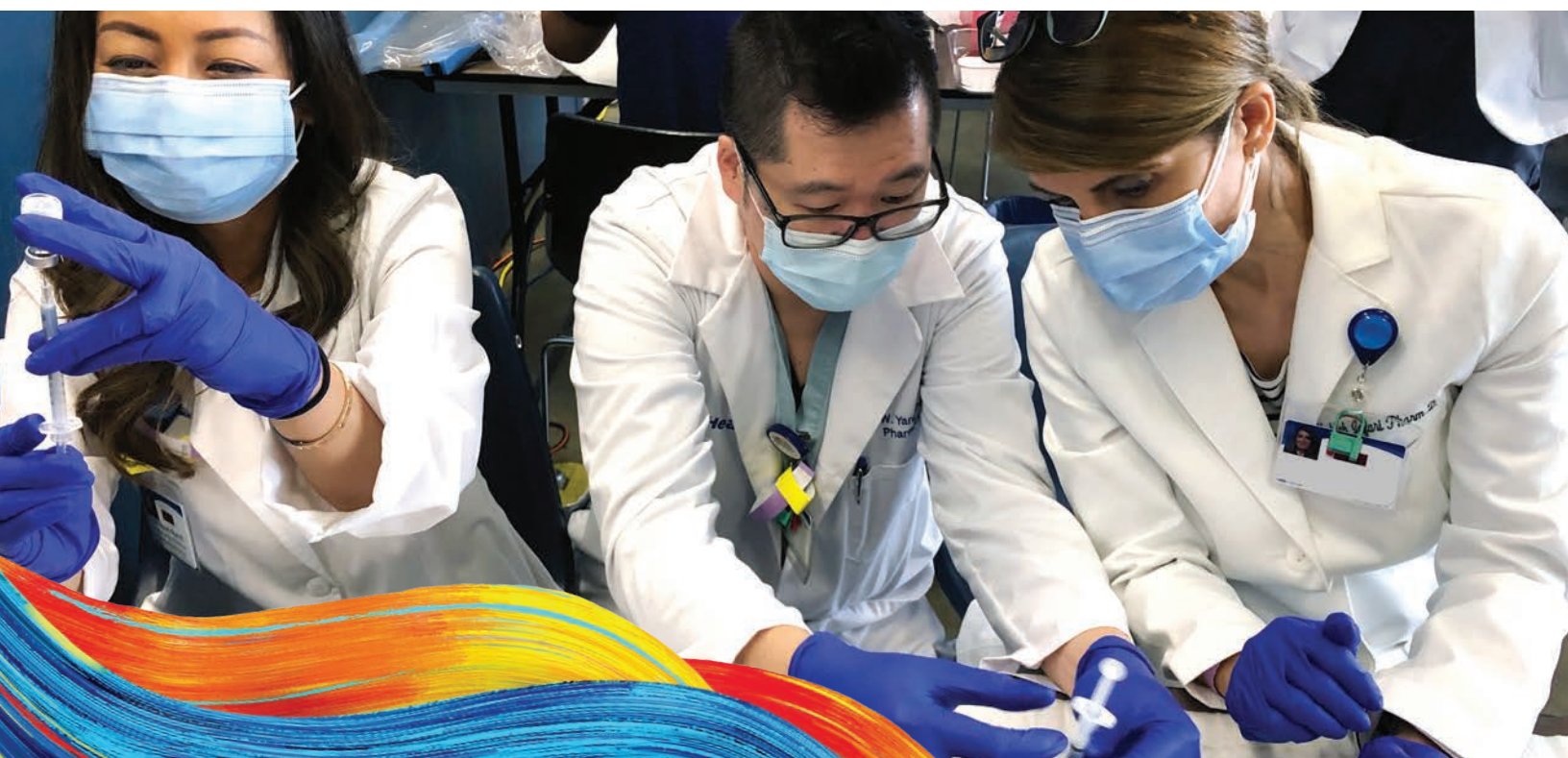




UCI School of Pharmacy &
Pharmaceutical Sciences

2020-2021 Annual Report

Pharmaceutical Scientists and Pharmacists at
the Leading Edge of Research and Clinical Practice



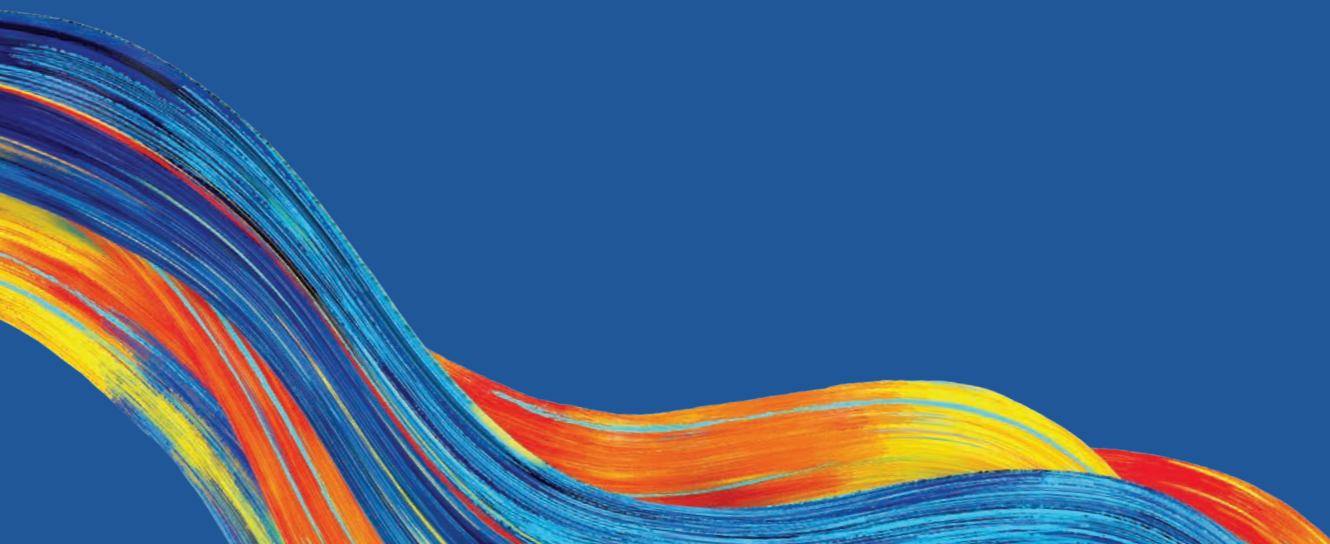
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On the cover:

Assistant Professor Claudia Benavente was awarded \$408,942 from the National Cancer Institute last year for her research in treating childhood cancers. Overall in fiscal 2020-21, the UCI School of Pharmacy & Pharmaceutical Sciences received \$8 million in grants and contracts, representing an 8.1-percent increase from the previous year.

Founding Associate Dean of Pharmacy Student Affairs Megan Nguyen, UCI Medical Center pharmacist Jerry Yang and Professor Mahtab Jafari prepare to administer vaccines at the Bren Center Vaccine Clinic on Jan. 17, 2021.



