

### Cultivating Team Science Award Announced

Congratulations to the 2023 awardees of the School of Medicine Cultivating Team Science seed grant program. The grants are awarded for collaborative science projects for which the lead principal investigators are School of Medicine faculty, and the team represents at least two different School of Medicine departments.

The awardees are:

- **Irva Hertz-Picciotto.** Hertz-Picciotto’s team will pilot Wildfire Health Clinics in underserved communities to collect clinical data and biologic specimens, assess statistical associations of wildfire exposures to medical conditions, and develop a wildfire response coordination program. Hertz-Picciotto is Professor and Vice Chair for Research of the Department of Public Health Sciences, and her interdisciplinary team includes faculty from the Departments of Internal Medicine, Public Health Sciences, Mechanical and Aerospace Engineering, Medical Microbiology and Immunology, Evolution and Ecology, Civil and Environmental Engineering, Biostatistics and Surgery.
- **Lee Miller.** Miller’s team will study the neural basis of speech and translate the findings into development of a prosthesis that enables speech restoration. Miller is a professor in the Department of Otolaryngology with a joint appointment in the Department of Neurobiology, Physiology, & Behavior. His team includes faculty from the Departments of Neurological Surgery, Otolaryngology, Neurology, and Mechanical and Aerospace Engineering.



The Cultivating Team Science award will provide \$100,000 annually per team, totaling \$200,000 in two-year seed funds for planning, preparation and submission of large team-based applications. The awarded teams will be required to submit an initial application for a program project, U01 or equivalent grant to the National Institutes of Health (NIH) or other federal funding agency by June 2024.

The award application and selection process was led by this year’s Cultivating Team Science Award review committee co-chairs, **Donald Bers**, chair of the Department of Pharmacology, and **Helen Kales**, chair of the Department of Psychiatry and Behavioral Sciences, and coordinated by the School of Medicine’s Office of Research. Thirty-one faculty members reviewed this year’s proposals. The proposals were reviewed for significance and impact, team composition and synergy, and potential for federal funding following the NIH scoring method.

### May 2023

#### School of Medicine Office of Research

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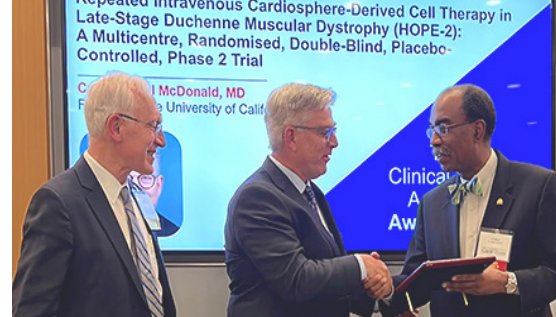
### 2023-2024 US News & World Report Rankings

The 2023-2024 *U.S. News & World Report* Best Graduate Schools rankings were released on May 11. Two of the School of Medicine’s medical education programs placed in the top 10 for all schools: family medicine at fifth (up from seventh last year) and primary care at sixth (up from eighth last year). The publication also ranked psychiatry as the 15th best program nationwide. UC Davis was also ranked the third most diverse medical school in the country, just as it was last year. And it ranked 50th in research, up one spot from the year before. The School of Public Health graduate program was ranked 22, tied with four other schools. [Read More.](#)

# Recognition

## CRF Top Ten Award

On April 17, Chair of Physical Medicine and Rehabilitation [Craig McDonald](#) received a 2023 Top Ten Clinical Research Achievement Award during the Clinical Research Forum (CRF) in-person award ceremony. This prestigious award is presented by the CRF in recognition of the top research being conducted in the country. It is in recognition of McDonald's team's remarkable work developing a stem cell therapy to treat the most severe patients with Duchenne muscular dystrophy (DMD). This is the second straight year a UC Davis School of Medicine researcher has been recognized by CRF with a Top Ten award. [Read More.](#)



Professor Craig McDonald (center).

