

Annual Impact Report 2020/21



**UCI Susan & Henry Samueli
College of Health Sciences**
1001 Health Sciences Road
Irvine, CA 92697-3950
cohs.uci.edu

UCI Susan & Henry Samueli
College of Health Sciences



“Imagine what we can and will do as we move out of crisis mode and back to playing offense. Imagine the impact we will have on the health of our community together.”

Chad Lefteris, CEO UCI Health

About us

The Future of Health Happens Here

UCI Health Affairs is Orange County's only university-based health system, driven by scientific discovery, clinical innovation and a commitment to providing world-class care. With annual revenue of \$2.3 billion, UCI Health Affairs is home to the Susan & Henry Samueli College of Health Sciences, UCI Health (our healthcare delivery system), and multiple research centers and institutes. Together, these units create a first-of-its-kind alliance across health disciplines, through team-based, interprofessional clinical research, teaching and healing.

Susan & Henry Samueli College of Health Sciences

Our integrative model of health in the Susan & Henry Samueli College of Health Sciences transcends traditional disciplinary boundaries. Here at UCI, interprofessional teams of educators, researchers and students leverage evidence-based integrative approaches to advance the frontiers of health.

School of Medicine

Connecting innovative medical discoveries with the humanistic aspects of patient care

Sue & Bill Gross School of Nursing

Championing interdisciplinary approaches that enhance the health of our communities

School of Pharmacy & Pharmaceutical Sciences

Accelerating innovations that save lives, reduce costs and optimize medication use

Program in Public Health *Future School of Population and Public Health*

Creating, integrating and translating population-based knowledge into preventive strategies

Susan Samueli Integrative Health Institute

Pioneering a multidisciplinary, evidence-based, integrative approach to health

UCI Health

Stopping at nothing to be the best place to give and get care in Orange County and beyond through improving health, increasing value and transforming our community

Research Centers & Institutes of Health

Pushing the boundaries of innovation and discovery

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Vice Chancellor's Message

This year has been truly remarkable. On reflection, we will recall the period as among our finest hours. At UCI Health Affairs, we prepare for great challenges hoping that our talents will not be required. And so, with forethought, innovation, and resiliency, we cared for Orange County and shared our powerful strategies to help others across the nation. In rising to the pandemic, the UCI Health Affairs mission to DISCOVER, TEACH, and HEAL demonstrated again its power. Concurrently, we were able to move forward on our long-term goals without pause.



Steve A. N. Goldstein, MA, MD, PhD, FAAP
Vice Chancellor for Health Affairs
Distinguished Professor, Departments of Pediatrics, Physiology & Biophysics, and Pharmaceutical Sciences

The Susan & Henry Samueli College of Health Sciences, UCI Health, and the UCI Centers and Institutes of Health – all together UCI Health Affairs – spearheaded an extraordinary response to the pandemic. Reaching across the county and the country, our basic and translational research, work with public healthcare agencies, and clinical trials were at the forefront, for example, leading the U.S. Department of Health & Human Services to share our AI-driven optimal patient care model for the “101st patient” nationwide.

Our physicians, nurses, pharmacists, population health, and integrative health providers mobilized to confront the health and societal impacts of COVID-19. From speedily advancing diagnostics and treatments at the molecular level into practice, partnering with the local community to mitigate the spread of disease and support of the most vulnerable, and

standing up robust telehealth offerings across almost all specialties, we acted as one to protect and serve.

At the same time, our pioneering plans for growth continued. We broke ground on the new UCI Medical Center – Irvine that will bring world-class care to south Orange County, recruiting more top talent and creating great jobs. Anchors of this complex on the north edge of the main campus on Jamboree Road are the Chao Family Ambulatory Surgery and Cancer Center, the Center for Advanced Care, and a 144-bed hospital, which will open in phases between 2023 and 2025. These state-of-the-art facilities are designed with sustainability in mind to support the wellbeing of humans and the planet.

And in the first quarter of the 2021-22 year, we announced exciting new initiatives, including a \$30 million naming gift from Prof. Robert A. Mah and Dr. Adeline Yen Mah for the 200,000

square foot Falling Leaves Foundation Medical Innovation building. To open in 2025, it will empower the cross-disciplinary basic and translational research achievements that keep UCI Health Affairs at the innovative cusp of discoveries that improve lives.

It is my pleasure – on behalf of UCI Health Affairs – to share this annual impact report to highlight just a few of the marvelous array of pioneering breakthroughs transforming wellness and healthcare for our loved ones and generations to come.

This year has shown how the virtuous cycle of discovery, teaching and healing in a university-based health system has no peer. I could not be any prouder of the passion and achievements of the people who are UCI Health Affairs.

Yours in health,

Dr. Steve Goldstein

Executive Leadership



Bernadette Boden-Albala, MPH, DrPH
Director and Founding Dean
Program in Public Health



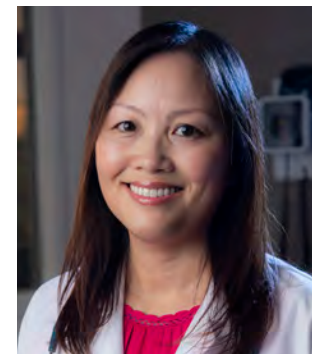
Rebecca Brusuelas-James
Associate Vice Chancellor
for Finance



Jan D. Hirsch, BS Pharm, PhD, FNAP
Founding Dean
School of Pharmacy &
Pharmaceutical Sciences



Sheefteh Khalili, PhD
Associate Vice Chancellor and
Chief of Staff for Health Affairs



Khanh-Van Le-Bucklin, MD, MEd
Associate Vice Chancellor
for Education



Chad T. Lefteris, FACHE
Chief Executive Officer
UCI Health



Sherry L. K. Main, MBA
Associate Vice Chancellor
for Communications
& Public Affairs



Shaista Malik, MD, PhD, MPH, FACC
Associate Vice Chancellor
for Integrative Health
Executive Director
Susan Samueli Integrative Health Institute



Adey M. Nyamathi, ANP, PhD, FAAN
Founding Dean
Sue & Bill Gross School of Nursing



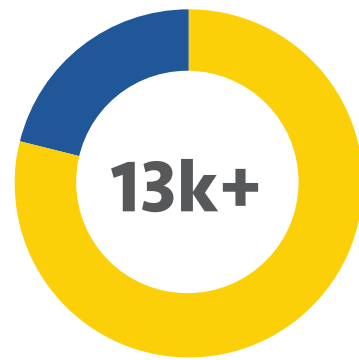
Caroline Pereira, MBA
Associate Vice Chancellor
Health Advancement



Michael J. Stamos, MD, FACS, FASCRS
Dean
School of Medicine

Who We Are

Total Faculty, Staff, Students
 10,255 Faculty & Staff
 2,745 Students
13,000+ students, faculty, and staff



■ Students ■ Faculty & Staff

COHS Enrollment by School

School of Pharmacy & Pharmaceutical Sciences

- 521 Undergraduates
- 67 Graduate & Professional

588

School of Medicine

- 569 Graduate & Professional
- 811 Residents, Interns, Postdoctoral Scholars

1,380

Program in Public Health

- 1,203 Undergraduates
- 127 Graduate & Professional

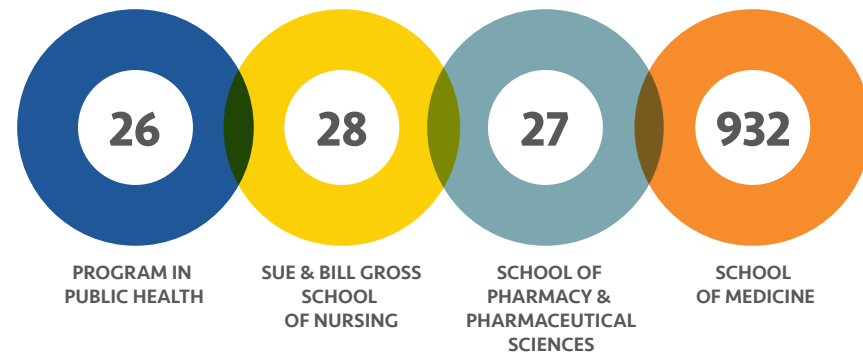
1,330

Sue & Bill Gross School of Nursing

- 158 Undergraduates
- 100 Graduate & Professional

258

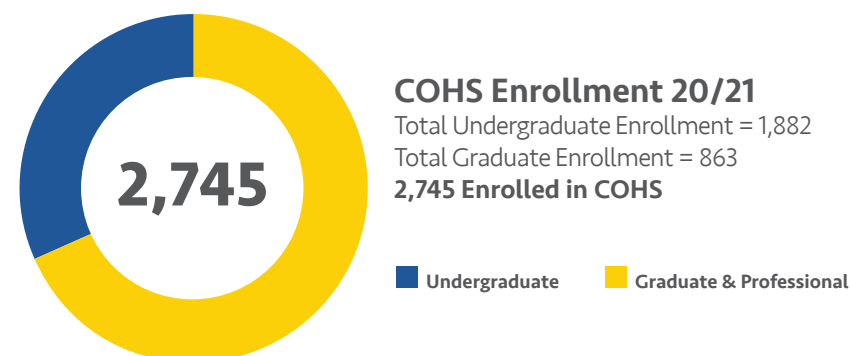
Faculty Breakdown
 The Susan & Henry Samueli College of Health Sciences has over 1,000 faculty



92%
 of enrolled students in the COHS are California residents

29%
 of COHS undergraduates and 22.8% of graduate/professional students identify as an underrepresented minority

53%
 of COHS undergraduates identify as first-generation, students whose parent/guardian have not received a bachelor's degree

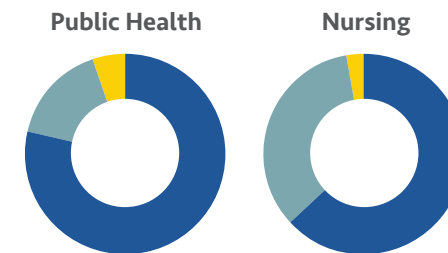


COHS Enrollment 20/21
 Total Undergraduate Enrollment = 1,882
 Total Graduate Enrollment = 863
2,745 Enrolled in COHS

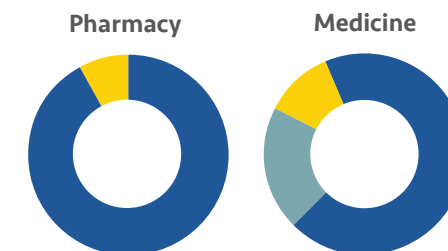
■ Undergraduate ■ Graduate & Professional

Academic Impact

COHS Degrees Awarded
 (Summer 2019 - Spring 2020)



■ Undergraduate ■ Masters ■ Doctoral



■ Undergraduate ■ Doctoral ■ Doctoral-MD ■ Masters ■ Doctoral

17,000+
 Applications received across all COHS degree programs

855
 Degrees Awarded in 2019-20

COHS Degrees Programs

17

GRADUATE PROGRAMS

- Master of Public Health, MPH
- Public Health, PhD
- Biomedical Sciences, PhD
- Biomedical and Translational Science, MS-BATS
- Environmental Health Sciences, MS
- Environmental Health Sciences, PhD
- Epidemiology, MS
- Epidemiology, PhD
- Genetic Counseling, MS
- Doctor of Medicine, MD
- Doctor of Nursing Practice - Family Nurse Practitioner, DNP
- Doctor of Nursing Practice - Post-Master's, DNP
- Nursing Science Community and Population Health Concentration (MEPN), MS
- Nursing Science, PhD
- Pharmacology, MS
- Pharmacological Sciences, PhD
- Doctor of Pharmacy, PharmD