UCI School of Pharmacy & Pharmaceutical Sciences: By the Numbers



588

students enrolled in
2020-21 within our three
academic programs
(BS, MS and PhD)



119

degrees granted
in June 2021



\$8 million

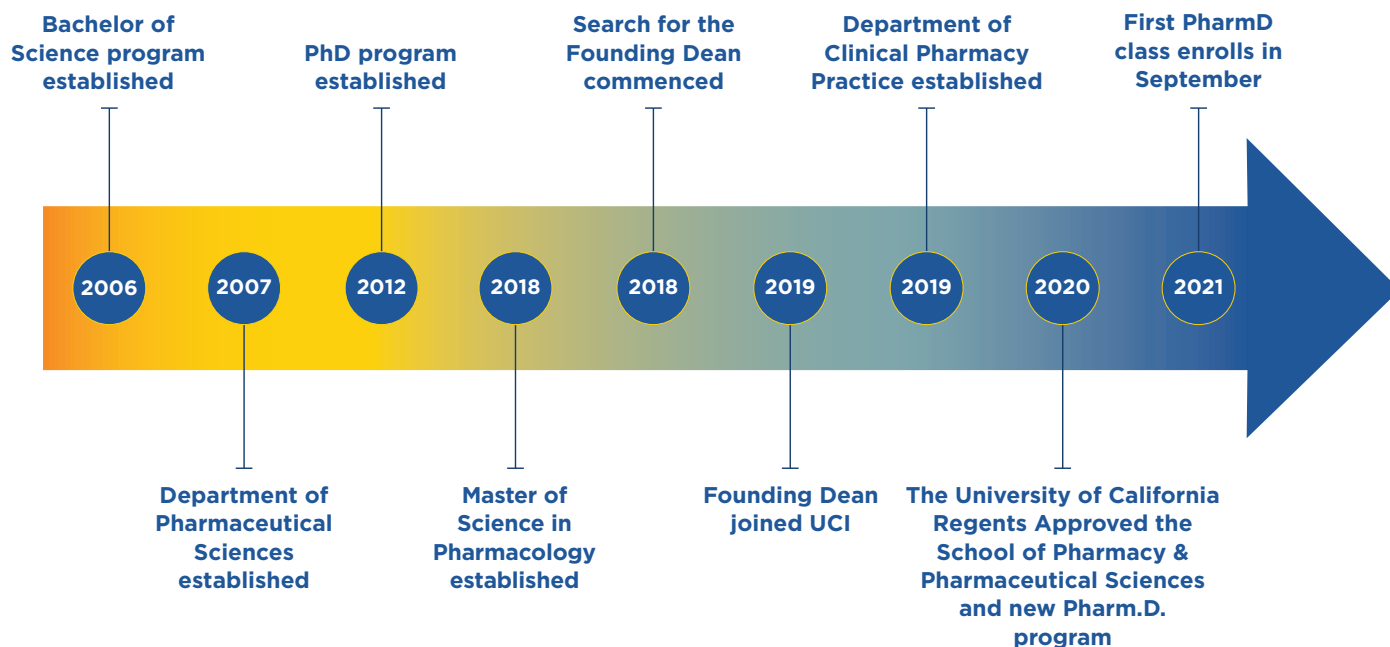
in Faculty research **grants**
and **contracts** in 2020-21



51%

first-generation
students

Timeline and Milestones



Welcome

from the Dean



Jan D. Hirsch, BS Pharm, PhD
Founding Dean

On July 30, 2020, the UC Irvine School of Pharmacy and Pharmaceutical Sciences officially became a school. In this annual report — a look back at our first 12 months — I am excited to share the accomplishments and honors of our faculty, staff, students and alumni. To stay up-to-date with all of our recent news, I encourage you to visit our website at pharmsci.uci.edu/news.

Our faculty across the Department of Pharmaceutical Sciences and the Department of Clinical Pharmacy Practice have garnered multiple awards and achieved great strides in research.

Our new Doctor of Pharmacy (PharmD) program achieved the first step in accreditation from the Accreditation Council for Pharmacy Education, and we welcomed our first cohort of students in September 2021.

Throughout fall 2020 and spring 2021, our students and faculty excelled in the remote learning environment. With a continued focus on innovative and integrative learner-centered education, our faculty and staff developed new initiatives such as the PharmSci Virtual Seminar Series and virtual labs.

During the past academic year, our faculty also pivoted their research, including highlights such as:

- Launching a highly accurate serology test for COVID-19.
- Publishing a study in the Journal of the American Medical Association Network Open to examine data on the usage rates of 10 different medicines and medicine categories to map how drugs were used on people hospitalized with the viral infection.
- Developing the first study to link healthcare disparities and 'pharmacy deserts' in California, while demonstrating that the social determinants of health compound the negative effects of pharmacy shortages. The COVID-19 pandemic makes access to pharmacists even more pressing.

The dedication and commitment of our school staff has been instrumental in maintaining operations, supporting teaching and research activities, and serving our students during the pandemic. Our talented staff are a key part of fulfilling our strategic plans for launching the new school and PharmD degree program.

From January through May 2021, UCI worked tirelessly to administer vaccines at the Bren Events Center and protect thousands of people against COVID-19. I am proud of our team of School of Pharmacy & Pharmaceutical Sciences faculty, staff, students and alumni for their effort in keeping our community safe. In addition to contributing more than 400 hours to support the Bren Center Vaccine Clinic, our faculty and staff also hosted two virtual town halls to share scientific and clinical information regarding the COVID-19 vaccines with the public.

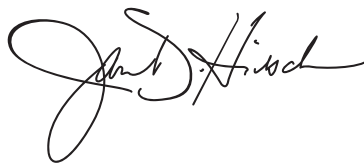
On April 28, UCI hosted its fifth annual Giving Day. Thanks to the generosity of our Anteater community, we were able to raise money to support the next generation of pharmacy and pharmaceutical professionals and establish two new traditions — an alumni-supported undergraduate scholarship and our PharmD White Coat Fund.

During 2020-21, 112 donors contributed \$1.6 million in gifts to the UCI School of Pharmacy & Pharmaceutical Sciences. This is a 55-percent increase in the number of donors compared to the previous year. We are grateful for all of your support!

In June, we celebrated our 119 graduates from the UCI School of Pharmacy and Pharmaceutical Sciences. Through the virtual commencement ceremonies, we honored and recognized our 106 Bachelor of Science in Pharmaceutical Sciences graduates, our eight graduates from the Master of Science in Pharmacology program, and our five PhD in Pharmacological Sciences graduates.

