THE MAGAZINE OF **UC DAVIS COMPREHENSIVE CANCER CENTER** VOL 27 NO 1 / WINTER 2024

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Dear Reader,

Welcome to the winter issue of Synthesis, the official magazine of UC Davis Comprehensive Cancer Center. Throughout this issue, you will read about the incredible work of our teams of scientists, clinicians and staff on both sides of the Yolo Causeway, all working collaboratively to discover and deliver the latest in cancer biology, prevention, interception, diagnosis and treatment.

It has long been recognized that cancer is — at its core — a genetic disease. In this issue, we highlight the importance of genetics and genomics in understanding cancer behavior across species. As part of our partnership with UC Davis School of Veterinary Medicine, we have launched a new initiative called the Canine Tumor Genome Atlas, an effort which seeks to map the genetic makeup of tumors in companion dogs. Some cancers occurring in dogs have an uncanny resemblance to those in humans. Performing next-generation DNA sequencing of dog tumors may unlock cancer breakthroughs applicable to our pets as well as to people.

As we aim to reduce cancer disparities in our region and beyond, you'll also read about how our new initiative focused on persistent poverty areas is helping us build connections with people in their communities to address the cancer risks they face. Those living in impoverished neighborhoods are subject to cancer death rates that are 12% higher than wealthier areas. We want to do something about that, and the National Cancer Institute funding we have received is giving our efforts a significant boost.

Within the sphere of making a difference, you'll learn about our new commitment to understanding the cancer burden endemic in Native American communities in Northern and Central California and how we hope to build trust with Indigenous peoples. A new outreach specialist is serving as a liaison with tribal nations as we work to identify their cancer health priorities and apply the power of research to mitigate their disproportionate cancer burden.

We also invite you inside our cancer center to see how we are optimizing the patient experience by linking education, prevention and the latest diagnostics and surgical technologies to catch and treat the nation's and our region's No. 1 cancer killer, lung cancer, through the establishment of a new integrated service line. Our plan is to ensure that people know when they are at risk, get screened and quickly obtain help, so they have the best chance of beating this lethal cancer.

Translating therapies into clinical practice starts with research. Learn about the in-depth studies that our scientists are conducting to bring meaningful clinical benefits through development of novel agents, personalized medicine and other innovative discoveries such as nanotechnology that manipulate molecules at near-atomic scales. These discoveries have the potential to be translated into clinical care through robust interactions between our laboratory-based researchers and cancer doctors.

Finally, high-profile foundations are continuing to take notice of UC Davis Comprehensive Cancer Center and its impact in our community. The Farrah Fawcett Foundation is investing in our initiative to promote awareness of the cancer risks posed by the human papillomavirus (HPV). We are committed to supporting teens hospitalized with cancer by establishing a teen lounge — funded in part by members of the rock band The Who — where young people can connect with others and have fun. And Hyundai is giving us the means to pursue research in cancers affecting children: A generous grant from the car company will allow us to develop a robot that will take pediatric patients on virtual field trips.

Want to be a part of it all? We have creative ideas for how you can join us as we strive to make a difference. Our new managing executive director of development shares ways to make your philanthropic vision a reality.

We hope you will find this issue of Synthesis informative and stimulating. As always, thank you for your support!

Primo "Lucky" Lara Jr. M.D.

DIRECTOR, UC DAVIS COMPREHENSIVE CANCER CENTER

BREAKING BARRIERS TO **BEAT CANCER**℠

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Prestigious appointment for cancer center director

UC Davis Comprehensive Cancer Center Director Primo "Lucky" Lara Jr. has been appointed co-chair-elect of the SWOG Cancer Research Network, a National Cancer Institute-supported alliance. He'll share the job with Dawn L. Hershman, deputy director of cancer care delivery and research at the Herbert Irving Comprehensive Cancer Center at Columbia University in New York City.

SWOG's board of governors appointed the two cancer center leaders to serve as co-chairs-elect until the term of the current SWOG group chair, Charles D. Blanke, ends in spring 2025. At that point, the two will begin a six-year term as SWOG group's first co-chairs.