5

UNDERGRADUATE PROGRAMS

- Public Health Policy, BA
- Public Health Sciences, BS
- Public Health Minor
- Nursing Science, BS
- Pharmaceutical Sciences, BS

7

DUAL-DEGREE PROGRAMS

- Medical Scientist Training Program (MD/PhD)
- Program in Medical Education for the Latino Community (PRIME-LC)
- MD/MBA
- Biomedical and Translational Science MS (MD/MS-BATS)
- MD/MPH
- Health Education to Advance Leaders in Integrative Medicine (HEAL-IM)
- Leadership Education to Advance Diversity-African, Black & Caribbean (LEAD-ABC)

Research Impact

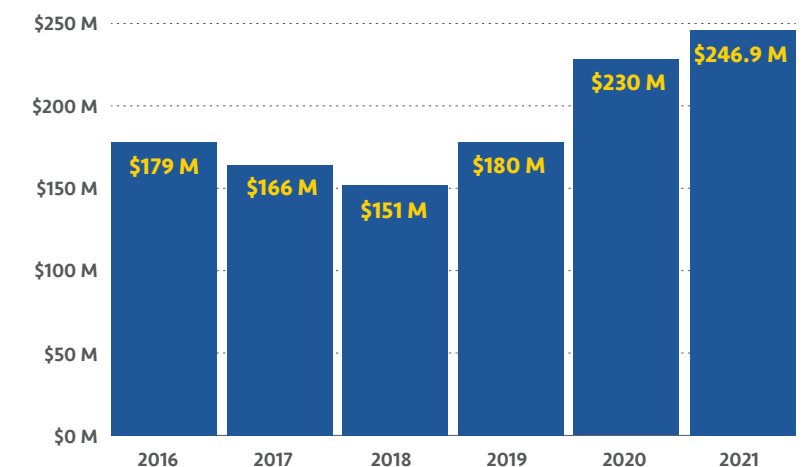
"UCI is the region's only university-based health system, and year-over-year growth in external funding underscores how we are leading the way by empowering discoveries and training the diverse, interprofessional healthcare workforce of the future to carry on that legacy."

Steve A. N. Goldstein, MA, MD, PhD, FAAP
 Vice Chancellor, Health Affairs

\$246.9 MILLION*

* In 2020-2021 Fiscal Year Research Awards Totaled \$246.9 Million Across Health Affairs

College Research Award Trends



Philanthropic Impact



\$86.7 Million

Raised in Philanthropic Support

Health Affairs had an **89% increase** in gifts from 2019-20 to 2020-21



Capital Projects

Over the next 5 years, Health Affairs will expand by nearly **2 million sq ft**

Between both the Health Sciences District and UCI Medical Center – Irvine projects

2,500 NEW JOBS

will be generated within Orange County

Clinical Impact

Susan Samueli Integrative Health Institute

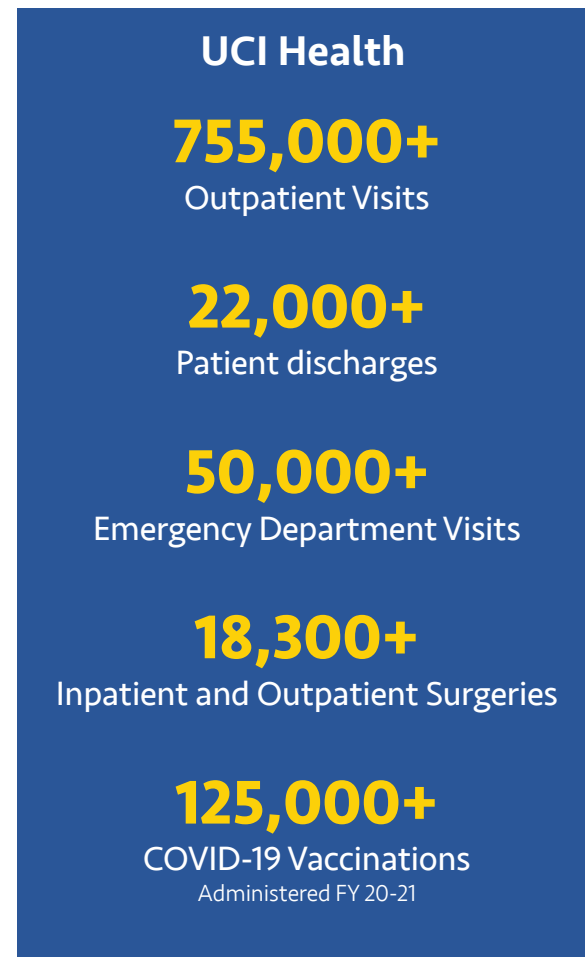
3,265

staff served through the UCI Wellbeing Initiative

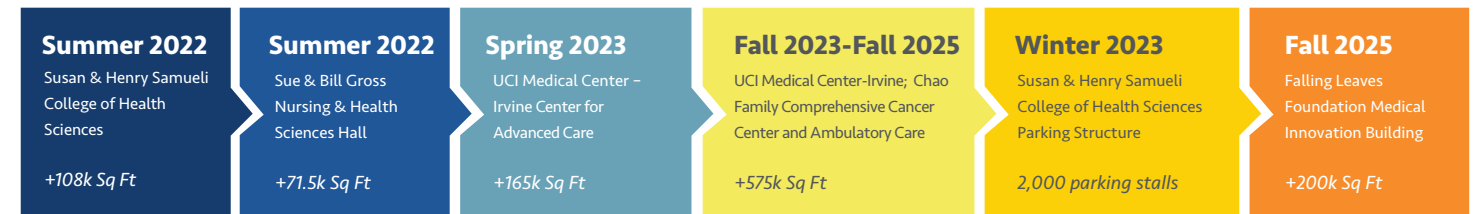
21,074

inpatient and outpatient integrative medicine clinical visits

The Susan Samueli Integrative Health Institute is home to 5 faculty, 27 staff, and 36 clinicians, and works with over 70 medical students and residents annually through educational and research programs



Capital Projects Timeline



Health Sciences District

The new district will include the 108,200-square-foot building for the Susan & Henry Samueli College of Health Sciences (Summer 2022), adjoining 71,500-square-foot building for the Sue & Bill Gross School of Nursing, in addition to the future (Summer 2022) 2,000-stall Health Sciences Parking Structure completion.

UCI Medical Center – Irvine

The new UCI Medical Center – Irvine includes a hospital, Chao Family Comprehensive Cancer Center and Ambulatory Care, and Center for Advanced Care totaling 575,000 square feet in new medical space.



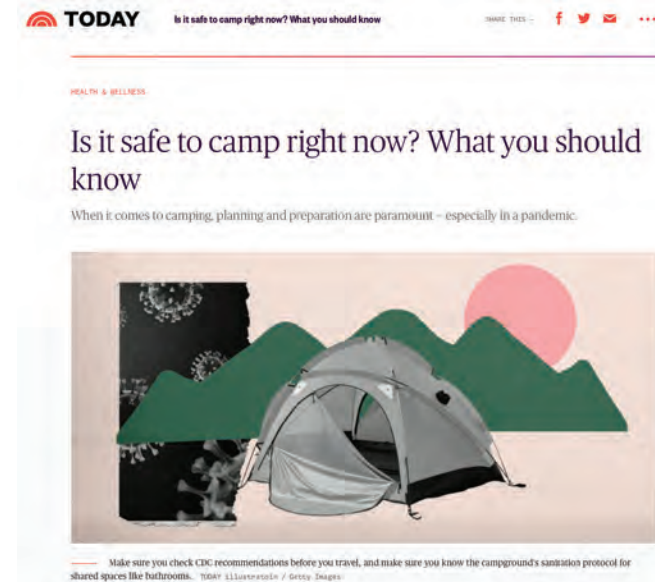
Top News in National Media

UCI Big Hits List

UCI Health Affairs had more than 4,000 placements in the media across the region, nationally and abroad this year. With 40 billion impressions over the 12-months period, UCI dominated with a 90% share of voice in the Orange County market at the peak of COVID in August 2020.

Is it safe to camp right now? What you should know

Today; Shruti Gohil; 7/13/2020



The COVID-19 guide to holiday travel – and the case for why you shouldn't go this year

USA Today; Karen Edwards; 10/16/2020

UCI to improve patient care, advance research through technology partnership with Syntropy

UCI News; Steve Goldstein; 10/06/2021

The Coronavirus Pandemic + LIVE Covid-19 Updates Coronavirus Map and Cases Hospitalizations in Southern L.C.U.s Vaccine Mandate

How Risky Are Indoor Sports This Winter?

Parents are agonizing over whether to enroll their kids in organized indoor sports.



A big Alzheimer's drug study is proceeding cautiously, despite the pandemic

NPR; Joshua Grill; 10/20/2020

Is there a secret to living well into your 90s?

60 Minutes (CBS); Claudia Kawas; 11/19/2020;



How Risky Are Indoor Sports This Winter?

The New York Times; Susan Huang; 11/18/2020

How to Become a Doctor: A Step-by-Step Guide

U.S. News & World Report; Megan Osborn ; 11/30/2020

The year of blur

The New York Times; Alison Holman; 11/2/2020

Gaps Feared if Hospitals, Pharmacies Sole Covid Vaccine Source

Bloomberg; Jan Hirsch; 1/11/2021

US rushes to catch up in the race to detect mutant viruses

AP; Ilhem Messaoudi; 2/4/2021



Many 'Long Covid' Patients Had No Symptoms From Their Initial Infection

The New York Times; Melissa Pinto; 3/9/2021;

Medical students haven't been deterred by the stress of Covid on hospitals and staff – they are eager to help

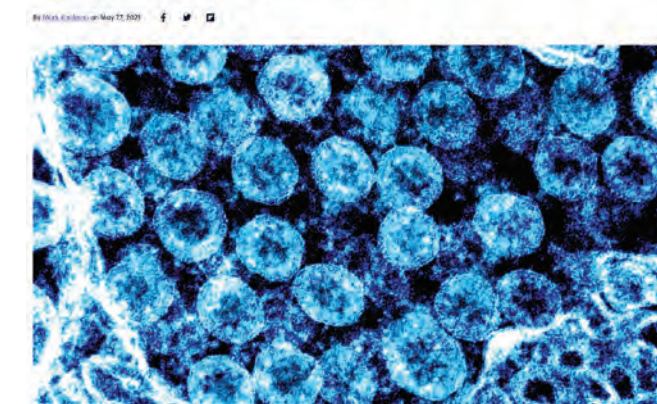
CNBC; Chika Okeke, ; 4/7/2021



Tech Life Social Good Entertainment Newsletters Search

Why COVID vaccines give way better protection than a COVID infection

"The evidence is really clear. The vaccines do provide better immunity."