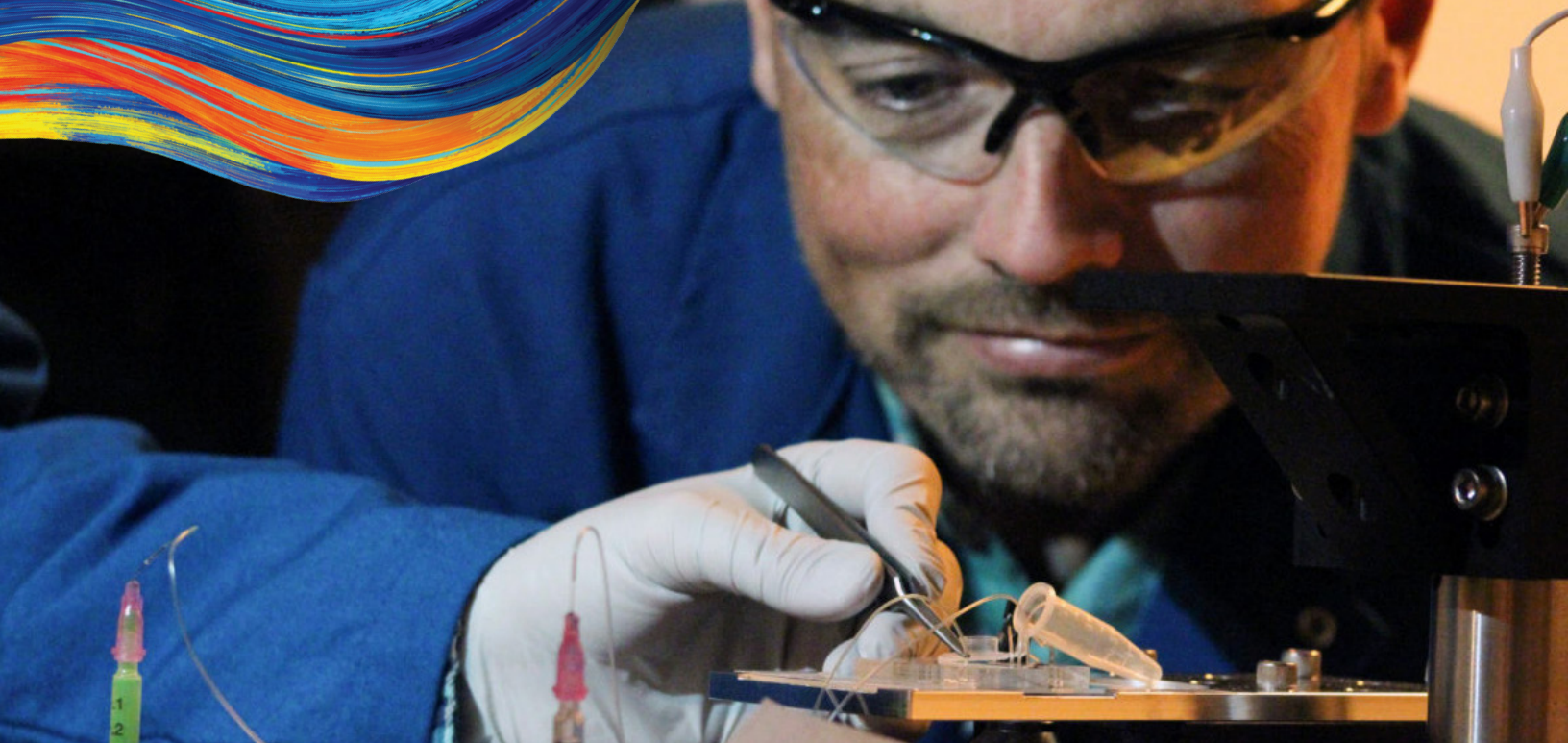
All of their accomplishments have set a strong foundation for our new School of Pharmacy and Pharmaceutical Sciences!

Zot! Zot! Zot!



Jan D. Hirsch, BS Pharm, PhD
Founding Dean





Pharmaceutical Scientists and Pharmacists on the Front Lines

In the midst of the COVID-19 pandemic, the University of California Regents approved the School of Pharmacy & Pharmaceutical Sciences. As a newly established school, our students, faculty and staff jumped into action to help with local efforts to slow the spread of COVID-19.

Before the development of the vaccine, UCI investigators developed a low-cost, fast antibody test with accurate results. One research team developed a new type of synthetic antibody to help with the treatment of COVID-19 patients. Even under the constraints and challenges presented to faculty, staff, and students, the School of Pharmacy & Pharmaceutical Sciences pushed the boundaries of science and innovated to help in the fight against the virus.

Although students remained mostly virtual for the 2020-21 academic year, students and faculty remained committed to its mission — be a driving force for advancing the health and wellness of individuals and society, through innovative and integrative learner-centered education; cutting-edge pharmaceutical research and discoveries; and leadership in inter-professional patient-centered healthcare.

During the COVID-19 pandemic, several faculty members from the Department of Pharmaceutical Sciences have focused their research on COVID-19 vaccines, treatment of SARS-Cov-2 infections, testing for the virus, and testing for antibodies:

John Chaput

UCI Professor John Chaput, PhD, and PhD student Kefan Yang developed a nucleic acid detection system named REVEALR, which offers an easy-to-use point-of-care platform to detect COVID-19 with a one-hour turnaround time and avoids the need for expensive instrumentation.

The Chaput Lab is also creating novel therapeutics to treat patients with COVID-19. The virus infects humans by recognizing a protein on the surface of lung cells. Drugs that block this interaction would prevent the virus from entering our cells and causing the disease.

In addition, Chaput is aiming to apply a novel gene silencing agent to treat COVID-19. Drugs that recognize and cut the viral RNA genome present in infected lung cells provide an option for treating patients infected with SARS-CoV-2.

Young Jik Kwon

To treat COVID-19 associated pneumonia, the Kwon Lab is creating a novel antiviral agent that can be inhaled and hinder the virus from growing and spreading. The research team accomplishes this by combining a material that can effectively deliver therapies to the lungs and help the cells in the region prevent the virus from replicating; eventually, the virus would die out.

Young Jik Kwon, PhD, collaborated with co-investigator Donald N. Forthal, MD, Chief at the Division of Infectious Diseases and Professor at UCI's School of Medicine, to develop a novel, cell-free, cellular COVID-19 vaccine. The researchers developed immune cell-derived vesicles that closely mimic the parent cell's T cell simulation capability without safety, storage, and distribution concerns like live cells.



Andrej Luptak

Professor Andrej Luptak, PhD, and his research team are developing specialized and easily produced molecules that can block the virus from spreading within the patient's lung tissue. The

molecules will be able to be locally synthesized and deployed in the field, without a need for a ramp-up of a specialized large-scale production, storage, and dissemination, as is needed for most antibodies and vaccines.

Brian Paegel

The ability to respond rapidly to emerging pathogens cannot be understated in light of the COVID-19 pandemic. Professor Brian Paegel, PhD, and his team are developing a technology that will screen extensive collections of drug candidates rapidly for molecules that halt the replication of the virus in cells using commercially available equipment and reagents. In addition to providing a tool for rapidly developing therapeutics to emerging pathogens, the platform is generally applicable to the discovery of other therapeutic classes, such as antibiotics and anti-cancer chemotherapeutics.

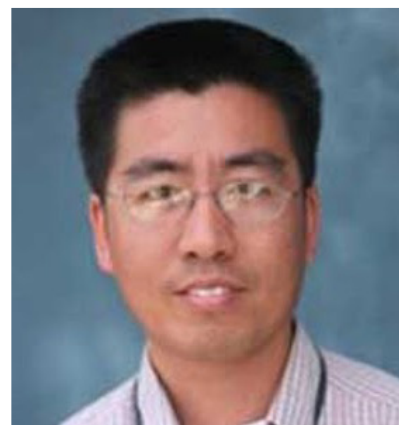


Weian Zhao

Professor Weian Zhao, PhD, is developing a platform technology that can accelerate the development of prophylactic and treatment vaccines and antiviral therapeutic antibodies against

COVID-19. With an unprecedented acceleration of discoveries, the proposed technology holds tremendous potential to develop vaccines and therapeutics against COVID-19 in the short term.

Zhao also collaborated with UCI's Philip Felgner, professor in residence of physiology & biophysics, to develop and deploy a COVID-19 serology test that has been used by more than 10,000 people in Orange County. The company Zhao co-founded, Velox Biosystems, is now creating a test for respiratory infections to help diagnose the common cold, influenza and COVID-19 in a single rapid assay; it's projected to be ready this fall.



Qun-Yong Zhou

The hypoxia and profound inflammatory response associated with COVID-19 pneumonia are likely critical for lethality and have overwhelmed intensive care facilities around

the world. Professor Qun-Yong Zhou, PhD, aims to stop the lethal over-response of the immune system to COVID-19 with the continued development of prokineticin 2 (PK2) blocking agents. The program of PK2 blocking agents has been licensed to a California biotechnology company, which has plans to test it in humans for inflammatory pain towards the year's end.



During Its Five-Month Run, the Bren Events Center Vaccine Clinic Served More Than **44,500** People

With well-planned collaboration and tremendous volunteer contributions, the UC Irvine Bren Events Center Vaccine Clinic served more than 44,500 people from January through to its final day on June 12.