## Hartwell Foundation Biomedical Research Award

Two UC Davis School of Medicine faculty members are among ten scientists selected to receive the 2022 Individual Biomedical Research Awards from The Hartwell Foundation. The award funds early-stage, innovative and cutting-edge biomedical research to benefit children in the United States. The awardees for this year are: [Geoanna M. Bautista](#), assistant professor of pediatrics in the Division of Neonatology at UC Davis Children's Hospital, and [Roy Ben-Shalom](#), assistant professor of neurology and faculty at the MIND Institute. [Read More.](#)



Assistant professor Geoanna M. Bautista.

## NHLBI Outstanding Investigator Award

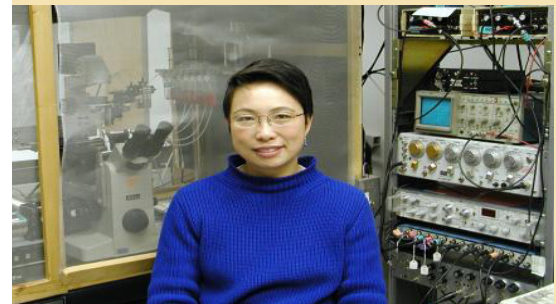
[Ye Chen-Izu](#), Professor in the Department of Pharmacology, has received an Outstanding Investigator Award from the National Heart, Lung and Blood Institute (NHLBI), which is part of the National Institutes of Health (NIH). The award provides \$7,758,328 in funding over the next seven years to support Chen-Izu's research into how the heart functions as a smart pump and how mechanical stress such as high blood pressure leads to heart diseases. [Read More.](#)



Assistant professor Roy Ben-Shalom

## Pershing Square Foundation MIND Prize

UC Davis Health neuroscientist [Sergey Stavisky](#) has received the inaugural Pershing Square Foundation MIND (Maximizing Innovation in Neuroscience Discovery) Prize — a \$750,000 award. The three-year grant will fund Stavisky's groundbreaking work in developing new devices that can shed light on the workings of the human brain. [Read More.](#)



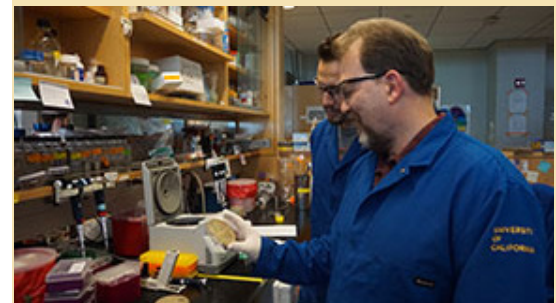
Professor Ye Chen-Izu

## National Academy of Sciences Election

[Andreas Bäumlér](#), vice-chair of research and professor in the Department of Medical Microbiology and Immunology at UC Davis School of Medicine and professor in the College of Biological Sciences, has been elected to the National Academy of Sciences (NAS). Members are elected to the NAS in recognition of their distinguished and continuing achievements in original research. Membership is a widely accepted mark of excellence in science and is considered one of the highest honors that a scientist can receive. Bäumlér is a highly cited author of more than 200 papers. His groundbreaking research has focused on the role of intestinal epithelium in the composition of gut microbiota and its effects in infectious and inflammatory diseases. [Read More.](#)