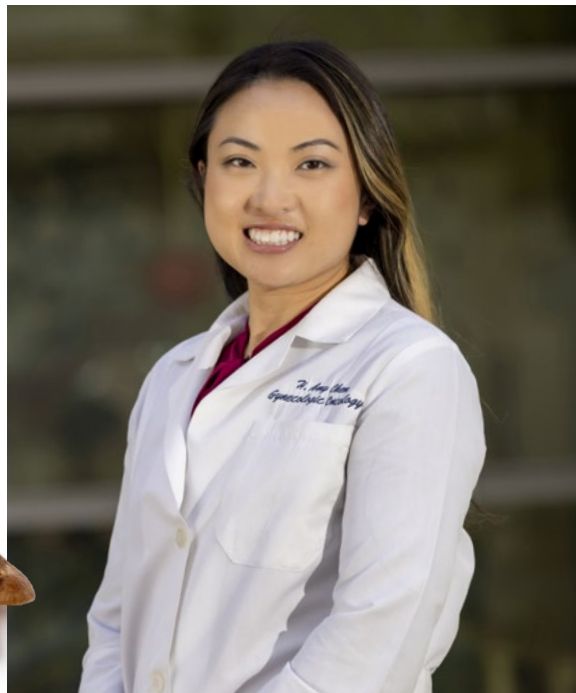
Along with serving as the cancer center director, Lara is professor of medicine and executive associate dean for cancer programs at the UC Davis School of Medicine. Within SWOG he currently serves as the group's deputy chair and vice chair of operations.

SWOG Cancer Research Network is a global cancer research community of over 18,000 members in 45 states and nine countries who design and conduct publicly funded clinical trials. The group, with its operations office in San Antonio, Texas, is a member of the NCI National Clinical Trials Network and the NCI Community Oncology Research Program.

Researcher studying cancer treatment benefits of shiitake mushroom extract honored

Hui "Amy" Chen has joined the Building Interdisciplinary Research Careers in Women's Health (BIRCWH K12) program as the newest dean's scholar in women's health research. Funding from the National Institutes of Health program supports early-career faculty researchers who are interested in women's health research. UC Davis BIRCWH K12 scholars explore the themes of lifespan, sex/gender determinants, health disparities/differences and diversity, and interdisciplinary research.

A recent graduate of the UC Davis Mentored Clinical Research Training Program, Chen studies lentinula edodes mycelia, a shiitake mushroom extract commonly used in some countries. She hopes to see if it improves the quality of life for ovarian cancer patients who receive chemotherapy after surgery. Among gynecologic cancers, ovarian cancer has the highest mortality rate, and quality of life is affected by both the disease and its treatment. Her research aims to understand the effects of complementary medicine and how to integrate it safely and effectively with conventional oncological care.



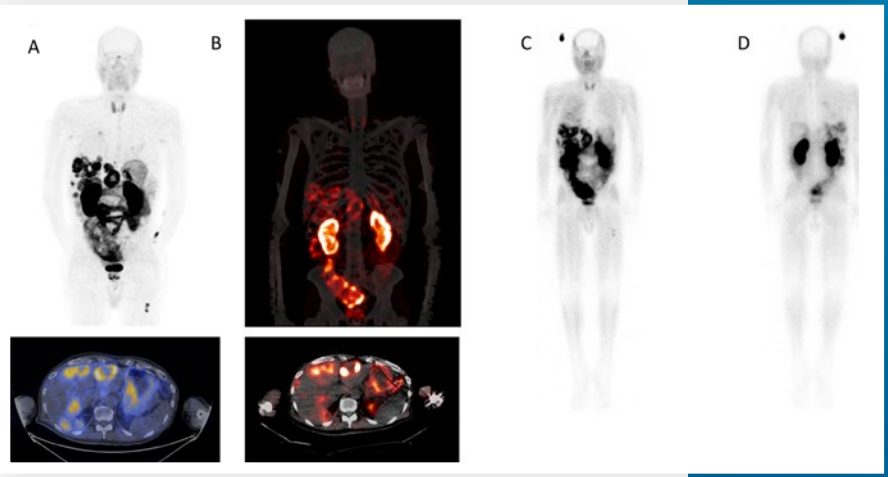
Julie Sutcliffe honored by the Society of Nuclear Medicine and Molecular Imaging

Julie Sutcliffe was presented with the 2023 Society of Nuclear Medicine and Molecular Imaging (SNMMI) Henry N. Wagner, Jr., Image of the Year award for her leading-edge "theranostics" phase one clinical trial in patients with metastatic pancreatic cancer. Theranostics is the combination of diagnostics and therapeutics.