During the five-month span, the Bren Events Center Vaccine Clinic team administered 76,544 shots and also held two community outreach clinics in Santa Ana and Anaheim.

When UCI Health started to prepare for the launch of the clinic on January 16, UCI School of Pharmacy and Pharmaceutical Sciences Founding Dean Jan Hirsch accepted the responsibility of finding a lead pharmacist for the Bren Events Center Vaccination Program. That's when she called on Larry Lovett, who has more than 40 years of administrative and clinical pharmacy experience.

"We knew Larry was the ideal person to bring into the operation from day one," Hirsch said. "His involvement included the hiring of part-time pharmacists and technicians while also setting up the dispensing areas. Larry's leadership and expertise was invaluable to the success of the clinic."

Lovett will be joining the School of Pharmacy and Pharmaceutical Sciences as a part-time faculty member in the fall when UCI enrolls its first Doctor of Pharmacy (PharmD) cohort.

Another key person in the Bren Events Center Vaccine Clinic was Alex Chan, the Founding Chair of the Department of Clinical Pharmacy Practice within the UCI School of Pharmacy and Pharmaceutical Sciences.

"Alex provided me with valuable administrative support, guidance, and encouragement," Lovett said. "He recruited and authorized critical School of Pharmacy and Pharmaceutical Sciences faculty support for the program until we could assemble a permanent pharmacy team."

In the collaboration between UCI Health and the School of Pharmacy and Pharmaceutical Sciences, a key leader was Robert Eastin, the director of pharmacy operations at UCI Medical Center.

“Based on their highly successful vaccine clinic at the UCI Medical Center, Rob and his team were instrumental in providing staff and technical assistance,” Lovett said. “We also received tremendous support from Medical Center Ambulatory Clinics under the leadership of Erwin Altamira.”

Together, Eastin and Altamira were among the UCI Health leads in establishing and coordinating the handling of vaccine deliveries, establishing protocols for safe-handling, registering recipients and overseeing the center’s operations.

Director of Experiential Learning Erin Knox played an important role in recruiting volunteer pharmacists to join the effort. Knox also led the effort to recruit more than 30 vaccination certified student pharmacists from UC San Diego and UC San Francisco to serve as volunteer vaccinators on weekends. The student pharmacists were also supervised by UCI pharmacists, School of Pharmacy and Pharmaceutical Sciences faculty, and UCI Medical Center pharmacy residents.

The School of Pharmacy and Pharmaceutical Sciences faculty and staff contributed more than 400 volunteer hours to the Bren Events Center Vaccine Clinic, but the success of the operation depended on collaboration throughout UCI Health and the Susan and Henry Samueli College of Health Sciences.

The Anteater EMS Student Volunteers were available at each clinic to provide emergency response as needed to patients experiencing adverse episodes following their vaccination.

The UCI Sue and Bill Gross School of Nursing sent their faculty and students to weekend clinics. The nursing students were trained to help the pharmacy team pull vaccine doses and to deliver doses to the vaccination tables where nursing students were also administering vaccines.

The School of Pharmacy and Pharmaceutical Sciences faculty also organized a training program for medical students in handling syringes and needles. After the training, the medical students were able to help the pharmacy team pull vaccine doses.

“It takes a tremendous, coordinated effort to implement and efficiently run a ‘pop-up’ clinic in a non-medical facility,” Lovett said, “and to consistently receive high praise from the customers receiving the service.”

In addition to the successful rollout of the COVID-19 vaccine at the Bren Events Center, the School of Pharmacy and Pharmaceutical Sciences also hosted two COVID-19 vaccine webinars, encompassing the scientific basis, clinical trials, delivery and administration issues to educate and reassure the public.



While demand for COVID-19 vaccination has dropped significantly in Orange County and elsewhere, there are currently COVID-19 vaccination programs active at several UCI Health outpatient centers. Plans to offer vaccinations at other UCI Health centers are also under consideration.

At the American Association of Colleges of Pharmacy annual meeting in July 2021, the UCI School of Pharmacy & Pharmaceutical Sciences presented their experience of helping to lead the Bren Events Center Vaccine Clinic.

Supporting our Innovation

With tremendous philanthropic support from our community, the UCI School of Pharmacy & Pharmaceutical Sciences continues to excel in the pursuit of its mission: To be a driving force for the advancement of health and wellness of individuals and society.

It is well known that our school already has a strong foundation in pharmaceutical sciences with our existing Bachelor of Science in Pharmaceutical Sciences, Master of Science in Pharmacology, and PhD in Pharmacological Sciences. Now that the PharmD program has turned from a dream into reality, our school will span 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.

During 2020-21, 112 donors contributed \$1.6 million in gifts to the UCI School of Pharmacy & Pharmaceutical Sciences. One of the many highlights was Kyhm Penfil establishing the first PharmD Scholarship Endowment to honor her grandfather Harry Penfil. The endowment will create opportunities for first-generation students to achieve their dreams and work toward making a positive impact in the world. On April 28, 2021, UCI hosted its fifth annual Giving Day. This year, the School of Pharmacy and Pharmaceutical Sciences dedicated its Giving Day proceeds to support our first-ever alumni-supported student scholarship and our White Coat fund.

The alumni-supported student scholarship was created by our Anteaters in Pharmacy chapter. Thanks to the generosity of our community, we were able to award scholarships to two deserving undergraduate students who are paving the way as the next generation of pharmacy and pharmaceutical sciences professionals.

The White Coat fund was established this year as we welcome our first-ever PharmD cohort. Each \$100 gift toward our White Coat fund provides one student's white coat and a welcome package at the White Coat Ceremony in September. As an additional touch, each white coat is embroidered with words of encouragement from the donor.

Overall, our 2021 Giving Day was a great success, and we look forward to all the new traditions we will be starting in the future!

Kay Family Foundation gives \$1.3 million to UCI Center for Healthspan Sciences

In April 2021, the Irvine-based Kay Family Foundation gifted \$1.3 million to the UCI Center for Healthspan Sciences. The funds will create a novel health coaching program, among other projects.

Part of the School of Pharmacy & Pharmaceutical Sciences, the center aims to increase human longevity and improve "healthspan," the time in people's lives when they experience mental and physical well-being.



"Healthspan sciences is a relatively new field focused on extending healthy human life," said center director Mahtab Jafari, UCI professor of pharmaceutical sciences. **"The main goals of the center are to engage in evidence-based, multidisciplinary research and educational programs to help improve everyday life in a way that will inspire healthier lifestyle choices and habits. This generous gift from the Kay Family Foundation will enable the center to launch its ambitious agenda."**



\$1.25 Million Gift From PharmaResearch Leads to Unexpected Discoveries in Cancer Therapeutics

A \$1.25 million gift from PharmaResearch may have surprised its recipient, Dr. Young Jik Kwon. What was even more unexpected? The result that occurred just a few years later: discovering a novel nano-formulation for cancer chemotherapeutics.

Kwon was first introduced to the Research and Development team at PharmaResearch through a mutual friend in 2015.

“It was a completely organic connection,” said Kwon, who is a professor at UCI’s School of Pharmacy and Pharmaceutical Sciences. “I was interested in their work and curious to learn more, but research and funding wasn’t something I was actively pursuing with them at the time.”

Until then, PharmaResearch was focused on exploring DNA as biomaterials for cosmetic and pharmaceutical applications, mainly with the goal of advancing regenerative medicine.

“As I got to know the researchers at the company and the studies they conducted, I realized there was a potential to employ those same materials in cancer research and developing cancer therapeutics,” Kwon said.

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), which is led by Kwon, quickly ensued.