Professor Sergey Stavisky



Professor Andreas Bäumlér

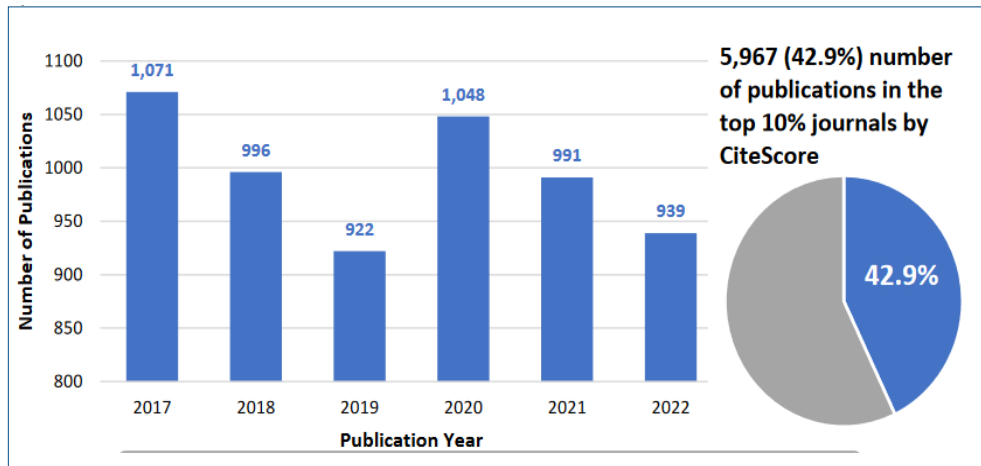
# Impactful Publications



Professor [Primo Lara](#), Executive Associate Dean for Cancer Programs and Director of the UC Davis Comprehensive Cancer Center, is first author on a study published in *European Urology*, called [“Bone Biomarkers and Subsequent Survival in Men with Hormone-sensitive Prostate Cancer: Results from the SWOG S1216 Phase 3 Trial of Androgen](#)

[Deprivation Therapy with or Without Orteronel.”](#) Co-authors include Assistant Professor [Mamta Parikh](#) from the Department of Internal Medicine and Professor Erik Gertz from the Western Human Nutrition Study Center, located on the UC Davis campus. This study looks at how bone biomarker levels alone or in combination with clinical covariates identify the overall survival outcomes of unique subsets of patients with hormone-sensitive prostate cancer (HSPC). [Read More.](#)

## 2023 Publication Metrics Report



Number of School of Medicine publications in Top 10% Journals from 2017 to 2022 (Source: SciVal)

The School of Medicine Office of Research has released the 2023 Publications Metrics Report. This report tracks the research productivity and scholarly impact generated by researchers in the UC Davis School of Medicine. It provides quantitative and qualitative information about the state of School of Medicine research across its 25 departments and is shared with School of Medicine Interim Dean Susan Murin and the respective department chairs and chief administrative officers. This data offers an invaluable insight into publication volume, prestige of publications and the number of citations our researchers receive.

For example, the data from the most recent report shows that between 2017 and 2022, UC Davis ranked 5th among the UCs and 27th among all institutions in number of scientific publications. During this time frame, School of Medicine faculty published 13,600 documents, cumulatively generating over 238,848 citations. Approximately 43% of these documents were published in the top 10% journals and almost 20% were in the top 10% cited worldwide (per SciVal).

Contact your department for information on how to access this report.

## 2023 Research Expo

The annual UC Davis Research Expo showcases the latest research-related insight, resources, opportunities and tools to help researchers. The event includes exhibits, presentations, workshops and opportunities to network with potential collaborators. This year’s event was held on May 16 at the Welcome and Conference Center on the Davis campus.



The keynote address was by Don Ingber, M.Phil., M.D., Ph.D., a pioneer in biologically inspired engineering.



The School of Medicine Office of Research staff was on hand to answer questions and give out information about our many services for UC Davis School of Medicine researchers.



# Feature

## Featured Research: UC Davis Arthritis Research



May is recognized each year as National Arthritis Awareness Month. According to the Arthritis Foundation, arthritis is a disease that impacts more than 50 million Americans, making it the number one cause of disability in the country. That means 1 in every 5 adults, 300,000 children and countless families are affected by arthritis.

There are four types of arthritis: Auto-immune, metabolic, infectious, and, by far the most common, osteoarthritis, which is the wearing down of cartilage between joints – most commonly the knee. Osteoarthritis was once considered a wear-and-tear disease, but with further research, we now know that OA is a disease of the whole joint, not just cartilage. Bones in affected joints become weaker, the connective tissue that holds the joint together deteriorates and inflammation damages the joint lining.

Surgical treatment is one of the most effective ways of managing arthritis pain, but one with serious downsides, including the high likelihood that revision surgery will be needed within ten years of the original surgery. Research on prevention and non-surgical treatment of arthritis is an important way to meet the current needs of millions of patients suffering from arthritis pain.

### Prevention

[Cassandra Lee](#), professor of orthopaedic surgery, has had some difficult conversations with her patients. She has seen patients in their twenties - athletes since they were children - having had multiple anterior cruciate ligament (ACL) injuries requiring surgical intervention. They now have little left of the meniscus, the cartilage that cushions the knee joint. In these cases, she is no longer counseling them on options for returning to their sport but on strategies for maximizing their joint and putting off post traumatic osteoarthritis of the knee. As a sports medicine specialist, ACL surgery is her bread and butter. As a scientist, however, Lee is invested in inquiring about ACL injury prevention. “We know that there’s a connection between people who have ACL tears and post traumatic arthritis. Can we prevent the risk of osteoarthritis and post traumatic histories with osteoarthritis?”