Sutcliffe is a professor of internal medicine and biomedical engineering at UC Davis. The Sutcliffe Lab research team bridges the spectrum from benchtop discovery to clinical trials, with the goal of improving patient care and transforming how cancer is detected and treated.

She is also director of the cyclotron and radiochemistry facility at the UC Davis Center for Molecular and Genomic Imaging as well as co-director of the center. She is an SNMMI fellow and additionally a fellow of the World Molecular Imaging Society and the American Institute for Medical and Biological Engineering.

Sutcliffe's SNMMI award was the result of her team's first-in-human evaluation of the novel theranostic pairing of two radiolabeled peptides: 68Ga-DOTA-5G as the diagnostic and 177Lu-DOTA-ABM-5G as the therapeutic agent. 68Ga-DOTA-5G successfully detected metastatic pancreatic cancer and 177Lu-DOTA-ABM-5G allowed for targeted treatment of the disease.



The grouping of 68Ga-DOTA-5G and 177Lu-DOTA-ABM-5G images that won the 2023 SNMMI Henry N. Wagner, Jr., Image of the Year award

Sutcliffe also receives $500,000 Mars Shot research grant

Sutcliffe was also presented at the annual SNMMI meeting with a $500,000 grant from the 2023 Mars Shot Research Fund. The fund recognizes individuals who are making a transformative impact in the field and elevating the value of nuclear medicine and molecular imaging. Sutcliffe's Mars Shot grant was awarded based on her proposal "Evaluating the Integrin αvβ6-targeted Molecular Imaging Agent 68Ga-DOTA-5G as a Diagnostic for Lobular Breast Cancer."

"This study will enable patients to receive more effective imaging that will improve their care by detecting disease earlier," Sutcliffe said. "We therefore expect this molecularly targeted approach to have an immediate and much-needed benefit for this subpopulation of patients."

Radiology department appoints **new medical physics chief and vice chair for clinical research**

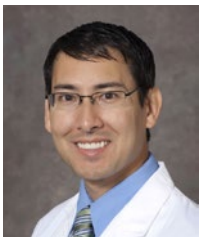
The UC Davis Department of Radiology has appointed two faculty members to new leadership positions: Sarah McKenney is the new chief of the Division of Medical Physics and Michael Corwin will fill the newly created role of vice chair of clinical research.

Sarah McKenney

McKenney, a diagnostic medical physicist at UC Davis and associate professor, has expertise in medical application of all forms of X-ray emitting devices. She specializes in pediatric imaging, and her research interests include image quality and patient dose optimization. McKenney obtained her Ph.D. in biomedical engineering from UC Davis and completed her medical physics residency at Henry Ford Hospital in Detroit, Michigan.

McKenney succeeds John Boone, who stepped down from the role after six years to take a yearlong sabbatical and focus his efforts on his continued research into CT breast imaging.

Michael Corwin



Corwin, a professor in the Department of Radiology, is the director of Body MRI. His clinical areas of interest include abdominal MRI and CT technology, with his research focusing on abdominal imaging studies. Corwin completed medical school at Duke University in Durham, North Carolina; his radiology residency at Brown University's Warren Alpert Medical School in Providence, Rhode Island; and an abdominal imaging fellowship at Beth Israel Deaconess Medical Center in Boston, Massachusetts.

Corwin joins the Department of Radiology's research leadership team of Ramsey Badawi and Guobao Wang, the department's vice chair of research and associate vice chair of research, respectively.

Cancer news via podcast!

Check out the Beat Cancer podcast, offering an in-depth discussion of the science, research and advancements taking place at UC Davis Comprehensive Cancer Center. Learn about the latest cancer news including prevention, screening and treatment — and how we are breaking barriers to beat cancer in our community and beyond. Find Beat Cancer on **cancer.ucdavis.edu** or your favorite podcast platform.

Want a topic covered? Email us at **beatcancer@ucdavis.edu**.