Diligent efforts by five graduate students and three postdoctoral researchers at BioTEL over five years and funded through 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. The treatment showed promising results when tested on various cancer animal models.

Encouraged by the research findings, PharmaResearch struck a joint patent ownership and license agreement with the UCI for the formulation, with UCI Beall Applied Innovation’s Industry Sponsored Research team guiding the way.

PharmaResearch was eager to see the clinical translation of the formulation and committed to additional research funding to test the formulation on different cancer types.

One place with the capabilities necessary to test the therapeutic and pharmaceutical applications of the cancer technology came to mind: The Nanotechnology Characterization Laboratory (NCL) of the National Cancer Institute (NCI) at the National Institutes of Health (NIH). Well-known for its highly reputed Assay Cascade characterization and testing program which only accepts the most promising cancer nanomedicine candidates, Kwon applied for this rare opportunity.

The NCL announced in March 2021 that the cancer therapeutics nano-formulation developed by the team of Kwon and PharmaResearch was accepted into the program, and the first batch of the samples has recently landed at the NCL for testing.



Robert Spitale

“The relationship between BioTEL and PharmaResearch is an exemplary case of how a committed corporate partner and a dedicated research team can effectively work together for the advancement of innovative healthcare solutions,” said Robert Spitale, Founding Associate Dean of Research at the School of Pharmacy and Pharmaceutical Sciences. **“The research couldn’t have made it this far without the continued support from PharmaResearch.”**

Kwon agrees: “It isn’t often that university researchers have an opportunity to fully immerse themselves in projects that focus on translational research. With PharmaResearch, I was extremely lucky to have a partner who believed in the value of a collaboration with a university research team and encouraged campus-based inventions.”

Increasing Diversity in Pharmaceutical Sciences and the Pharmacy Profession

The Diversity, Equity, and Inclusion (DEI) Committee, established in November 2019, is comprised of faculty, staff, and students representing the departments and programs of the school.

The UCI School of Pharmacy & Pharmaceutical Sciences' Commitment to Diversity, Equity, and Inclusion



The mission of the School of Pharmacy & Pharmaceutical Sciences at UCI is to be a driving force for the advancement of health and wellness of individuals and society. We believe that plurality of experiences, accomplishments, and values leads to greater innovation and creativity. We, therefore, strive to maximize opportunities and inclusion for all SPPS members and affiliates so that we can use our potential to achieve academic and clinical excellence. Our goal is to serve all communities in the region, the State and beyond.

The DEI Committee invites our students, faculty, and staff to get involved. So far, the committee's priorities include:

- Adding guidance on DEI for those conducting admission interviews
- Adding curricular content on DEI throughout our courses
- Engaging student leaders in DEI discussion

During the admissions process for the inaugural PharmD class, multiple efforts were made to prevent bias:

- Application review and interview day rubrics incorporated language that cautioned reviewers against implicit biases

- Applications reviewed by at least two faculty members
- Balanced faculty interviewers
- Holistic admissions approach
- Blinded names, gender, and race/ethnicity data during admissions discussions

Of the 41 students entering the PharmD program in fall 2021, 56 percent are first-generation students, and 29 percent are underrepresented minority students.

In addition to the work of the DEI Committee, other faculty members are taking the lead in advancing diversity in pharmaceutical sciences and the pharmacy profession:

Equity Advisors: Professors Andrej Luptak and Mahtab Jafari

An Equity Advisor is a senior faculty member appointed as an advisor to the Dean in their respective schools. Andrej Luptak served in this position for the past four years and Mahtab Jafari was appointed to assume the role starting with the 2021-22 academic year. Equity Advisors participate in faculty recruiting, organize faculty development programs, and address individual issues raised by women and underrepresented minority faculty.

DECADE Mentors: Professors Claudia Benavente and Brian Paegel

DECADE Mentors are committed to fostering an inclusive environment within UCI's graduate programs and promoting diversity campus-wide. Claudia Benavente served in this position from 2017 to 2020, after which Brian Paegel was appointed to assume the role. DECADE Mentors serve as a resource to graduate students and faculty alike, collaborating with Equity Advisors and UCI's Graduate Division to accomplish their program's DEI goals.

Inclusive Excellence: Professor Frances Leslie

Inclusive Excellence Professors are nominated by UCI colleagues and are selected based on their demonstrated commitment and a track record of activities that advance inclusive excellence on campus. In this role, Frances Leslie works as an advisor to UCI's Associate Vice Provost for Faculty Development to organize and run faculty-development activities; and serves as a mentor for faculty.

Faculty Recognition

Team-based pharmacy practice, research and healthcare are the heart of the School of Pharmacy & Pharmaceutical Sciences, thanks to our world-class faculty members. With a track record of securing competitive research awards, maintaining an excellent level of instruction for all students,

and contributing to society's healthcare needs, our faculty demonstrate industry standards for our students. While showing courage and perseverance in the face of adversity during an unprecedented time, the following faculty members received notable awards in the past year.



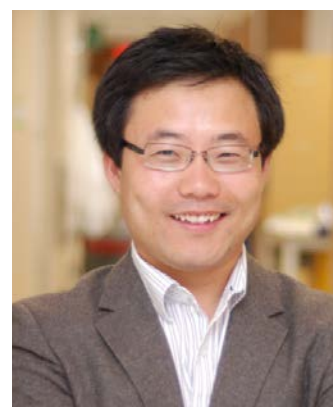
Amal Alachkar received the 2021 Celebration of Teaching Award, which recognizes the faculty, instructors, and teaching assistants who have demonstrated excellence in undergraduate teaching at UC Irvine.



John Chaput earned the 2021 Athalie Clarke Achievement Award, which celebrates Susan & Henry Samueli College of Health Sciences researchers whose investigations have made a lasting impact on human health.



Jan Hirsch and **Jonathan Watanabe** received a 2020 Value Assessment Challenge Award, which supports new concepts that help define innovative, patient-centered approaches to measuring health care value.



Weian Zhao earned the 2020 Beall Applied Innovation Innovator of the Year Award, which recognizes distinguished innovators who have demonstrated excellence by developing a breakthrough idea, process, or technology and shown its transformational potential to improve lives and create economic value.

Transforming Our Campus



The UCI campus is evolving rapidly to extend access to world-class patient care, groundbreaking research and industry-leading training to Orange County and beyond. UCI Health Affairs is expanding its impact with construction underway of the new Henry & Susan Samueli College of Health Sciences, and a new Medical Center in Irvine is in the planning stages.

If you've driven through campus recently, you may have noticed how quickly our five-story, 108,200-square-foot UCI Susan & Henry Samueli College of Health Sciences building is going up on the corner of Bison and California avenues

adjacent to the UCI Research Park. Overall, it's part of a landmark 9-acre health sciences complex that promises to be a national showcase for integrative health patient care, training and research.

The COHS consists of the School of Pharmacy & Pharmaceutical Sciences, the School of Medicine, the Sue & Bill Gross School of Nursing, the Susan Samueli Integrative Health Institute, and the Planned School of Population and Public Health. It is the first university-based health sciences enterprise to incorporate integrative health research, teaching and patient care across its schools and programs.

In January 2021, the UC Board of Regents approved plans to build a world-class, acute care hospital on the northern edge of the UCI campus, just walking distance from the COHS complex.

The hospital joins the previously approved UCI Health Center for Advanced Care to create the new UCI Medical Center in Irvine, a full-service academic health complex that will bring a broad spectrum of the most advanced healthcare services to coastal and southern Orange County, including access to the hundreds of clinical trials underway at UCI Health. The medical center will connect with the UCI Health primary care network throughout Orange County, including its newest clinic in Newport Beach, creating the region's only health system supported by one of the nation's premier academic research institutions.