Lee’s project includes the collection of leftover ligament tissue and cartilage from patients undergoing ACL surgery. “That’s an ongoing study involving collaboration with biomedical engineering and physiology and membrane biology,” she explains. “We utilize the tissues from patients who have ACL tears removed and reconstructed in surgery. And then what we do is try to understand ligaments and the potential to optimize ligament healing and understand the factors that go along with healing.” Recognizing that female athletes are more susceptible than males to ACL tears, her team studied the role that estrogen levels might play in the risk of ACL injury. The focus of this study is to find the means of preventing ACL injuries by identifying the athletes’ vulnerability to them.

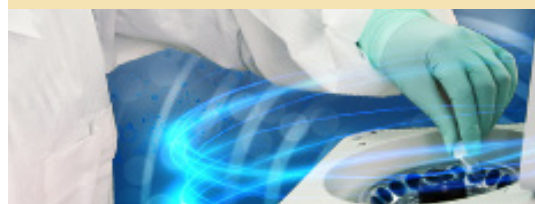
The study looked at a potential hormonal connection to ACL injury, given the sex differences in ligament behavior. The team used the cells from the remnant ligaments and engineered an ‘embryonic’ knee ligament (‘embryonic’ because it lacks all the signals of a full ligament). It was connected to lab-created bone and

*continued on p.4*

### Arthritis by the Numbers:

(Source: [Arthritis Foundation](#))

- Working-age people (ages 18 to 64) with arthritis are less likely to be employed than those of the same age without arthritis.
- 1/3 of working-age people with arthritis have limitations in their ability to work, the type of work they can do or whether they can work part time or full time.
- People with osteoarthritis and rheumatoid arthritis miss a combined 172 million workdays every year.
- Arthritis and related conditions account for more than \$156 billion annually in lost wages and medical expenses.
- There are nearly 1 million hospitalizations each year due to arthritis.
- 57% of adults with heart disease have arthritis.
- 52% of adults with diabetes have arthritis.
- 44% of adults with high blood pressure have arthritis.
- 36% of adults who are obese have arthritis.
- 1/3 of adults with arthritis age 45 and older have either anxiety or depression.



### June is Laboratory Safety Month

- Laboratory safety guidelines on the [Safety Management Team web page](#)
- [Video training on lab safety offered by the Centers for Disease Control](#)

The Employer’s First Report (EFR) will be retired on May 29, and employees and supervisors will start using a new app called [Employee Injury and Illness Reporting](#) to report work-related injury and illness.



Cassandra Lee, M.D.

then tested by trying to mimic what is seen with the menses cycle, in terms of the estrogen spike, and if the tissue acts any differently. Their findings indicated that it did ([“Estrogen inhibits lysyl oxidase and decreases mechanical function in engineered ligaments”](#)).

The next phase of the study will be to confirm these findings. Lee is excited about the next steps and thoroughly enjoys the process of asking questions and finding answers that contradict the norms. “I think what is really exciting about orthopaedics is not only the surgery, but also research and innovation. Our clinical and mechanistic faculty interact by exchanging ideas, and sometimes we come across an interesting concept that leads to successful funding. It’s exciting to challenge dogma and try to answer the question ‘why?’”

Lee is also working with orthopaedic surgery colleague Associate Professor [Blaine Christensen](#), who has developed mouse models of post-traumatic arthritis. Because mice develop osteoarthritis after ACL injury at a more rapid rate than humans, they can observe the course of post-traumatic arthritis and ways to mitigate it; at times, simply by calming the knee. (see the 2021 publication on this research by Lee, Christensen and other UC Davis researchers in [Osteoarthritis Cartilage](#), [“Post-traumatic osteoarthritis progression is diminished by early mechanical unloading and anti-inflammatory treatment in mice.”](#)) She currently has an R01 from the National Institutes of Health (NIH) to continue her studies and to find ways to move this research into clinical trials.