How travelers can find vaccines on the road

The Washington Post; Bernadette Boden-Albala; 4/16/2021;

Mask On or Off? Life Gets Back to Normal, and We're Rusty

The New York Times; Susan Huang; 4/29/2021

Why COVID vaccines give way better protection than a COVID infection

Mashable; Philip Felgner; 5/27/2021

As Life Begins To Return To Normal, Psychologists Say Expect Anxiety

NPR; Dana Garfin; 5/26/2021

COVID-19 vaccine creators win prestigious Spanish prize

AP; Philip Felgner; 6/24/2021



UCI researcher Lbachir BenMohamed and team are exploring alternative distribution methods for a pan-coronavirus vaccine, including a patch which could reach more of the public.

UCI researchers work on preemptive vaccine for all coronaviruses

Through a multimillion-dollar grant from the National Institute for Allergy and Infectious Diseases, Lbachir BenMohamed, PhD, School of Medicine Professor and Director, Cellular and Molecular Immunology, Ophthalmology, and his colleagues are developing a preemptive vaccine that could thwart a new coronavirus before it got a chance to spread to humans.

BenMohamed's lab examined more than 20 SARS-CoV-2 proteins and found that the immune systems reacts to each one of them in different ways. Their pan-coronavirus vaccine focuses on epitopes — parts of viral proteins that evoke immune responses — from SARS-CoV-1, SARS-CoV-2, four of the most typical viruses that produce the common cold, as well as several animal coronaviruses, including those in bats. Results have been promising, showing that laboratory animals have produced T-cells and antibodies in reaction to the many prototype pan-coronavirus vaccine candidates. If the vaccine is successful in providing preemptive protection against all coronaviruses, this multi-epitope method may be a useful approach for a variety of illnesses.

Therapeutic effects of cilantro

A new study led by Professor Geoffrey Abbott and published in FASEB Journal uncovered the underlying science of herbs, including cilantro, in delaying seizures common in epilepsy and other diseases. Cilantro has traditionally been used as an anticonvulsant treatment, and now we understand the molecular mechanisms behind this. UCI scientists found that the molecular action of cilantro is a potent KCNQ potassium channel activator that reduces neuronal excitability that leads to seizure activity. Dodecenal, a specific component of cilantro, binds to a part of the potassium channels to open them and this opening reduces cellular excitability. This discovery has the potential to drive new treatments.

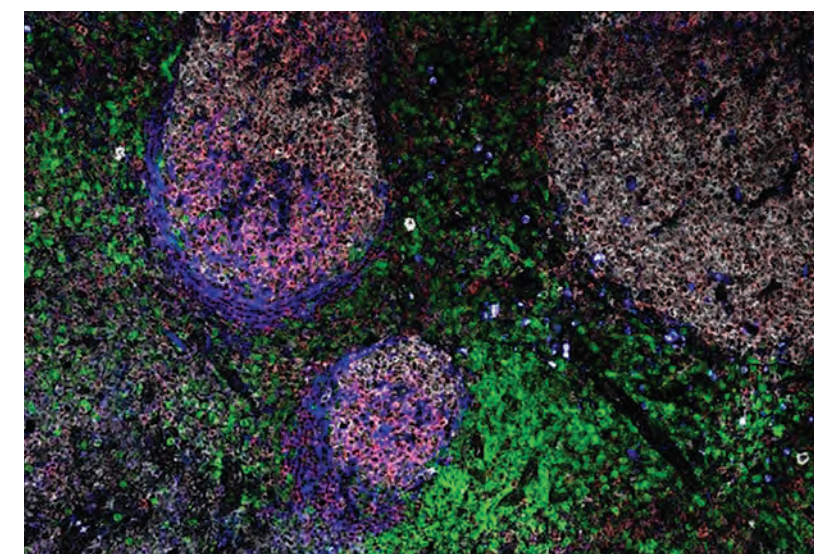


CRISPR technology lays foundation for restoring vision

Irving H. Leopold chair in the Gavin Herbert Eye Institute, Krzysztof Palczewski, PhD, the Department of Ophthalmology and UCI, led a new study showing the restoration of retinal and visual functions of mice models suffering from inherited retinal disease. The study used CRISPR technology and will serve as foundation for the new therapeutic modality for a wide range of inherited ocular diseases caused by different gene mutations.

UCI researcher wins Wellcome Leap grant to improve vaccine design

Lisa Wagar, PhD, assistant professor in the Department of Physiology & Biophysics at UCI School of Medicine, was awarded a grant by the Wellcome Leap Fund to study human tonsil organoids. The focus of her lab is translational human immunology and using organoids to understand the complex interactions that occur between immune cells upon vaccination and infection in humans.



Immune organoids can be produced from human tonsil tissues, spleen, and lymph nodes. These organoids respond appropriately to influenza vaccines and viruses.

Sue & Bill Gross School of Nursing



Nurse moral injury study, collaboration with Department of Psychological Science

Faculty and one student within the Sue & Bill Gross School of Nursing received research grants from the Institute for Clinical and Translational Research (ICTS) as part of its Campus-Community Research Incubator Program to study how COVID-19 has impacted nurses. Assistant Professor Candace Burton, nursing PhD student Danisha Jenkins, and Alyson Zalta, assistant professor in the UCI Department of Psychological Science, are using this grant to study the impact of moral challenges nurses are facing during the COVID pandemic and their potential contribution to professional turnover. The pandemic has taken a tremendous toll on frontline nurses, and many are directly involved in caring for COVID patients. Issues of insufficient supplies, illness among staff, and increased acuity in patient populations have all taken their toll. Burton, Jenkins and Alta's study aims to uncover the differences between the core responsibilities of the school nurse before COVID and their additional COVID functions, better understand moral injury linkages, and help establish the infrastructure for joint nursing research.

Digital model of community-centered care, collaboration with Computer Science

UCI Sue & Bill Gross School of Nursing Assistant Professor Amir M. Rahmani, PhD, has been awarded a National Science Foundation planning grant to establish a model of digital community-centered care. Current community-centered care models are inefficient, costly, and are not scalable. Community-centered care models rely on caregivers to provide crucial services to the elderly, disabled, and other vulnerable populations. Registered nurses supervise the caregivers. The goal of this research is to transform the current system into one that is efficient, automated, and scalable. This grant will help fund much needed community-focused research, establish a community advisory board, conduct focus groups to identify concerns and barriers, and conduct feasibility workshops and need assessments to evaluate progress. Having affordable technology allows health systems to better serve vulnerable or rural populations and connects healthcare providers to communities in most need.

Graduated our first cohort in the Doctor of Nursing practice (DNP) program, Pat Patton and Ashley Plummer

The inaugural cohort of the Doctor of Nursing Practice (DNP) Program graduated this summer, prepared to continue their impactful leadership and work.

Included in this cohort is Ashley Plummer, DNP, WHNP, who studied the impact of a text-based partner notification service designed to slow the spread of adolescent chlamydia in Denver, where it is the most common sexually transmitted infection. When a person is diagnosed with chlamydia in her clinic, their partners are notified via text message and provided with resources for treatment.

Pat Patton, DNP, has a storied career as a nurse, from serving in the armed forces to executive nursing positions. That experience helped him understand the value of nursing to patient care and outcomes, and the human element nurses bring to healthcare. A top nursing executive at the University of California, San Francisco, Patton's dedication to patient care has brought him to the pinnacle of his nursing career and serves as a model example of leadership in nursing.



A firm believer in empowering nurses to take aim for the highest of aspirations, Patton is always looking for ways to push nurses beyond what they thought could be possible.

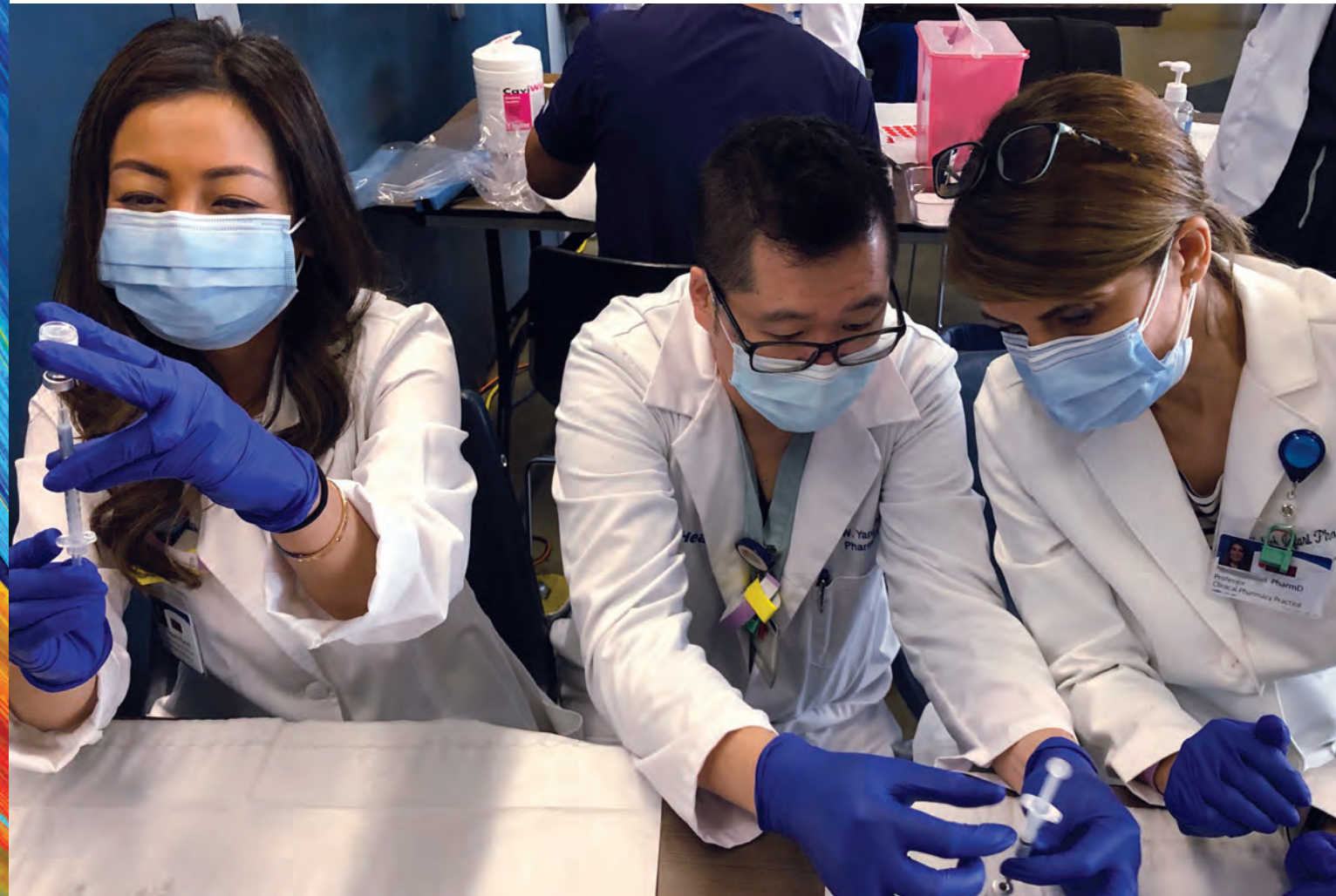


Center for Nursing Philosophy

Associate Professor Miriam Bender is bringing together an international community of nursing philosophers in a quest to define nursing practice, in her role as director of the Center for Nursing Philosophy, the first in the United States. It is no easy feat. "Ask any nurse to define nursing. They'll tell you an amazing story, but you won't get a definition," she says.