In June 2021, the UCI Health Affairs Vice Chancellor and the Henry & Susan Samueli College of Health Sciences (COHS) deans toured the construction site of the new COHS campus. From left, Bernadette Boden-Albala, Director and Founding Dean, Program in Public Health; Steve Goldstein, Vice Chancellor, Health Affairs; Michael Stamos, Dean, School of Medicine; Adey Namathy, Founding Dean, School of Nursing; Jan Hirsch, Founding Dean, School of Pharmacy & Pharmaceutical Sciences; and Shaista Malik, Executive Director, Susan Samueli Integrative Health Institute.

Our Student Awards

Even after a year of learning remotely, our students did more than logging on to Zoom. They volunteered to help with community vaccine distribution, led student organizations to network with others, including industry leaders and some performed essential work and continued to conduct research in our laboratories. Here are just a few examples of our students making a difference inside and outside of UCI.



Diana Carreño:
2021 Latina
Excellence and
Achievement
Graduate Student
Award



Kathleen Diep:
Pharmaceutical
Sciences
Undergraduate
Achievement Award



Hannah Baumann:
2021 Excellence in
Research Award



Ivey Lee:
Pharmaceutical
Sciences
Undergraduate
Achievement
Award



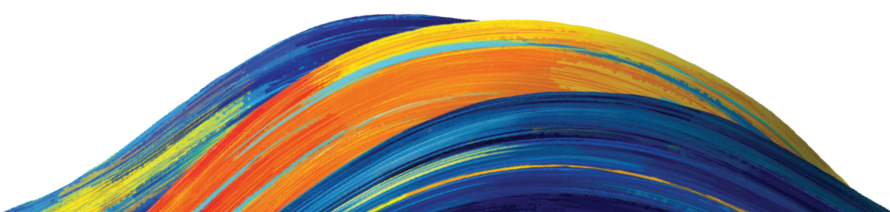
**Leslie Spitalny &
Abigail Vandewalle:**
2021 Outstanding
Teaching Assistant
Award



Ayaka Miura:
Pharmaceutical
Sciences
Undergraduate
Achievement
Award



Tri Dong:
Pharmaceutical
Sciences
Undergraduate
Achievement Award



Anteaters in Pharmacy

A strength of our School of Pharmacy & Pharmaceutical Sciences is our expansive, and inclusive, Alumni Chapter. Our Anteaters in Pharmacy Alumni Chapter brings together all UCI alumni who work in pharmaceutical fields. The Alumni base enables us to provide expertise for continuing education, job placement and mentorship.



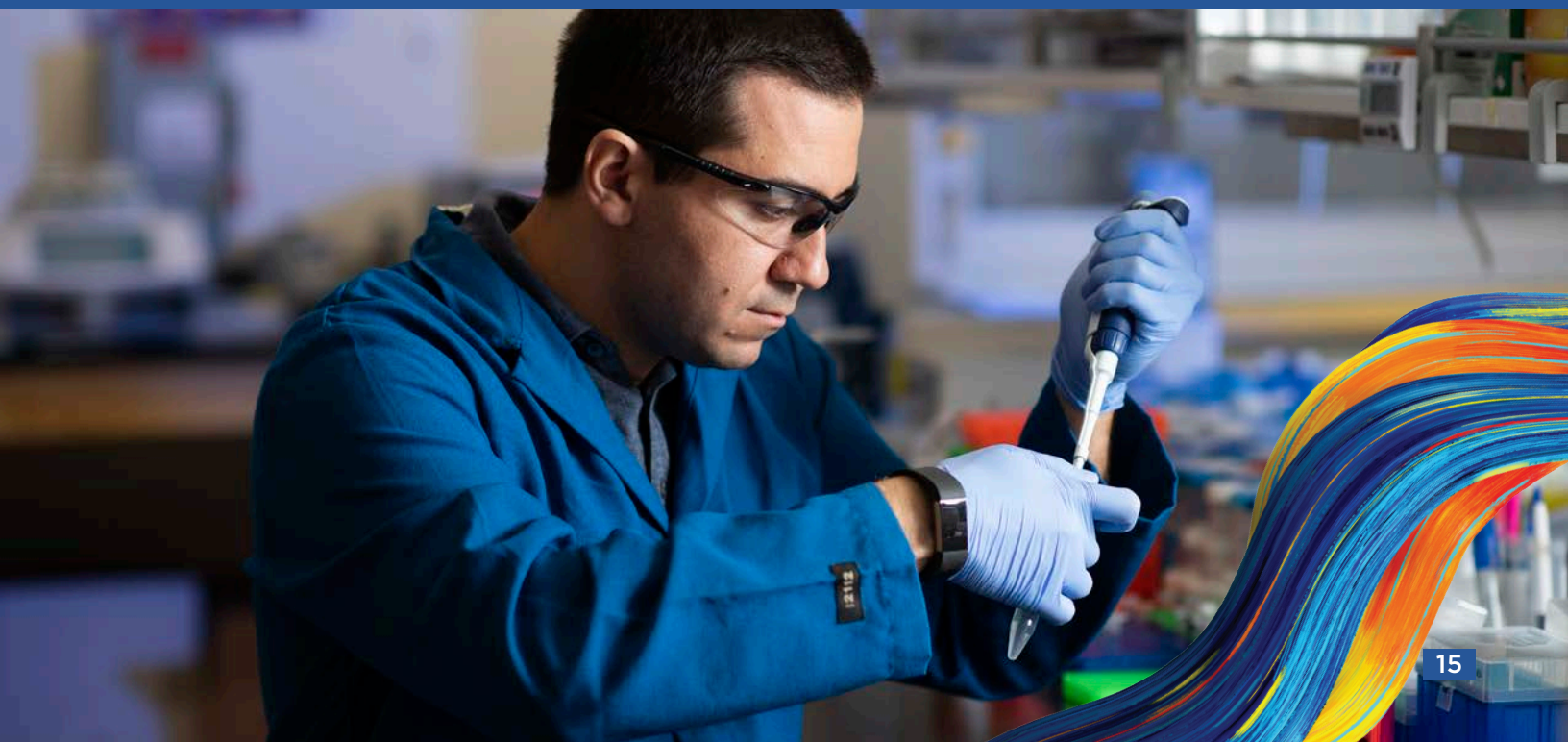
Dr. Karolina Kapustova (PharmD '17), Anteaters in Pharmacy Incoming President:

Dr. Kapustova earned her Bachelor of Science degree in Pharmaceutical Sciences from UC Irvine in 2017 and her Doctor of Pharmacy degree from the University of Southern California (USC) School of Pharmacy in 2021. Throughout her pharmacy school career, Dr. Kapustova has been a champion of student mentorship and has passionately sought to encourage and support novel student opportunities to demonstrate the creativity, professionalism, and forward thinking that is crucial to push the boundaries of the pharmacy profession. Dr. Kapustova is excited to continue her clinical training as PGY1 pharmacy resident at Riverside University Health System Medical Center in Southern California.



Dr. Eric Samuels (PhD '18), Anteaters in Pharmacy Incoming Mentorship Chair:

Eric Samuels earned his PhD in Pharmacological Sciences from UC Irvine in 2018. He currently works as a scientist in pharmaceutical sciences for AbbVie in Irvine. What interests him about his current job is the applied science, troubleshooting, and R&D aspects. From discovery, through development and clinical trials, all the way to market — he is excited to be a part of drug development and watch the clinical trials process unfold in real time.





Year in Review

July 2020

PharmSci DREAM Mentor, Diana Carreño Talks About the Importance of the DREAM Scholars Program

Pharmaceutical sciences PhD student, Diana Carreño, is a DREAM mentor for UCI's DREAM Scholars program. She assists undocumented students, and as a DACA recipient herself, she is familiar with the struggles of undocumented immigrants striving for educational success.