Reese Olander

New managing executive director of development appointed

UC Davis Comprehensive Cancer Center has appointed Reese Olander as managing executive director of development to guide philanthropic initiatives.

"Philanthropy is an essential partner in UC Davis' efforts to improve the cancer care we provide our community," Olander said. "Each donated dollar is a challenge to us to further enhance the high-quality care, education and research we perform at the region's only NCI-designated comprehensive cancer center. This designation ensures that we can provide the best possible outcome for so many of our community members, and I am excited to help build support for the great work being done here."

Previously, Olander was the senior director of development at Renown Health in Reno, Nevada. At Renown, he managed the major giving, grants and planned giving teams within the health system. He attracted key gifts that transformed Renown's cancer center, medical education and pediatrics programs. Olander also began a grateful patient program that channeled substantial support for departments throughout the health system.

Before joining Renown, Olander worked at Sutter Health as well as the Crocker Art Museum in Sacramento, growing each organization's major giving programs. Olander, who is originally from Nevada, enjoys mountain biking, fishing, skiing and travel with his family.

Olander received his undergraduate degree from the University of Nevada, Reno, and completed his master's degree at Atkinson Graduate School of Management at Willamette University in Salem and Portland, Oregon.

Medical student awarded Daniel T. O'Connor, M.D., Memorial Research Grant

UC Davis School of Medicine student Matthew Lara has received the Daniel T. O'Connor, M.D., Memorial Research Grant. The grant will allow Lara, in his fourth year of medical school, to take a year off from the classroom and clinical rotations and focus solely on research. Lara has taken a special interest in developing drugs for lung cancer patients who have limited options for effective therapy.

"This is such a great opportunity to work on so many projects I have going on right now and contribute to the field I love," Lara said.

The grant is awarded each year to a medical student who is focused on a career in academic medicine and whose research project embodies the values that were important to UC Davis alumnus Daniel T. O'Connor: high-quality research in translational medicine that utilizes a multi-disciplinary, highly collaborative, "bench to bedside" approach.

Lara's research journey

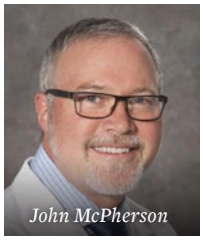
Lara was exceptionally young — only 16 — when he presented on non-small cell lung cancer at the 2013 American Society of Clinical Oncology Conference in Chicago, a "who's who" of cancer researchers. His research study concluded that younger patients with lung cancer tend to have better survival rates than older patients.

After graduating from Davis High School, Lara attended Stanford University as a chemistry major. He enrolled in the UC Davis School of Medicine in 2020 and was offered a spot on a special pathway for student researchers called Academic Research Careers for Medical Doctors. The pathway steers students through medical school in five years intertwined with extensive research.

Lara credits his parents for nourishing his passion for research. His father, Primo "Lucky" Lara Jr., a well-known medical oncologist and researcher, is the director of UC Davis Comprehensive Cancer Center.

Canine Tumor Genome Atlas maps genes in pets to help people with cancer


Christine Toedebusch


John McPherson

Pioneering work in comparative oncology continues at UC Davis with the launch of a Canine Tumor Genome Atlas, the first genomic data bank of its kind outside of one developed by the National Cancer Institute. Eventually it may store hundreds of gene samples from companion dogs diagnosed with osteosarcomas, oral melanomas and gliomas.

These three cancers are remarkably similar to the same cancers found in humans and, sadly, they can be uniformly fatal in both species. Through comparative oncology, scientists seek to find cures that work in dogs in the hope that similar therapies may work in people. In fact, canine clinical trials are underway at UC Davis to test an immunotherapy agent to fight cancer.

As part of its joint cancer research with the UC Davis School of Veterinary Medicine, UC Davis Comprehensive Cancer Center is building an extensive genome catalog in order to map why certain canines are genetically predisposed to cancer. Researchers hope that by helping find cures for pets with cancer, the atlas may also unlock similar breakthroughs for people with cancer.

John McPherson, deputy director of the cancer center, and Christine Toedebusch, assistant professor in surgical and radiological sciences at the UC Davis veterinary school, are leading the research initiative. It's funded by a $115,000 grant from the cancer center.

"These genomics studies will show how tumors mutate and what's driving those mutations in the cancerous cells," McPherson said.