### Pain Management



Scott Pritzlaff, M.D.

Associate Professor [Scott Pritzlaff](#) and Professor [David Copenhaver](#) are faculty in the UC Davis Department of Anesthesiology and Pain Medicine. Copenhaver is Chief of the Pain Medicine Division and Pritzlaff Fellowship Director. Pritzlaff is also UC Davis site PI for a large, multi-site study by Johns Hopkins called “Sequenced strategy for improving outcomes in people with Knee OsteoArthritis Pain (SKOAP).”

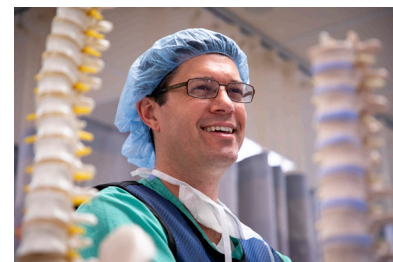
As Copenhaver explains, the UC Davis Pain Medicine division has built a strong network and national reputation, enjoying growing opportunities for research and funding. This includes a large footprint in cancer pain research. Cancer patients, like KOA patients, frequently need to manage pain using non-surgical interventions, so the Pain Medicine team works on nuanced approaches to pain management. Their expertise was sought out by Johns Hopkins and UC Davis was recruited as one of the sites for this large study.

The SKOAP study has two phases, both of which compare different non-surgical treatments for knee osteoarthritis pain. Phase 1 includes best practices for pain management. In Phase

2, the study participants receive one of three novel treatments – injections into the knee with a mixture of hyaluronic acid, long-acting local anesthetic, and corticosteroid; ablation of the genicular nerves (the nerves that supply sensation to the knee joint); or genicular nerve blocks with local anesthetic.

The Phase 2 treatments represent an exciting and important test of pain treatment options that Pritzlaff and Copenhaver have already seen hold some promise. Nerve ablation, already offered by the UC Davis Pain Clinic, can provide months of pain relief for KOA patients. The use of ultrasound to aid in procedure precision is also an important development. Used conventionally, anti-inflammatory medications have the potential for long-term side effects, such as gastrointestinal ulcers, kidney or renal complications and cardiac concerns for older patients. The use of sonoflouris (a type of ultrasound) to drive anti-inflammatory creams directly into the knee, can help minimize the risk to other systems.

In addition to participation in the SKOAP trial, the Pain Medicine division has a host of interesting pain management studies, including the use of virtual reality to help deliver pain relief. “We have projects looking at the use of virtual realities and understanding how virtual reality or calm, soothing experiences can shift or alter the course of a procedure or an experience of surgery or a procedure injection,” notes



David Copenhaver, M.D.

Copenhaver. “So, for example, in someone who might be very anxious about having an injection, we can help assuage the apprehension in a way that doesn’t require sedatives.”

The division is also doing a homegrown UC Davis study on the understanding of low-risk strategies to treat compression fractures in patients that have cancer; a study looking at the small joints in the lumbar spine and using the mechanics of the joint itself to relieve the pain of compression fractures; a study utilizing MRI and ultrasound to measure the depth of epidural [space](#); and the development of pain blocking devices. “We’ve been working with a company that develops spinal cord stimulators, these devices that distract the brain from pain. And they’re implanted like pacemakers into the spine. A lot of people don’t really know about this; they’re a unique system.” Copenhaver is enthusiastic about the breadth of pain management research at UC Davis. “I could go on and on,” he says. “We’ve had many years of investing and developing a research acumen, and now we have access to so many studies. We’re at an unprecedented point in my career, observing this number of projects, and we now come up as a frequently offered location for these opportunities.”

## Aggie Square Update



On May 4, UC Davis, the city of Sacramento, and Wexford Science & Technology, LLC, celebrated the full structural completion of the first phase of Aggie Square. Aggie Square is an emerging innovation district on the UC Davis Sacramento campus. The first phase of the construction comprises 728K square feet and includes a life science, engineering, and technology research and academic building; a building focused on lifelong learning and public scholarship, which also includes spaces for startup companies and community programming, a parking garage and student housing. [Read More.](#)



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ABSTRACT SUBMISSION DEADLINE: Friday, May 26, 2023

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