August 2020

UCI Launches Innovative School of Pharmacy & Pharmaceutical Sciences

UCI announced the establishment of the School of Pharmacy & Pharmaceutical Sciences, the first public pharmacy school in the Los Angeles-Orange County region and a pillar of UCI's expanding Susan and Henry Samueli College of Health Sciences.

UCI Develops Low-Cost, Accurate COVID-19 Antibody Detection Platform

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 appears in the journal Lab on a Chip, published by the Royal Society of Chemistry.

September 2020

Clinical Pharmacy Practice Welcomes Four New Faculty Members

The School of Pharmacy & Pharmaceutical Sciences welcomed four new faculty members into the Clinical Pharmacy Practice: Keri Hurley-Kim, Cheryl Wisseh, Lee Nguyen and Christine Cadiz.

Year in Review (cont)

Schizophrenia: Nurture Cannot Overcome Nature

UCI research led by Amal Alachkar found that too much of a certain amino acid in utero caused schizophrenia in mice despite the quality of postpartum caregiving — and the study suggests that the same would be true with humans. These findings will be used to develop better treatments for (and possibly avert) schizophrenia and other psychiatric disorders.

October 2020

SPPS Anti-Cancer Challenge Team Surpasses Goal

Professors Claudia Benavente and Alex Chan spearheaded the first-ever School of Pharmacy & Pharmaceutical Sciences Anti-Cancer Challenge Team, calling on faculty, staff and students to join the team in the fight against cancer. SPPS surpassed the initially set goal of \$1,500. Proceeds go directly to lifesaving cancer research at the UCI Chao Family Comprehensive Cancer Center.



November 2020

Pharmaceutical Sciences Professor Weian Zhao, PhD, Wins 2020 UCI Beall Applied Innovation Innovator Of The Year Award

SPPS Professor Weian Zhao was awarded the UCI Beall Applied Innovation Innovator of the Year Award. The Innovator of the Year Award “recognizes distinguished innovators who have demonstrated excellence by developing a breakthrough idea, process, or technology and shown its transformational potential to improve lives and create economic value.”



Mahtab Jafari's Life Skills Course is Expanded to All 10 UC Campuses

After its success at UCI, Professor Mahtab Jafari's Life 101 course became available across the 10 UC campuses during the 2021 winter quarter. Launched as a UCI pharmaceutical sciences course in 2013, Life 101 teaches students how to manage stress and improve quality of life through nutrition, exercise, sleep, the effects of performance-enhancing drugs on campuses and even the health benefits of volunteering.

December 2020

UCI, UCSD Study: People More Likely to Pick Up Prescriptions Via Automated Kiosks

Founding Dean Jan Hirsch led a study by UCI and UCI San Diego that found that patients using an automated kiosk in their workplace had better prescription pickup rates without sacrificing instruction from pharmacists. Like an ATM, the automated kiosk delivered pharmacist-filled prescriptions to patients when they entered their code. Patients could call the pharmacist with questions using the attached phone.

Professor Mahtab Jafari's Publication Investigates "Diet And Botanical Supplementation: Combination Therapy For Healthspan Improvement?"

In a study published in Rejuvenation Research, Professor Mahtab Jafari found that while an ancestral diet consisting of apples, and botanical extracts can increase lifespan and improve healthspan individually, they decrease lifespan when combined. This study involved a collaboration between two different disciplines: evolutionary biology and pharmaceutical sciences.

Year in Review (cont)

Pharmaceutical Sciences Research and Innovation Amidst COVID-19: Chaput Lab's Development of COVID-19 Therapeutic

Professor John Chaput and his research team focused on developing drug discovery technologies. Amidst the COVID-19 pandemic, they leveraged their skills to develop a new type of synthetic antibody that can diagnose and treat COVID-19 patients. This COVID-19 research will establish a drug discovery pipeline that is better prepared to prevent local epidemics from developing into global pandemics and create a new line of drugs to treat prominent infectious diseases.

Orange County Health Experts Talk Vaccines and How to Move Forward Safely

Joining other Orange County health experts, Dean Jan Hirsch spoke at an Orange County Business Council panel event to educate the community on vaccines and what people need to know about how to move forward safely.



Cheryl Wisseh

January 2021

UCI Study First to Link Disparities and 'Pharmacy Deserts' in California

In the United States, Black, Latino and low-income communities have historically lacked nearby access to pharmacy services. Published in the Journal of Racial and Ethnic Health Disparities, this UCI study was the first to look at pharmacy deserts in California.

Professor Mahtab Jafari Weighs in on Families Expanding Their Pandemic Bubble to Include Children's Girlfriends and Boyfriends

In this report, Professor Mahtab Jafari encouraged that if families decided to include their children's significant others in their pandemic pods, it is important to have open communication and to set realistic boundaries within the household.

SPPS Researchers Awarded 2020 PhRMA Foundation Value Assessment Challenge Award

The PhRMA Foundation announced the 2020 Value Assessment Challenge Awards winners, and among the recipients were Founding Associate Dean Jonathan Watanabe and Founding Dean Jan Hirsch. The awards support new concepts that help define innovative, patient-centered approaches to measuring health care value.

February 2021

UCI Study Found Autonomic Benefits of Cryotherapy in Chemotherapy-Treated Breast Cancer Patients

This UCI study, led by Professor Alexandre Chan, evaluated the role of cryotherapy to reduce neuropathic symptoms caused by chemotherapy that are used to treat breast cancer patients. Data suggests that cryotherapy is able to prevent small fiber neuropathy and autonomic symptoms.

Academic Innovation Amidst COVID-19: Virtual Pharmaceutical Sciences Seminar Series

SPPS launched its first virtual Pharmaceutical Sciences Seminar Series, featuring a diverse range of distinguished guest speakers from across the country. Professor Brian Paegel, the Department of Pharmaceutical Sciences Seminar Series Chair, has played an integral role in transitioning the series to virtual seminars and inviting a diverse range of speakers.



UCI School of Pharmacy & Pharmaceutical Sciences Hosts a Two Part COVID-19 Vaccine Panel

The School of Pharmacy & Pharmaceutical Sciences' Community Information Session and Q&A provided a unique opportunity for attendees to hear from expert scientists and clinical pharmacists about the why, what, where and when of COVID-19 vaccines. Panelists presented an overview of how vaccines work while discussing efficacy, safety, administration, and distribution.

Pharmaceutical Sciences Research and Innovation Amidst COVID-19: Professor Young Kwon's Development of a Cell-Free, Cellular COVID-19 Vaccine

SPPS Professor Young Kwon began working on developing a novel, cell-free, cellular COVID-19 vaccine. Kwon's interdisciplinary expertise in gene therapy, nanomedicine, and cellular vesicles places him in a unique position to develop an innovative COVID-19 vaccine that requires genetic engineering of immune cells, novel nanoscale formulation, and preparation of immune cell-derived vesicles.

Kyhm Penfil Establishes the First PharmD Scholarship Endowment for First Generation Students at UCI

To honor the legacy of her grandfather, Harry Penfil, Kyhm Penfil established the first PharmD scholarship endowment at UCI to create opportunities for first generation students to achieve their dreams and work toward making a positive impact in the world.

UCI Pharmacists Transform Health Care and Wellness

A pharmacist's role extends far beyond dispensing medication. From administering COVID-19 vaccines, to providing direct patient care, to increasing medication access, to reducing health disparities, and advocating for medication safety- the clinical faculty at UCI School of Pharmacy & Pharmaceutical Sciences engage in impactful, collaborative, and interdisciplinary work that transforms healthcare and wellness in society.