By developing concepts and discourse, Bender hopes the community can contribute to the understanding of nursing's unique potency.

School of Pharmacy & Pharmaceutical Sciences



UCI launches School of Pharmacy & Pharmaceutical Sciences

The University announced the establishment of the School of Pharmacy and Pharmaceutical Sciences, as part of its prescription to change 21st-century health. This is the first public pharmacy school in the Los Angeles-Orange County region and a pillar of UCI's expanding Susan & Henry Samueli College of Health Sciences. The school spans a continuum, from discovery, development, and delivery of new drugs, devices, and diagnostics, all the way to optimizing medication therapy in patients and patient populations.

This is the first public pharmacy school in the Los Angeles-Orange County region and a pillar of UCI's expanding Susan & Henry Samueli College of Health Sciences.

Schizophrenia: nurture cannot overcome nature

UCI research led by Amal Alachkar, associate professor of teaching in pharmaceutical sciences, found that too much of a certain amino acid in utero caused schizophrenia in mice despite the quality of postpartum caregiving. The study suggests that the same would be true with humans. The pups with excess methionine showed signs of schizophrenia, and those without it did not. The results undermine the idea that nurture can avert schizophrenia. The results also noted that the offspring that did not receive the extra amino acid were not endangered. These findings may open the door for scientists to develop a drug to stop these genetic changes from happening early in life. The goal would be to create pharmaceuticals to treat, cure or – ideally – prevent schizophrenia. The translational science possibilities are also being considered for other mental health diseases such as Alzheimer's and autism. The early intervention aspect of this research study will certainly inform future studies that go beyond treating schizophrenia to preventing it all together.



\$1.25 million gift leads to unexpected discoveries in cancer therapeutics

Professor Young Jik Kwon was introduced to the Research and Development team at PharmaResearch through a mutual friend in 2015. Until then, PharmaResearch was focused on exploring DNA as biomaterials for cosmetic and pharmaceutical applications, mainly with the goal of advancing regenerative medicine.

In what came as a surprise to Kwon, PharmaResearch expressed commitment to this new research direction with a \$1.25 million gift. A five-year research collaboration with UCI's BioTherapeutics Engineering Laboratory (BioTEL), led by Kwon, quickly ensued.

The collaboration resulted in a potentially effective, manufacturing-enabled nanoscale formulation of one of the most widely used cancer chemotherapeutics, based on the company's DNA and BioTEL's nanomedicine technology.



Program in Public Health

Future School of Population and Public Health



Antibody screening finds COVID-19 nearly 7 times more prevalent in O.C. than thought

In October 2020, data from a UCI-based COVID-19 antibody screening study showed seven times the amount of COVID-19 was present among Orange County residents than previously thought. To conduct the screening UCI partnered with marketing firm LRW Group to recruit a representative sample of residents, as well as with the Orange County Health Care Agency. The screenings were conducted using the UCI-developed imaging platform, highly sensitive technology that allowed researchers to identify whether participants had contracted COVID-19.

UC Irvine workshop trains residents in COVID-19 hot spots to do contact tracing

To address barriers in access to care and critical health information among OC residents, UCI partnered with Orange County Health Care Agency and community organizations to host a four-week contact tracing workshop. Designed with a fundamental focus on health equity, the workshop worked directly with community members to train a workforce of OC residents, students, and public health practitioners to conduct contact tracing. The result was an increase in the number of contact tracers and a better understanding of the spread of the virus across the community. Additionally, this workshop was the foundation for the current campus contact tracing program that continues to serve the UCI community

Doctoral student Anqi Jiao selected as one of seven UCI Solutions that Scale Graduate Fellows for work on impacts of heat exposure on pregnancy outcomes

Leading the way on linking climate science with health, PhD student Anqi Jiao, was chosen as the Solutions that Scale Graduate Fellow from Public Health. Her PhD advisor is Jun Wu, a professor of environmental and occupational health. Her study: "Impact of Heat Exposure on Pregnancy Outcomes: Climate Adaptation by Modifiable Built Environment Factors," focuses on extreme heat events due to climate change and their association with health outcomes including preterm birth and severe maternal morbidity. It also looks at the impact of climate adaptation factors such as green space and the potential for them to reduce preterm birth and severe maternal morbidity incidences.



California wildfires disproportionately affect elderly and poor residents, UCI study finds

As California's wildfire burn area has increased by more than 23,000 acres per year over the past two decades, the number of people who have been adversely affected has nearly doubled, according to a paper published recently in the *International Journal of Environmental Research and Public Health*. UCI researchers show that elderly and low-income residents have suffered a disproportionate share of the fires' impacts. UCI scientists analyzed the fire frequency and areas burned by wildfires across all census tracts in California over the last 20 years. Between 1980 and 1999, catastrophic wildfires happened an average of 1.5 times per decade. From 2000 to 2019, incidents increased to seven per 10-year period. Cumulative costs jumped from \$10 billion to \$75 billion over the two-time spans, as noted in the study. A large portion of these expenses have fallen on people who can least afford them, and victims have often suffered from smoke-related health problems, psychological stress and direct physical injury. Rural areas sustained more wildfire damage than other parts of the states, while these areas also happen to be characterized by higher poverty rates, unemployment, and a greater proportion of low-income residents without college degrees. While lower proportions of minority residents tended to reside in high-impact census tracts, an exception was for Native Americans, who were over three times more concentrated in such areas. This work sheds light on the state's most vulnerable and bolsters calls for enhanced aid and recovery efforts in regions hardest hit by wildfires, as well as it highlighting the importance of forest management and other fire-prevention strategies. It also underscores the effects of climate change coming into direct contact with environmental injustice that touches socioeconomically vulnerable communities and emphasizes the necessity for policymakers and officials in state agencies to consider elderly and low-income individuals when allocating funds for wildfire prevention resources.



Susan Samuelli Integrative Health Institute



Wellbeing Initiative

When the COVID-19 outbreak first surfaced, UCI Health was at the forefront in providing cutting-edge care for patients while actively advancing research. The Susan Samuelli Integrative Health Institute (SSIHI) responded by launching the Wellbeing Initiative, which was developed to provide support to UCI Health frontline healthcare workers. Soon after the program launched, it was expanded campuswide, and offered to all UCI faculty and staff. In the first year, SSIHI hosted more than 4,400 virtual visits including topics on one mindfulness, mindfulness-based stress reduction courses, nutrition consults, guided acupressure, yoga and massage, stress management, and educational livestream

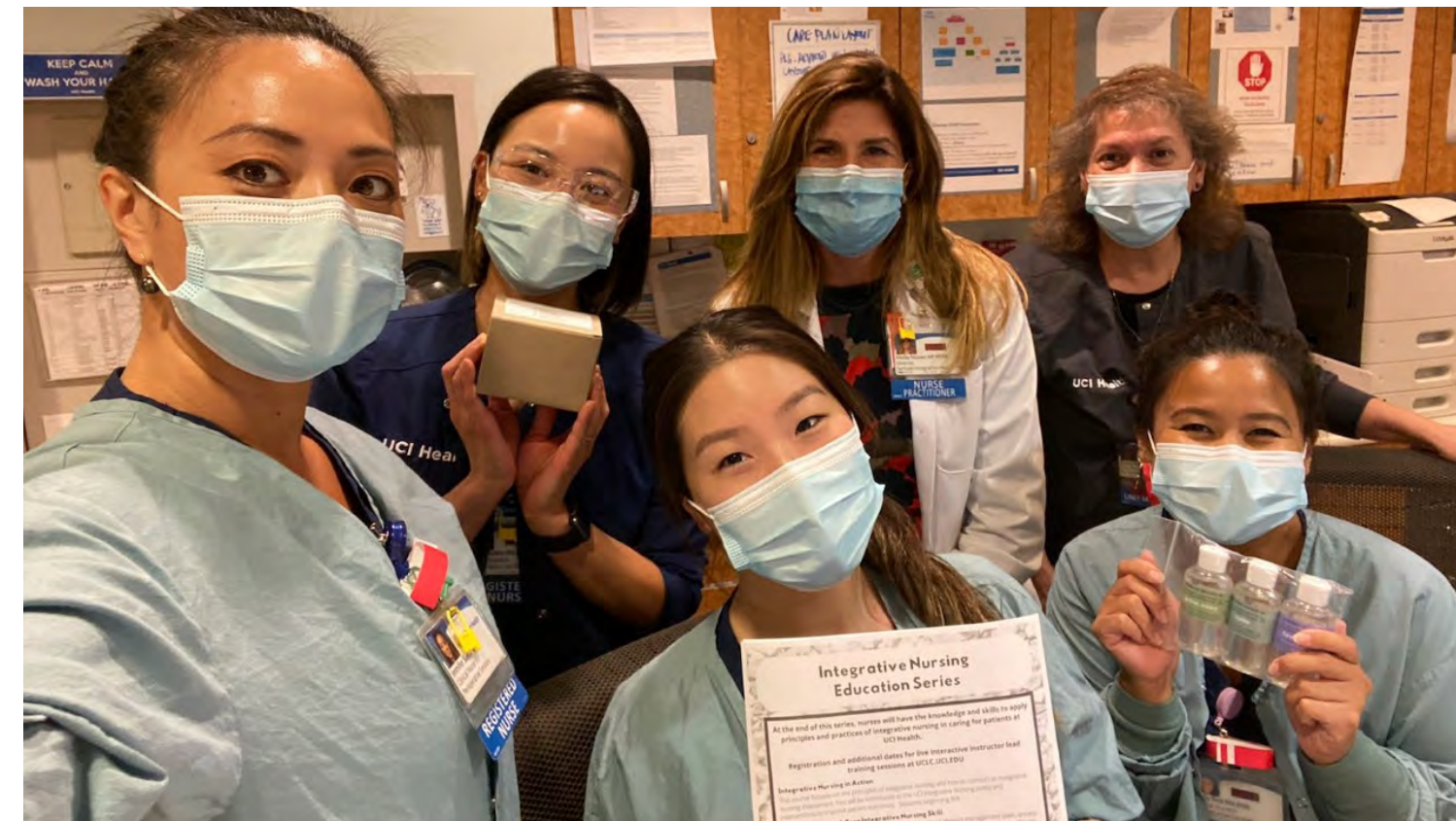
webinars — all at no cost to the faculty and staff. With the success of the program, in July 2021 SSIHI extended the Wellbeing Initiative Program to offer services to UC Care Members (more than 45,000 individuals) across all 10 of the University of California campuses through a partnership with the University of California Office of the President. UC Care members will be able to participate in virtual wellbeing services such as acupressure, nutritional counselling, biofeedback, yoga, massage, mindfulness meditation, and other services.

With nurses now trained at the hospital, patients have reported 42% less nausea, 20% better sleep and 12% less anxiety.

