society.

View the series, which debuted on World Lymphoma Awareness Day in September, at www.curetoday.com/speaking-out/understanding-chronic-lymphocytic-leukemia

2020 virtual 'Challenge' sets record

Pivoting from a one-day festival attended by thousands to eight weeks of virtual activities, the 2020 UCI Anti-Cancer Challenge united people across the nation and Canada in a movement to defeat cancer.

Participants in the fourth annual event raised a record \$735,000 for promising cancer research at the UCI Chao Family Comprehensive Cancer Center, and received valued support from partners in research.

This year's event featured weekly

virtual fitness challenges leading up to Challenge Day, Saturday, Oct. 3. For the previous eight weeks, participants collectively logged 25,000 miles on individually chosen routes to raise awareness and funds for cancer research. UCI experts also hosted public webinars on such topics as melanoma, nutrition and sleep.

Challenge Day opened with an online morning ceremony hosted by Monster Energy and country musician Rick Monroe singing

the national anthem. Two-time Ultimate Fighting Championship bantamweight titleholder Dominick Cruz and KTLA 5 meteorologist Henry DiCarlo served as emcees. Throughout the day, people posted personal stories of achievement and support.

One hundred percent of the funds raised by participants will go directly to cancer-related pilot studies and early-phase clinical research.

Learn more at anti-cancerchallenge.org



UCI Health

333 City Blvd. West, Suite 1250
Orange, CA 92868-2990

CONNECT WITH US

ucihealth.org



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SUPPORT UCI HEALTH

Few things in life matter more than your health. As Orange County's only academic medical system, UCI Health pushes the frontiers of lifesaving research while improving health and wellness in our community and beyond.

We couldn't do it without you. With your partnership, we will make new medical breakthroughs, redefine patient treatment and the teaching of personalized healthcare, as well as promote the physical and mental health of our communities. Become an active partner in charting UCI Health's future path.

To support the expansion of UCI Health, thank a provider or honor a loved one's memory, visit, ucihealth.org/makeagift or call 714-456-7350. Gifts to UCI Health support UCI's Brilliant Future campaign.

BRILLIANT FUTURE
THE CAMPAIGN FOR **UCI**