March 2021

John Chaput Can Store the Declaration Of Independence in a Single Molecule

John Chaput, a professor of pharmaceutical sciences at UCI with appointments in chemistry and molecular biology & biochemistry, and his lab team are striving to improve a technique that's already on the bleeding edge of synthetic biology and data storage. By employing an artificial variation of DNA, Chaput is transforming the field of semipermanent data storage.

April 2021

UCI Pharmacists on the Front Lines

Hours before UCI Health's first vaccination event, Robert Eastin, director of pharmacy operations at UCI Medical Center, spent the night with the vaccines to assure temperature stability. UCI's School of Pharmacy & Pharmaceutical Sciences focused on vaccine education and research, but now its pharmacists have joined personnel from UCI Health and the Sue & Bill Gross School of Nursing to provide vaccinations to the UCI community.

Alumni Roll Up Their Sleeves to Aid UCI's COVID-19 Vaccination Efforts

When the School of Pharmacy and Pharmaceuticals Sciences needed more licensed pharmacist volunteers to oversee student COVID-19 vaccine preparation, the staff knew where to find the qualified personnel required — its very own Anteaters in Pharmacy alumni network. The alumni response exceeded the call, with more than twice the number of people needed showing up at the UCI Bren Events Center to support the Vaccine Clinic.

Year in Review (cont)

Brian Paegel Receives NIH Award for Drug Discovery Tech Development

The National Institutes of Health has granted \$2 million to researchers in UCI's School of Pharmacy & Pharmaceutical Sciences. The new Maximizing Investigators' Research Award will fund drug discovery technology development in the laboratory of Brian Paegel, UCI professor of pharmaceutical sciences.

Diana Carreño Named 2021 Latina Excellence and Achievement Graduate Student Awardee

Diana Carreño, Pharmacological Sciences PhD student, is the School of Pharmacy & Pharmaceutical Sciences 2021 Graduate Student Awardee for Excellence and Achievement. Her research project focuses on understanding the molecular mechanisms of adolescent drug addiction.

Kay Family Foundation Gives \$1.3 Million to UCI Center for Healthspan Sciences

The Irvine-based Kay Family Foundation has made a gift of \$1.3 million to the UCI Center for Healthspan Sciences at UCI. The funds will create a novel health coaching program, among other projects.

2021 Giving Day Supports Student Scholarship

For UCI's fifth annual Giving Day, the School of Pharmacy & Pharmaceutical Sciences dedicated their Giving Day proceeds to support the first-ever alumni-supported student scholarship and the White Coat fund. Thanks to the generosity of our community, we were able to raise money to support the next generation of pharmacy and pharmaceutical professionals.

May 2021

UCI Student Ryan Kwok Creates a Community Through the ZOTRx Podcast

When the pandemic hit, chance encounters and chats with professors were no longer the norms. To fill this void, Kwok and the Pre-Pharmacy Society launched the ZOTRx Podcast in September 2020. Kwok interviewed UCI alumni from across the industry to share inspiring stories about their careers. The response has been overwhelmingly positive.

UCI Commentary Expands Understanding of How Transplanted Stem Cells Address Disease

UCI scholars Zachary W. Wagoner, a graduate student researcher in cellular & molecular biosciences, and Weian Zhao, professor of pharmaceutical sciences in the School of Pharmacy & Pharmaceutical Science, have identified a new mechanism by which transplanted stem cells treat disease. Their findings are contrary to the long-standing conventional wisdom that diseased tissue is repaired through stem cells differentiating into new cells or producing beneficial molecular secretions.



Keri Hurley-Kim

Keri Hurley-Kim's Work as Ambulatory Care Pharmacist Impacts the Lives That Need It Most

UCI School of Pharmacy & Pharmaceutical Sciences Professor Keri Hurley-Kim, practices as an ambulatory care pharmacist in addition to being an educator at UCI. She has been a pharmacy educator since 2014 and has worked with PharmD students and residents at all levels of didactic and clinical education.

Efforts to Treat COVID-19 Patients Chronicled in UC Health Medications Data

Led by Professor Jonathan Watanabe, a record of medicine utilization patterns assembled by an interdisciplinary team of researchers at UCI and the UC San Diego School of Medicine reveals the thought, care and scientific rigor clinicians at UC Health medical centers applied in their treatment of patients with COVID-19 in 2020.

Year in Review (cont)

\$1.25 Million Gift From PharmaResearch Leads to Unexpected Discoveries in Cancer Therapeutics

A \$1.25 million gift from PharmaResearch may have surprised its recipient, Professor Young Jik Kwon. What was even more unexpected? The result that occurred just a few years later: discovering a novel nano-formulation for cancer chemotherapeutics.

June 2021

Pharmacists Play Big Role in Vaccination Rates, Acceptability in Asia-Pacific Area, Study Finds

Led by Professor Joyce Lee, research team members from UCI found that pharmacists improve vaccination acceptability and rates in the Asia-Pacific region, according to a recent study published online in the Journal of the American Pharmacists Association.

UCI Webinar Creates Venue to Discuss Healthcare Disparities in Pharmacy

The School of Pharmacy & Pharmaceutical Sciences hosted a webinar titled “Health Disparities in Pharmacy Practice within the Community,” bringing together pharmacy leaders from UCI and other organizations and universities across the country.

UCI School of Pharmacy & Pharmaceutical Sciences Celebrates 119 Graduates in 2021 Commencement Ceremony

During the Susan and Henry Samueli College of Health Sciences Reception, the UCI School of Pharmacy & Pharmaceutical Sciences recognized

and honored its first official class of graduates since becoming an official school in July 2020. The School of Pharmacy & Pharmaceutical Sciences' Class of 2021 features 119 graduates: 106 from the Bachelor of Science in Pharmaceutical Sciences, eight from the Master of Science in Pharmacology, and five from the PhD in Pharmacological Sciences.

UCI-Led Study Links Age of At-Risk Individuals to Much Higher COVID-19 Hospitalization Rate

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, according to a recent study led by Professor Jonathan Watanabe and his team.

UCI Team's Study Gives Clues to Life's Chemical Origins With Implications for Drug Design

How life came to be homochiral is a central problem in developing theories of life's chemical origins. In a recent study in Nature Chemistry led by Professor Brian Paegel, scientists at UCI and Scripps Research uncovered an interesting property of cell membranes that might provide clues as to how homochirality emerged on the early earth..

During its Five-Month Run, the Bren Events Center Vaccine Clinic Served More Than 44,500 People

With well-planned collaboration and tremendous volunteer contributions, the UCI Bren Events Center Vaccine Clinic served more than 44,500 people from January through to its final day on June 12. During the five-month span, the Bren Events Center Vaccine Clinic team administered 76,544 shots and held two community outreach clinics in Santa Ana and Anaheim.

John Chaput Receives the 2021 Athalie Clarke Achievement Award

Professor John Chaput received the Athalie Clarke Achievement Award on Tuesday, June 22, 2021. Chaput is the inaugural recipient of the UCI School of Pharmacy & Pharmaceutical Sciences, established officially in July 2020.



Natalie Deeb, one of 119 graduates from the UCI School of Pharmacy & Pharmaceutical Sciences in June 2021.

“As you leave UCI and prepare to embark on your next big adventure, my hope is that you take every opportunity that you are faced with in the future and continue to learn and grow as you did here at UCI. Please stay in touch so that we may join you in celebrating your many milestones and victories ahead!”

— Founding Dean Jan Hirsch in her message to the Class of 2021.

To watch Dean Hirsch’s message to the graduates, [visit bit.ly/spps-grad](https://bit.ly/spps-grad).