Integrative Nursing

Empowered by the wealth of health information around them, patients now expect more from their health providers and treatment options. Founded in September 2020 and the first of its kind nationwide, the Susan Samuelli Integrative Health Institute's Integrative Nursing program aims to address the growing patient demand for tailor-made therapies and treatment, empowering nurses with new tools for integrative nursing care designed to promote nursing acts of compassion and the utilization of gentle, non-pharmacologic approaches to symptom management. The broad adoption of integrative clinical aromatherapy, acupressure, mind-body therapies (such as guided imagery, meditation,

breathwork) into nursing practice at UCI has enhanced the patient and family-centered, relationship-based model of nursing care at UCI. Documentation tools for capturing healing practices and patient responses to integrative nursing care have been implemented, and real-time analysis of patient outcomes and cost of nursing care is creating a pathway to develop new knowledge about evidenced-based integrative nursing practices and disseminated what is learned in nursing literature and at professional nursing conferences. With nurses now trained at the hospital, patients have reported 42% less nausea, 20% better sleep and 12% less anxiety.



Research Centers and Institutes of Health



Precision Health Institute

UCI's Precision Health through Directed AI, led by Professor Leslie Thompson, provides a platform of cross-disciplinary teams dedicated to solving specific health needs. Using new technologies, vast amounts of individual health data, and deep clinical and research expertise – powered by artificial intelligence – UCI experts are working to develop individualized treatments for a myriad of diseases, including cancer and Alzheimer's disease. This program aims to have a truly transformational impact on integrating artificial intelligence in providing next-level healthcare.

Priority areas include developing clinical tools and funding pilot projects for clinicians and patients, using machine learning to identify disease markers to develop patient-specific brain and cancer therapies, and training the next generation of health-directed science and medical leaders. The initiative also provided support during the coronavirus crisis. Using UCI Health electronic patient data with a confirmed diagnosis of COVID-19, experts are creating predictive models to estimate disease progression and identify individuals who might need escalated care.



Sue & Bill Gross Stem Cell Research Center

UCI-Led multidisciplinary team develops transplant biomaterial for Type 1 diabetes that doesn't trigger immune response

Using stem cell technology, UCI scientists were able to create a biomaterial for pancreatic islet transplants for long-term treatment for Type 1 diabetes, which is an autoimmune reaction that destroys pancreatic islets' beta cells. The treatment is especially notable for its ability to avoid producing an immune response in the body. This hybrid alginate will potentially offer a long-term treatment for Type 1 diabetes. Development of the treatment was led by Jonathan Lakey, PhD, professor of surgery and biomedical engineering at UCI. Lakey also co-developed a method of pancreatic islet transplant for Type 1 diabetes called the "Edmonton protocol," which this new promising treatment builds off.

Institute for Clinical and Translational Science

This year UCI's Institute for Clinical & Translational Science (ICTS), led by Dr. Dan Cooper, was pivotal in keeping staff and students safe throughout the pandemic. By turning real-time science into medical best practices they were able to disseminate clear and accessible guidelines. The ICTS was responsible for creating guidance in partnership with the American Academy of Pediatrics Orange County Chapter, and Children's Health of Orange County for mask exemptions for children. As well, the ICTS put together a "Symptom Decision Tree" to help decide whether their symptomology was indicative of COVID-19 and if so what steps to take. Aside from protecting the Orange County community, ICTS also publicized their research on the implications of vaccine testing and trials in children, which was published in the International Pediatric Research journal. This research was critical to helping the world understand what was needed to successfully vaccinate children in 2021.



Research Centers and Institutes of Health



Chao Family Comprehensive Cancer Center

Groundbreaking Research

The Chao Family Comprehensive Cancer Center, led by Dr. Richard Van Etten, offers the most advanced patient care, including a bench-to-bedside approach to translating the research of Cancer Center scientists into the clinic, where new treatment approaches and devices are tested in patients. These early-phase clinical trials offer Orange County patients access to the very latest advances in cancer care. A key part of this translation process are the Cancer Center's Disease-Oriented Teams, multidisciplinary groups of cancer specialists who partner with cancer scientists to move discoveries through the pipeline. Vice Dean for Clinical Research and neuro-oncologist Dr. Daniela Bota's multipronged attack against the aggressive brain cancer known as glioblastoma multiforme reflects the Center's comprehensive approach. Dr. Bota's work on the experimental drug marizomib has generated significant national attention and hope. Unlike traditional chemotherapy drugs, marizomib can penetrate the blood-brain barrier and inhibit brain cancer growth, and is currently being evaluated in an international clinical trial. If successful, marizomib will be the first new therapy approved for glioblastoma since 2009.

Community Outreach

Community Outreach and Engagement is one of the most important missions of The Chao Family Comprehensive Cancer Center, aimed at alleviating the specific burdens of cancer on the residents of Orange County. The Center has three pillars that guide its community outreach efforts: Cancer Health Equity, to aid with access to cancer treatments and reduction and prevention; Partnerships that Respect Community Autonomy, to reduce disparities in diverse populations with cancer prevention and control practices; and Policy and Systems Change, working to support policy changes at the federal and state level. In 2018, the Cancer Center launched Advancing Cancer Care Together, a partnership with several local Federally Qualified Health Centers, to bring state-of-the-art cancer screening and prevention practices to these facilities, which care for many of the uninsured and underinsured patients in Orange County. This program has already resulted in increased rates of screening for cervical and colon cancer.

Center for Clinical Research

The UCI Center for Clinical Research played a leading role in advancing clinical research of COVID-19 during the pandemic and in the treatment of at-risk COVID-19 patients in Orange County and beyond. Clinical research on NeuroRX's RLF-100, or ariprazole, is one of many ongoing efforts at the center to investigate all potential therapeutics that hold promise of treating COVID-19. Through a Phase 2/3 clinical trial investigating the role of ariprazole for the treatment of patients with Severe COVID-19, researchers at the center have been working to help coronavirus patients recover faster and reduce their likelihood of Critical COVID-19 since early 2021. UCI Health was the first clinical center for the study of the critical drug, with about 120 patients enrolled in the trial.



Anthem, UCI will investigate how digital tools can aid asthma management

In an exciting partnership to further personalized medicine, UCI is working with Anthem to show how everyday digital devices such as smartphones and smart watches can help individuals self-manage asthma towards an improved clinical outcome. The study targets asthma with the primary goal to look into outcomes and clinical changes associated with the use of new digital tools for the self-management of asthma. The study also looks at the ability of devices to predict asthma exacerbation and to serve as digital biomarkers of asthma control. Conducted by UCI and designed in collaboration with Apple, Inc., the study is part of a collaboration with CareEvolution, the technology partner responsible for building the study app and enabling collection of the study data.

College of Health Sciences

Research Highlights

School of Medicine

> New study by Kei Igarashi, PhD, an assistant professor in the **Department of Anatomy & Neurobiology** at the UCI School of Medicine titled, "Dopamine facilitates associative memory encoding in the entorhinal cortex" was **published in *Nature*** and reveals how the brain creates memories of delicious smells. (Sept. 22, 2021).

> Shivashankar Othy, PhD, lead author, and Amit Jairaman, PhD, both **project scientists in the Cahalan Lab at UCI**, conducted a study published in the ***Proceedings of the National Academy of Sciences***, which helps explain how regulatory T cells (Treg) are instrumental in limiting the damage caused to the spinal cord in diseases like multiple sclerosis (MS). (Sept. 21, 2020)

> Published in the ***Journal of Biological Chemistry***, Michael Demetriou, MD, PhD, FRCP(C), professor of neurology, microbiology and molecular genetics at UCI School of Medicine led a **study on N-acetylglucosamine**, a simple sugar found in human breast milk and sold as an over-the-counter dietary supplement in the United States, which found that it promotes myelin repair in mouse models and correlates with myelination levels in multiple sclerosis patients. (Oct. 7, 2020)

> Published in ***Clinical Cancer Research***, Charles Limoli, professor of radiation oncology at UCI, and Marie-Catherine Vozenin, associate professor of radiation oncology at CHUV/UNIL, found that using an ultra-high dose rate of radiation therapy to **eliminate brain tumors in mice bypasses key side effects** usually caused by cranial irradiation. (Oct. 27, 2020)

> Published in ***Nature Communications***, a new UCI-led study finds a new method for identifying biomarkers which

may aid in **early cancer diagnosis** and illustrates the importance of considering cell heterogeneity when calculating the DNA methylation level from sequencing data. (Jan. 27, 2021)

> A new discovery made by the laboratory of **Geoffrey W. Abbott, PhD**, a professor in the Department of Physiology and Biophysics at the UCI School of Medicine, was published in ***Cellular Physiology and Biochemistry*** and shows that **compounds in both green and black tea relax blood vessels** by activating ion channel proteins in the blood vessel wall. The discovery helps explain the antihypertensive properties of tea and could lead to the design of new blood pressure-lowering medications.

> **The National Institute of Arthritis and Musculoskeletal and Skin Diseases** has awarded UCI a 5-year, **\$4.2 million grant** to study sporadic inclusion body myositis (sIBM), which affects aging adults causing asymmetric muscle weakness and severe disability. The disease is currently untreatable and poorly understood. It is led by principal investigator, **Tahseen Mozaffar, MD**, a professor of neurology and director of the Division of Neuromuscular Disorders and the UCI-MDA ALS and Neuromuscular Center at UCI's School of Medicine. (April 6, 2021)

> A new study, led by UCI, **reveals how chronic inflammation promotes muscle fibrosis**, which could inform the development of new therapies for patients suffering from **Duchenne muscular dystrophy (DMD)**, a fatal muscle disease. Titled, "A Stromal Progenitor and ILC2 Niche Promotes Muscle Eosinophilia and Fibrosis-Associated Gene Expression," the study was published in ***Cell Reports***. (April 14, 2021)

> A new study, led by UCI professor of bioinformatics **Wei Li, PhD**, in the **Department of Biological Chemistry** at

UCI's School of Medicine, analyzes the association between an individual's genetics (genotype) and their observable characteristics resulting from the interaction of genetics and the environment (phenotype). It was published in ***Nature Genetics*** and **contributes new knowledge to the understanding of human complex traits and diseases**. (June 1, 2021)

> A new UCI-led study finds that the **persistence of a marker of chronic cellular stress**, previously associated with neurodegenerative diseases such as amyotrophic lateral sclerosis (ALS) and frontotemporal dementia (FTD), also takes place in the brains of Huntington's disease (HD) patients. It was published in the ***Journal of Clinical Investigation***. (June 23, 2021)

> The Conte Center @UCI received a **three-year state grant of more than \$2.3 million** to address the health impacts of adverse childhood experiences using precision medicine.

Sue & Bill Gross School of Nursing

> Miriam Bender, Professor & Associate Dean for Academic and Student Affairs **UCI Sue & Bill Gross School of Nursing**, led a study protocol to evaluate implementation and effectiveness of the Clinical Nurse Leader Care Model in improving quality and safety outcomes, which received funding from the Agency for Healthcare Research and Quality (May 3, 2021)

> Dawn Bounds, Assistant Professor at the **UCI Sue & Bill Gross School of Nursing**, led a research group on a study focused on intimate partner violence in African American co-parents of young children (April 24, 2021)

> Dr. Dawn Bounds along with other researchers from universities across America, studied the factors that predict African American

mothers' decisions to participate as data informants in a randomized controlled trial of a fatherhood intervention for African American non-resident fathers (April 19, 2021)

> E. Alison Holman, a professor at **UCI Sue & Bill Gross School of Nursing**, and a team of UCI researchers studied the link between rising stress and depression in the U.S. for Americans experiencing stress triggers due to COVID-19 and consuming COVID-19 related media (Oct. 14, 2020)

> **The National Science Foundation** awarded **UCI Sue & Bill Gross School of Nursing** assistant professor Amir M. Rahmani, PhD, a planning grant to establish a model of digital community-centered care to make sure community healthcare workers will be able to serve a greater population (Aug. 2020)

> Founding Dean and Distinguished Professor Adey Nyamathi, Assistant Professor Amir M. Rahmani and Assistant Clinical Professor Candice Whealon from **UCI Sue & Bill Gross School of Nursing**, were awarded three grants by the Susan and **Henry Samueli Endowment**, to study the impacts of mental health interventions among homeless people, college students, and emergency room nurses (May 17, 2021)

> **The National Institute of Child Health and Human Development (NICHD)** awarded Dawn Bounds, an Associate Professor from **UCI Sue & Bill Gross School of Nursing**, a grant to study adolescent-caregiver mental health in hopes to provide insight into the effects of events such as divorce or neglect on minors.