The Canine Tumor Genome Atlas will house a collection of biological samples that contain mutations and alterations in tumor gene expressions. The atlas will allow researchers to mine the data after the genetic makeup of the tumors is analyzed and sequenced.

"Think of it this way," McPherson said. "A genome is like an encyclopedia set. Every volume of the encyclopedia is a chromosome and inside every volume are chapters and paragraphs. Sequencing is reading the words and letters of the genome. As a genomic researcher, I'm looking at misspelled words. These are changes that alter the function of proteins encoded by the genes."

McPherson said that this research approach, which is called oncogenetics, will draw upon the atlas to identify gene variants that stick out like sore thumbs, and then track those patterns to see if they can be mapped to certain cancers.

"Our canine companions share genetic and environmental complexity with us and have an intact immune system, unlike laboratory mice," Toedebusch said. "Many canine tumors progress similarly and share many features with human tumors. While laboratory mice are vital to initially understand and test mechanisms of cancer progression, they have repeatedly demonstrated limited success in therapeutic translation to human cancer patients. Naturally occurring canine cancer may serve as a bridge for therapeutic translation between rodents and humans."

For example, Toedebusch said gliomas are fatal brain tumors in dogs and humans, causing death of patients within a year to 18 months of diagnosis.

"It has been more than 20 years since a new therapy has been effective at extending this meager survival time in humans," Toedebusch said. "Companion canines with glioma are becoming more readily acceptable as a translational model for human glioma, creating funding opportunities to study the canine disease and allowing for the possibilities of breakthroughs in treating canines and humans, alike."

The Canine Tumor Genome Atlas will be shared nationally with other cancer researchers.

OutSmarting Osteosarcoma: Grant to fund more canine cancer clinical trials

Canine cancer patient Tyson receiving inhaled immunotherapy

The nation's leading pediatric osteosarcoma nonprofit organization, MIB Agents, has awarded the cancer center's Robert Canter a $100,000 "OutSmarting Osteosarcoma" grant. Canter, who is a clinical scientist and surgical oncologist, will use the funds for comparative oncology research of osteosarcoma.

About 1,000 people are diagnosed each year in the United States with osteosarcoma, a brutal bone cancer that mostly affects children and young adults — and also many dogs. It is much more common in canines than humans, affecting approximately 18,000 dogs in North America every year.

MIB Agents is a parent-patient advocacy group that fosters collaboration between osteosarcoma patient families and researchers, and awards grants for studies aimed at finding a cure for osteosarcoma.

Canter's work with the UC Davis School of Veterinary Medicine conducting comparative oncology clinical trials in dogs caught the attention of MIB Agents. The organization wanted to help further his research exploring cures for osteosarcoma in pets in the hope that it could benefit people with osteosarcoma.

The grant will fund a clinical trial under the supervision of both Canter and veterinary oncologist David Vail at the University of Wisconsin-Madison School of Veterinary Medicine. Vail will use the grant to fund research similar to what is being conducted at UC Davis with companion dogs suffering from osteosarcoma.

"Companion dogs with osteosarcoma serve as a relevant parallel patient population with a very similar disease to childhood bone cancer," Vail said. "And gains made in the treatment of one species could translate into gains for affected children."

Canter agreed and said that even pathologists examining tissues microscopically encounter difficulty in discerning any differences between human and canine tumors.