> Nakia Best, Assistant Professor at **UCI Sue & Bill Gross School of Nursing**, studied the nurse-to-student ratios and school-nurse health services on the health and education outcomes of students with diabetes and asthma.

School of Pharmacy and Pharmaceutical Sciences

> UCI investigators **Weian Zhao, Per Niklas Hedde, Enrico Gratton** and **Philip Felgner** created a robust low-cost imaging platform utilizing lab-on-a-chip technology to help accelerate the testing process quickly and affordably. Their discovery appeared in the ***Journal of the American Chemical Society***, published by the Royal Society of Chemistry. (Aug. 19, 2020)

> In collaboration with UC San Diego, UCI found that patients using an automated kiosk in their workplace had better prescription pickup rates without sacrificing instruction from pharmacists. **Jan D. Hirsch**, BS Pharm, PhD, founding dean of UCI's School of Pharmacy & Pharmaceutical Sciences, was the lead author of the study. (Dec. 11, 2020)

> In collaboration with researchers from Charles R. Drew University of Medicine and Science, UCI published the first study to link disparities and pharmacy deserts. Lead author, **Cheryl Wisseh**, PharmD, MPH., a health sciences assistant clinical professor at UCI, aimed to determine which communities have the greatest need for pharmacy access. (Jan. 9, 2021)

> **Alexandre Chan**, PharmD., MPH, Founding Chair and professor of clinical pharmacy at UCI, led a recently published study on the autonomic benefits of cryotherapy chemotherapy-treatment for patients with breast cancer. The study was published in the ***Frontiers in Neurology*** journal. (Feb. 9, 2021)

> The UCI School of Pharmacy & Pharmaceuticals has been awarded **\$2 million** from the National Institutes of Health. **Brian Paegel**, PhD, professor of pharmaceutical sciences, was awarded the NIH award for Drug Technology Development. (April 15, 2021)

> The UCI Center for Healthspan Sciences, led by Professor **Mahtab Jafari**, PharmD, was gifted

\$1.3 million by the Kay Family Foundation to create a health coaching program and other projects. (April 23, 2021)

> A new study led by **Jonathan Watanabe**, PharmD, PhD, investigated the usage rates of 10 different medicines and medicine categories to illustrate how drugs were utilized on patients hospitalized with COVID-19. Investigators were an interdisciplinary team of researchers from UCI and UC San Diego School of Medicine. (May 21, 2021)

> In a study published in the ***Journal of the American Chemical Society***, Professor **John Chaput**, PhD, led the development of a nucleic acid detection system, named REVEALR, which offers an easy-to-use point-of-care COVID-19 detection system that has a one-hour turnaround time and avoids the need for expensive instrumentation. (June 10, 2021)

> The UCI School of Pharmacy & Pharmaceutical Sciences received **\$8 million in grants** and contracts during the fiscal 2020-21 year. Of the \$8 million, the National Science Foundation **awarded \$438,000** to **John Chaput**, PhD, the National Cancer Institute awarded **\$408,942** to **Claudia Benavente**, PhD, and the National Institutes of Health awarded **\$343,481** to **David Mobley**, PhD (Aug. 11, 2021)

Program in Public Health

> UCI lead researcher **Bernadette Boden-Albala**, DrPH, wrote a textbook chapter on the importance of diversity and the inclusion of women and racial/ethnic minority groups to address health disparities in clinical research. (Feb. 12, 2021)

> UCI researcher **Karen Edwards**, PhD worked with the research team to develop **new Polygenic Risk Score Reporting Standards (PRS-RS)**, which can help personalize preventive measures by identifying genetic markers for early detection and treatment of these diseases. This framework details which data

elements are needed to interpret and evaluate PRS, and the study details clinical applications for translating PRS into patient care. (March 10, 2021)

> UCI-led research found that **neighborhood socioeconomic status and ethnic backgrounds** are associated with an increased risk for breast cancer among Asian American women. (April 12, 2021)

> UCI childhood cancer researcher **Joel Milam**, PhD conducted a study with peer institutions on the various barriers childhood cancer survivors experience with their care maintenance later in life. (June 16, 2021)

> UCI researcher **Michael Hoyt**, PhD collaborated with several institutions that examined the effects of coping health and health behaviors relating to peer victimization among high school students. (June 17, 2021)

> UCI clinical researcher **Deborah Goodman**, MD piloted a visually-appealing breast cancer risk communication tool for high-risk breast cancer patients that may help provide **personalized risk-reduction information** as part of a precision medicine trial. (June 17, 2021)

> **UC Presidential Chair and UCI professor of population health and disease prevention Dele Ogunseitan**, join efforts on a **\$200,000 research grant award by Microsoft Corp.** to address the public health and environmental implications of the alarming rate of toxic electronic waste generated worldwide. (June 30, 2021)

> UCI public health researchers led by Bernadette Boden-Albala inked a **\$2.9 million contract** with the city of Santa Ana to better understand health disparities among residents with SARS-CoV-2 antibodies. (Aug. 2, 2021)

> Program in Public Health, in collaboration with the Department of Informatics and Continuing Education, was awarded \$7M in

federal funding program that aims to train the next-generation public health workforce proficient at informatics and technology.

Susan Samueli Integrative Health Institute

> UCI researcher **Shaista Malik**, MD, PhD, and department of medicine faculty, **Elizabeth Dineen**, DO wrote a textbook chapter on Integrative Approaches for Cardiovascular Disease Prevention in the ***American Society of Preventive Cardiology's Manual of Preventive Cardiology***, 2nd edition.

> **Karen Lindsey**, PhD, Assistant Professor of Pediatrics at UCI, published a study that confirmed acceptability of a smartphone app that delivered a mixed lifestyle intervention targeting overweight and obese pregnant women. Women participants, particularly those from disadvantaged neighborhoods, reported the app to be easy to use and enjoyable. This study was published in the ***JMIR mHealth and uHealth Journal*** (May 12, 2020).

> **Karen Lindsay**, PhD, Assistant Professor of Pediatrics at UCI, contributed to a book chapter, titled "Maternal Nutrition in Pregnancy," in ***Present Knowledge and Nutrition***, 11th Edition. This book focuses on providing the most up-to-date, reliable, and accessible information spanning various broad topics of nutrition and is authored by expert contributors in the field (July 17, 2020).

> NIH/NICHD **awarded \$747K** to support a study on maternal prenatal stress and its role on the association between diet and gestational glucose-insulin homeostasis, led by **Karen Lindsay**.

> The COVID Joint Fund **awarded \$49K** to support training for frontline workers on using self-regulation techniques, incorporating heart-rate variability to mitigate stress during COVID-19 pandemic, led by **Shaista Malik**.

Education & Training Highlights



Pictured: Associate Vice Chancellor for Education Khanh-Van Le-Bucklin, Chancellor of the University of California Irvine Howard Gillman, President of the University of California Michael Drake, Dean of Medicine Michael Stamos and Vice Chancellor for Health Affairs Steve Goldstein.

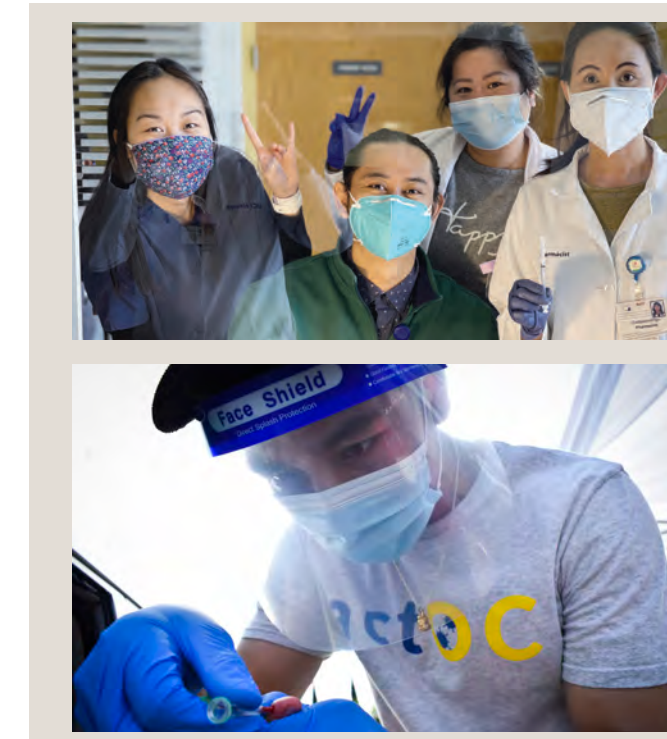
School of Medicine Graduation featuring President Michael Drake as the commencement speaker

This UCI School of Medicine commencement ceremony was held as a socially distant “Drive-Thru-Commencement,” honoring the amazing resilience and strength of this year’s School of Medicine graduates. Virtual graduation ceremonies became a necessity across the country during the pandemic, and the UCI School of Medicine was no exception. To honor the UCI School of Medicine graduates this year, University of California system President and UCI Chancellor Emeritus, Michael V. Drake, MD spoke at the second successful “Drive-Thru-Commencement,” and delivered a message of hope, inspiration and humanity to the graduating class. Students

drove to campus with family and friends to the School of Medicine parking lot to celebrate and to listen to the commencement speeches. The speeches were broadcast on UCI’s KUCI radio station (88.9FM) and the podium was visible to all via big screen. The ceremony was livestreamed for graduates and their friends and families to enjoy from home, too. The graduating class of 105 students includes 71 graduates who will begin their residency in California. The top specialties of this graduating class were psychiatry, internal medicine, family medicine and general surgery.

Health Equity and Diversity Certificate Program announces its first graduates

In June, 86 students, staff, and faculty completed the inaugural Health Equity and Diversity Certificate program. The program is available to anyone affiliated with the Susan & Henry Samueli College of Health Sciences and UCI Health. Featuring 27 guest lecturers, the courses address a multitude of issues related to diversity, equity and inclusion in the health sciences, research and patient care.



Susan & Henry Samueli College of Health Sciences students, staff, and faculty volunteer across Orange County

The School of Pharmacy & Pharmaceutical Sciences faculty and staff contributed more than 400 volunteer hours to the Bren Events Center Vaccine Clinic, which served more than 44,500 people from January to June. The Sue & Bill Gross School of Nursing sent their faculty and students to Bren Center weekend clinics, where students were trained to pull and deliver vaccine doses and administer vaccines. Students in the Program in Public Health volunteered at drive-thru testing sites throughout Orange County.

Interprofessional Education

This past year UCI’s Interprofessional Education Series explored pressing issues facing UCI and the Orange County community. The first session was dedicated to diversity and inclusion. As a commitment to taking seriously the oath and moral responsibilities to all members of the community, the session explored how we can better meet the needs of our diverse patients, students, and staff with a goal of achieving health equity. The second session hosted over 180 students and faculty from across UCI Health for the Pandemic Disease Preparedness event. This event focused on the response to the COVID-19 pandemic and the experience of the community and healthcare workforce. Participants discussed the role of healthcare workers in a pandemic and the pandemic’s impact on health equity.

COVID Response



Between May 2020 and June 2021, as the coronavirus pandemic is in full swing, UCI Health and Susan & Henry Samueli College of Health Science researchers continue to aggressively address ongoing issues and new developments involving COVID-19. While everyone is in lockdown quarantining to try to stop the spread of the virus, UCI researchers, clinicians and staff are hard at work treating patients, finding new ways to treat the disease, and introducing tracing tools to try to stop transmission.

May 2020

Neuroradiologists Peter D. Chang, MD, and Daniel S. Chow, MD, are on an interdisciplinary team that develops an AI tool, or vulnerability scoring machine, using machine learning (ML) to calculate the likelihood that a COVID-19 patient will need a ventilator or some form of escalated care.

July 2020

To help track and slow the spread of COVID-19, UCI Public Health leaders launch a health equity bilingual contact tracing workshop for Orange County Health Care Agency staff, UCI students and community members. The remote training sessions help meet the growing need for contact tracers to investigate how COVID-19 is transmitted from one person to another.

September 2020

UCI researchers release a new Orange County COVID-19 website to track the spread of the disease and forecast future infection trends to understand infection risk.

October 2020

UCI public health researchers test 3,000 Orange County residents to determine the true local prevalence of the virus. Findings show 11.5% with antibodies in contrast to previous estimates of less than 2%, and reveal disparities in risk across racial/ethnic and socioeconomic groups.

December 2020

UCI Health receives COVID-19 vaccine. First batch of 3,000 are given to frontline healthcare employees.

UCI Health and the county healthcare agency partner to develop a mobile field hospital in front of the medical center's Douglas Hospital, to reduce pressure on a crowded emergency department and inpatient units. Within weeks, patients move into a fully operating hospital unit on Dec. 29. The mobile unit continues to serve patients waiting for a bed after admission or who are about to be discharged.

January 2021

UCI vision researchers begin work on a preemptive vaccine for all coronaviruses that would halt them before they spread. The preclinical studies are funded through a multimillion-dollar grant from the National Institute for Allergy and Infectious Diseases (NIAID). Researchers will apply for another NIAID grant to support clinical trials of their lead pan-coronavirus universal vaccine in early 2022.

UCI Health begins offering the COVID-19 vaccine to more than 2,700 UCI Health patients 65 and older on the UCI campus in Irvine. Appointments fill within two hours of going live reflecting the high demand for the vaccine.

To help meet the huge demand for COVID-19 vaccinations during the height of the pandemic, faculty and students from the UCI Sue & Bill Gross School of Nursing and the School of Pharmacy & Pharmaceutical Sciences contribute hundreds of volunteer hours to administer the vaccine to the community at UCI Health clinics.

February 2021

UCI researchers are awarded a \$1.2 million grant to develop advanced robots to protect healthcare workers, and provide quarantined Californians a safe way to connect outside their homes.

Federal COVID-19 response taps UCI Health as a model for delivering monoclonal antibody therapy. UCI Health treatment method to be shared with healthcare systems nationwide

UCI's leading-edge contact tracing program helps control the spread of coronavirus on campus and in the community.

March 2021

UCI leads transfer of COVID-19 patient data for federal research to better understand the disease.

April 2021

UCI researchers also create and begin using the first antibody tests that help keep track of COVID-19 rates in Orange County. The antibody test may be the most comprehensive in California.

UCI Health launches an outpatient treatment program to address prolonged COVID-19 symptoms and complications experienced by an estimated 10% to 30% of people long after their initial illness. People with post-COVID-19 syndrome, or "long haulers," continue to experience complications for months after infection.

May 2021

The UCI Sue & Bill Gross School of Nursing holds a COVID-19 research symposium to highlight the diverse efforts of faculty during the pandemic that range from support tools to help clinicians identify and aggressively treat the highest-risk patients soonest to coping solutions for pandemic related stress. More than one third of faculty are doing COVID-related research.

June 2021

UCI's Philip Felgner, PhD, professor in residence of physiology & biophysics, is one of seven scholars worldwide to win Spain's prestigious Princess of Asturias Award for Technical and Scientific Research in recognition of his contributions to designing COVID-19 vaccines. Felgner's work supports the development of the Pfizer-BioNTech and Moderna vaccines, the first commercially available mRNA vaccines on the U.S. market.

UCI Professor John Chaput and PhD student Kefan Yang develop REVEALR, a fast, easy-to-use COVID-19 detection test with a one-hour result turnaround time. Chaput and Yang are now working to improve the turnaround time to 30 minutes or less.

UCI researchers release the results of their survey that shows that age increases the likelihood of hospitalization and poor outcomes for COVID-19 patients with such preexisting conditions as heart disease, high blood pressure, high cholesterol, asthma, kidney disease and diabetes.

A new study by UCI researchers reveals a reduction of COVID-19 infection rates among healthcare personnel at UCI Health after receiving the COVID-19 vaccine.

October 2021

UCI Medical Center was ranked No. 9 in the cohort of "Comprehensive Academic Medical Centers" for demonstrating excellence in delivering high-quality patient care.



UCI Health to build world-class hospital on Irvine campus

In January 2021, UCI Health announced plans to build a second world-class medical center in Orange County, featuring the Chao Family Comprehensive Cancer Center and Ambulatory Care and advanced care center, anchored by a 144-bed general acute care hospital. This academic medical complex will improve access for patients residing in coastal and south Orange County, host advanced healthcare services,

drawing leading medical and research talent and bringing advanced oncology, neurology and neurological surgery, orthopedics, spine and digestive disease services to coastal and southern Orange County. The Center for Advanced Care will provide primary, specialty and urgent care services to patients starting in early 2023 and will be home to a special Center for Children's Health and the Center for Autism and

Neurodevelopmental Disorders of Southern California. By late 2023, the Chao Family Comprehensive Cancer Center and Ambulatory Care is scheduled for completion. The UCI Medical Center-Irvine will serve as the health system's southern hub, connecting UCI Health primary and specialty care networks, including our two newest locations in Newport Beach and Laguna Hills, for those south county patients who look to UCI

Health as a provider of comprehensive health care services. The complex's design integrates green technology and sustainable construction practices, and relies on renewable power for heating and cooling. This state-of-the-art medical complex in Irvine will complement the flagship UCI Medical Center in Orange as a key component of the region's only academic health system, powered by UCI.

Lifesaving Cancer Care Close to Home



Lifesaving stem cell transplants close to home

As Orange County's first adult stem cell transplant program begins service, patients and their families will no longer need to travel elsewhere for lifesaving treatment. The Hematopoietic Stem Cell Transplant and Cellular Therapy Program also marks a new era of research and innovative immunotherapy options patients with blood and other cancers.

The stem cell transplant program will enable the Chao Family Comprehensive 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. Transplanting hematopoietic stem cells is a highly complex procedure and requires considerable staff expertise and special facilities, all of which the center provides, including a new facility on the UCI campus to process cellular therapies.

The UCI Chao Family Comprehensive Cancer Center

1 of 51
National Cancer Institute-designated comprehensive cancer centers in the United States

200+
cancer researchers, including globally renowned oncology specialists

400% increase
in early-phase clinical trials since 2014

600+
journal publications by cancer center researchers since 2017

A better way to target metastatic spine tumors at UCI Health

UC Irvine radiology researchers have developed a new therapy called brachytherapy bone cement that irradiates metastatic spine tumors from the inside without harming other tissue.

Top prostate cancer surgeon brings treatment advances to UCI Health

Dr. David I. Lee, MD, one of the nation's foremost prostate cancer surgeons and the new director of the new UCI Health Comprehensive Cancer Program, explains advances in diagnosis and treatment that have improved patient survival rates at academic health programs such as UCI's.

As Orange County's first adult stem cell transplant program begins service, patients and their families will no longer need to travel elsewhere for lifesaving treatment.

Nonalcoholic fatty liver disease: a deadly diagnosis

A Tustin woman overcame a deadly liver disease with the help of UCI Health digestive disease doctors and a breakthrough diagnostic device. Paula Lazarus didn't realize that her previously diagnosed nonalcoholic fatty liver disease could lead to severe cirrhosis and death. Her UCI gastroenterologists' interventions culminated in a 100-pound weight loss and dramatically improved liver health.

New diagnostic tool aids battle against liver disease

The Digestive Health Institute at UCI Health has developed a groundbreaking, noninvasive method to accurately measure blood pressure in the liver, which could accurately assess the liver organ's health and potentially help millions of people avert severe liver disease. The new technique, called endoscopic ultrasound-guided portal pressure gradient (EUS-guided PPG), was recently approved by the FDA and is now being shared with physicians in a multicenter U.S. trial.

Bone marrow transplantation program signals new era for cancer care

A little more than a year after performing Orange County's first adult bone-marrow transplant, the UCI Health Hematopoietic Stem Cell Transplant and Cellular Therapy Program is conducting clinical trials, opening a specialized outpatient center, planning for a stem cell processing lab and — most important — providing lifesaving transplants to dozens of patients so far. "We are now a full-fledged transplant program and seeing very good outcomes," said Dr. Stefan O. Ciurea, director of the program at the UCI Health Chao Family Comprehensive Cancer Center, the only Orange County-based comprehensive cancer center designated by the National Cancer Institute.

Capital Projects



Pictured: Founding Dean of Population and Public Health Bernadette Boden-Albala, Vice Chancellor for Health Affairs Steve Goldstein, Dean of Medicine Michael Stamos, Founding Dean of Nursing Adey Nyamathi, Founding Dean of the School of Pharmacy and Pharmaceutical Sciences Jan Hirsch, Associate Vice Chancellor and Executive Director of Susan Samueli Integrative Health Institute Shaista Malik.

A new chapter in healthcare at UCI is unfolding. This past year saw the vision for our ambitious capital projects transition from planning to construction.

In our **Health Sciences District**, our Susan & Henry Samueli College of Health Sciences building reached the roof in June, an exciting milestone that we celebrated with our generous donors, Susan and Henry Samueli. In this next phase, the structure of the adjacent Sue & Bill Gross School of Nursing building is taking shape. These new facilities will encompass classrooms, research labs, collaborative clinical spaces and administrative offices for our Sue & Bill Gross School of Nursing, School of Pharmacy & Pharmaceutical Sciences, Program in Public Health, Susan Samueli Integrative Health Institute, and School of Medicine. When completed, these

state-of-the-art facilities will advance our mission to discover, teach and heal, and further UCI's position as a bold leader in population health, integrative patient care, and health-related education and research.

On our healthcare delivery side, the new **UCI Medical Center – Irvine** began to build infrastructure for the full-service health complex that will bring a broad spectrum of the most advanced healthcare services to coastal and southern Orange County. When completed, the UCI healthcare system will be unparalleled in this region, with two advanced medical centers, nationally recognized research units conducting hundreds of clinical trials, and a network of community locations stretching to all corners of Orange County.



Fast Facts

Health Sciences District

- Budget: \$185 million
- Size: 9 acres
- Location: corner of Michael Drake (formerly Bison) and California avenues adjacent to the UCI Research Park
- State-of-the-art, five-story-level, 108,200-square-foot building for the Susan and Henry Samueli College of Health Sciences (Summer 2022)
- Adjoining four-story-level, 71,500-square-foot building for the Sue & Bill Gross School of Nursing
- 200-seat auditorium
- Central courtyard that connects with the Gavin Herbert Eye Institute
- Landscape design elements that support activities such as yoga and tai chi, Zen Garden, 600-foot-long wellness walk leading to School of Medicine Biomedical Research Center
- Health sciences building to house the Susan Samueli Integrative Health Institute
- Project includes a pad for a proposed School of Pharmacy & Pharmaceutical Sciences building
- Health Sciences Parking Structure
 - 2,000 spaces
 - Completion in Summer 2022
 - Located within the new Health Sciences District
 - Will serve UCI faculty, students, staff, patients, and visitors

Falling Leaves Foundation Medical Innovation Building

- 200,000 square feet
- State-of-the-art labs will support cutting edge scientific research
- Collaboration of researchers from diverse disciplines

UCI Medical Center – Irvine

- Budget: \$1.2 billion
- Location: Irvine on Jamboree
- Center for Advanced Care
 - 165,000 square feet
 - Key clinical services: Center for Children's Health, primary and specialty care, 24-hour urgent care, neurosciences, ortho/spine/pain, Digestive Health Institute
- Hospital
 - 144 beds
 - Emergency department
 - Comprehensive stroke center
 - 8 operating rooms
- Chao Family Comprehensive Cancer Center and Ambulatory Care
 - 10 outpatient operating rooms
 - Endoscopy center
 - Cancer center with multidisciplinary clinics, radiation oncology and infusion
 - Advanced imaging including nuclear medicine
 - Key services for both Hospital and ACC: cancer, neurosciences, digestive health, orthopaedics, spine
- Combined square footage: 575,000 square feet
- Between both the Health Sciences District and UCI Medical Center – Irvine projects, 2,500 new jobs will be generated within Orange County

Bridging the Gap



2020/21 Bridging the Gap Topics



A Reaffirmation of our Commitment to Social Justice and Equity

The Bridging the Gap series makes its debut, introduced by Dr. Steve Goldstein, Vice Chancellor for UCI Health Affairs. Two novel programs are highlighted by Dr. Khanh-Van Le-Bucklin, Associate Vice Chancellor of Education and Vice Dean of Medical Education in the School of Medicine: the Program in Medical Education for the Latino Community (PRIME-LC) and the Leadership Education to Advance Diversity-African, Black and Caribbean program (LEAD-ABC).



The Discover. Teach. Heal. Mission

Dr. Bernadette Boden-Albala, director of the UCI Program in Public Health and founding dean of our future school of Population and Public Health, shares how Health Affairs is addressing health equity gaps through research to define problems, teaching to produce the diverse healthcare workforce of the future, and making change to reduce the societal burden of human disease and disability.



Confronting Racism in Health

Dr. Alison Holman of the UCI Sue & Bill Gross School of Nursing, is interviewed by Marketing Manager Heather Shannon, about how her teaching and course work provide the next generation of nurses with tools to address institutional racism and what the school is doing to tackle its own institutionalized racism.



Primary Care

Dr. Cynthia Haq, chair of the Department of Family Medicine in the School of Medicine, expands on the importance of family physicians and other primary care providers in improving health equity.



Pharmacy Deserts

The growing problem of pharmacy deserts as a contributing cause for health inequity is the focus of Cheryl Wisseh, health sciences assistant clinical professor, Department of Clinical Pharmacy Practice in the School of Pharmacy and Pharmaceutical Sciences.



Women's Equity

Empowering diverse women scientists and healthcare professionals, ensuring that the voices and views of women are represented at all levels in the world of ophthalmology is highlighted by Assistant Professor Dr. Dorota Skowronska-Krawczyk and Assistant Director Dziyana Aydin, of the Center for Translational Vision Research at the Gavin Herbert Eye Institute.



Xenophobia as a Public Health Threat

Dr. Brittany Morey, UCI Assistant Professor of Public Health, offers long-term solutions to counter the damaging health effects of racism on Asian Americans and highlights how we can be more supportive allies.



Transgender Health Equity

Brit Cervantes, program coordinator for the UCI Pediatric Gender Diversity Program, shines a light on healthcare challenges that gender-nonconforming children face and what healthcare providers must do to meet their needs.

At UCI Health Affairs, we are committed to diversity, equity and inclusion in healthcare and throughout our organization including in the Susan & Henry Samueli College of Health Sciences, UCI Health, and our institutes and centers. As healthcare providers, we take seriously our oaths and moral responsibilities to embrace our entire community when we pledge our lives to advancing the health of all people, especially those in vulnerable communities.

We began our Bridging the Gap series in June 2020, as a way to examine, act and share our work in meeting the needs of our diverse patients, students and staff. This series is one of many actions we have taken this past year to identify and address health inequities, as detailed below. A few examples:

- Advocating for equitable public health responses to COVID-19, and into the future beyond the pandemic, including facilitating the first health equity bilingual contact-tracing training with community partners in Orange County

- Our two mission-based, medical education programs: PRIME-LC, to help future physicians who are committed to addressing the health needs of California's Latino communities; and LEAD-ABC, to produce future physicians who aspire to address the health needs of African, Black and Caribbean communities
- Established a new Federally Qualified Health Centers program in Anaheim, in addition to our longtime center in Santa Ana, to increase and improve patient care in underserved communities
- Increased employee and provider training, including a health equity and diversity certificate program open to all students, faculty and staff
- Expansion of LGBTQ affirming care

We will continue to work toward closing all gaps in our goal to achieve health equity through awareness, understanding, compassion and action.

Advancement and Engagement

Chao Family Gifts to UCI Health for Cancer Care — \$50 Million

Longtime UCI Health benefactors, the Chao family continues to support nearly every aspect of UCI Health's mission of discovery, teaching, and healing since their first gift to the university in 1995. With their latest gift in June 2021, the Chao family has committed an additional \$50 million, providing critical resources that expand access to leading-edge cancer treatments and therapies, promising clinical trials, and world-class cancer care driven by the latest in precision medicine. The gift also funds the new Chao Family Comprehensive Cancer Center and Ambulatory Care, one of three medical facilities at the new \$1.2 billion medical center adjacent to the UCI campus. The cancer care center is strategically located at the new medical center campus in Irvine to allow patients to receive multidisciplinary care by interprofessional and integrative teams working together to apply the latest innovations from university-backed clinical research.



Tu Foundation \$2.5 million gift to support COVID-19 patient care and research

The TU foundation provided \$2.5 million in donations to support patient care and research around COVID-19. This funding directly impacts patients, allowing UCI to rapidly increase lifesaving treatments, testing and scientific discoveries. John and Mary Tu's gift allows a dramatic acceleration in UCI's ability to both impact patients suffering from COVID-19 and conduct research in real time, not only at UCI but within the Orange County community at large through UCI's community public health partnerships.



Linda & Mike Mussallem Donate \$5 Million to SSIHI

Linda and Mike Mussallem donated \$5 million to the Susan Samueli Integrative Health Institute, which will go towards supporting integrative cardiology research, education, and health coaching. The donation will allow advances in science-based research and educational opportunities for the next generation of healthcare providers. The Mussallem's partnership UCI will transform how healthcare is delivered to patients.

College of Health Sciences Advisory Board

Susan Samueli, PhD

(Co-chair) trustee, UCI Foundation; honorary co-chair, UCI Brilliant Future Campaign, UCI Health

Henry Samueli, PhD

(Co-chair) co-founder and chairman of the board, Broadcom; honorary co-chair, UCI Brilliant Future Campaign, UCI Health

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Margaret Chesney, PhD

Professor and director, Osher Center for Integrative Medicine, UCSF School of Medicine

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Founder and director, Earl E. Bakken Center for Spirituality & Healing, professor, School of Nursing, University of Minnesota

Michael A. Mussallem

Chairman and CEO, Edwards Lifesciences; trustee, UCI Foundation

Sheila Peterson

President, Beachside Books LLC; trustee, UCI Foundation; co-chair, UCI Brilliant Future Campaign

James Peterson

Founder, Peterson Capital Group; trustee, UCI Foundation; co-chair, UCI Brilliant Future Campaign

Suzanne Stern

Community leader

Ralph Stern,

Founder, Carecredit LLC

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Pinnacle Resources International

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Chairman and president, Pinnacle Resources International; trustee, UCI Foundation

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Phil Anthony

Chairman, UCI Health Advisory Board; Consultant (self-employed)

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Founder, Carecredit LLC

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Group Vice President, DaVita

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Founder & Managing Member, Innovate Partners

UCI Health Affairs ONE HEALTH Vision



At **UCI Health Affairs**, we do not practice medicine, **We Create It**. As a university-centered, comprehensive healthcare system, we offer the most advanced support for human wellbeing based on groundbreaking research and delivery of cutting-edge care at the right time and in the best place. This nation-leading status is achieved by the innovative combination of our world class experts in medicine, nursing, pharmaceutical sciences, public health and integrative health, to produce a uniquely collaborative, team-based synergy.

We call our inclusive and data-driven approach **ONE HEALTH**. A first-of-its-kind alliance uniting health disciplines, empowered by the entirety of UCI knowledge and resources, our shared goal of predicting, preventing and treating illness produces whole-person, patient-centered care that is precise for individuals and communities. One Health is the vision that directs our mission – to **Discover. Teach. Heal.** – and three strategic priorities, or pillars, we are pursuing over the next five years.

Three Strategic Pillars

I. Future Health: Innovations in Education & Research

We are focused on innovation from bench to bedside in education and research, where UCI can distinctively push the boundaries to deliver data-driven, compassionate, precise, whole-person care through:

- Innovation in interprofessional education to advance healthcare in a first-of-its-kind collaboration across health disciplines.
- Innovation in basic and translational research where UCI advances discovery to improve knowledge and care, and create the diverse workforce of the future.

II. Health Equity

Our approach to equity demands that we identify, rectify and prevent health disparities, and educate a diverse healthcare workforce to serve diverse communities. Achieving this priority requires advances in discovery, teaching and healing.

III. Precision Health

We create healthcare that is optimal for individuals and for communities through the collection, analysis and use of data in an ongoing manner. In this way, the outcome for every patient is the best possible while advancing the quality of care for the next patient.

“Our first-of-its-kind model of collaboration across health disciplines throughout the whole of UCI Health Affairs, and the UCI campus, powers our ability to carry out our mission to Discover. Teach. Heal. We are creating the very future of healthcare – team-based, interprofessional, whole-person, precision-driven, innovative and community-serving by a diverse and united healthcare workforce.”

– **Steve A. N. Goldstein, MA, MD, PhD, FAAP**
UCI Health Affairs Vice Chancellor

These strategic priorities are being carried out through our **Susan & Henry Samueli College of Health Sciences**, our **UCI Health** medical care system, and our **research centers and institutes**. UCI will continue to strive for excellence and advance integrated patient care, discovery and education to benefit Orange County, the region, state and nation.