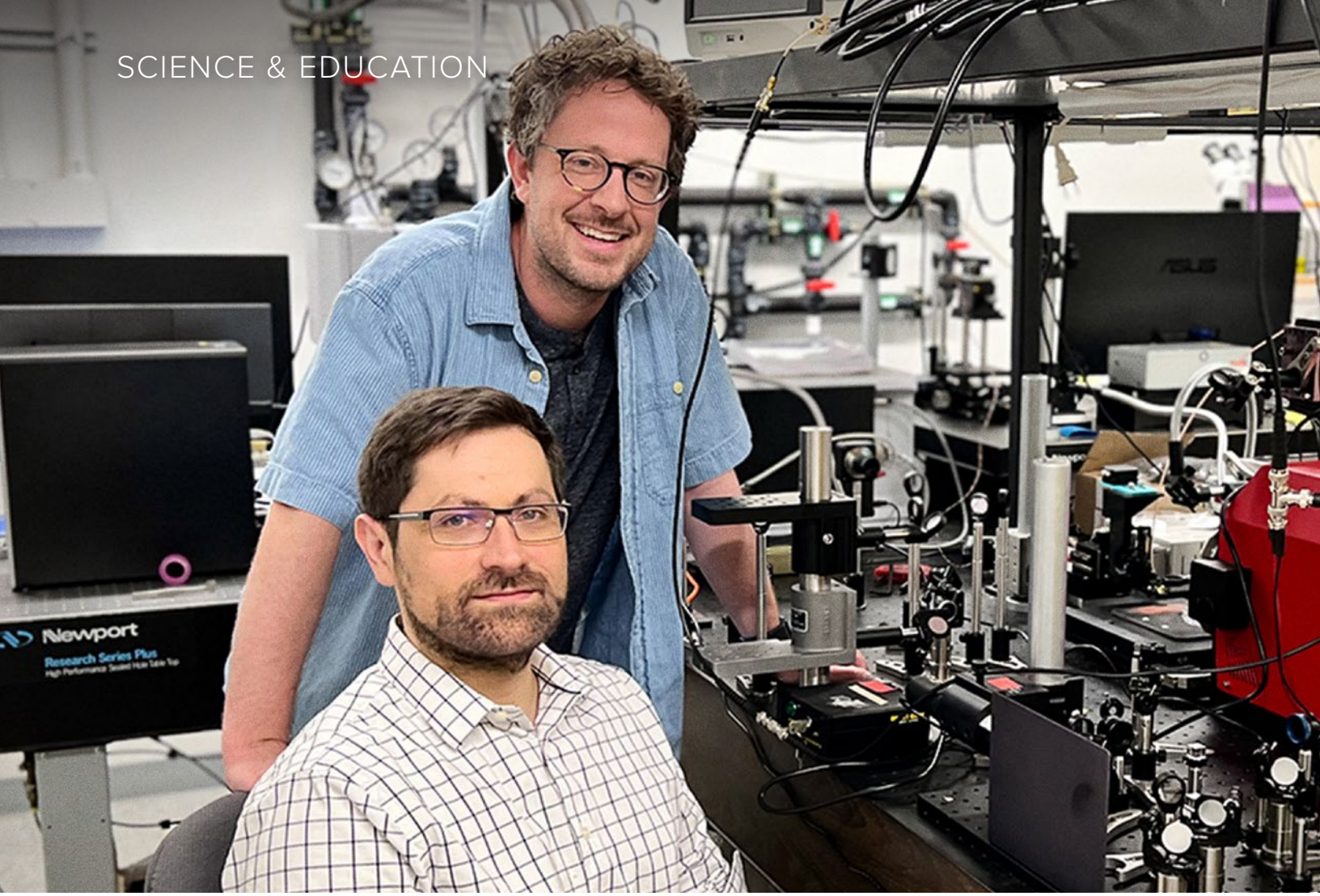
Robert Canter received an OutSmarting Osteosarcoma grant for $100,000 from MIB Agents (Photo courtesy MIB Agents)

New and improved clinical trial

Nearly a dozen pet dogs will be given inhaled dosages of Interleukin 15, an immunotherapy protein that the body naturally produces. They hope to see if the drug's effectiveness can be extended by administering it for six months instead of two weeks, as in the UC Davis previous trial. In that trial, the dogs also were given a human version of Interleukin 15, Canter said. This time they will receive the canine version of the drug that is now available.

Interleukin 15 as an injectable form has not been promising in humans, Canter said. The hope is that breathing treatments with Interleukin 15 stimulates the immune system long enough to be effective without causing toxicity.

"I'm really excited about the clinical trial," Canter said. "Will it be a game changer? We'll have to see. We've been encouraged by the results of the short-course therapy, and it's given us a good intellectual foundation to build the next trial."



Novel nanotechnology to detect

Researchers developing tiny devices to use saliva to detect cancer

The National Cancer Institute has awarded over $3 million in funding to a UC Davis project to develop a tiny nanotechnology device capable of diagnosing cancer from drops of saliva and other biofluid samples.

J. Sebastian Gomez-Diaz and Randy Carney are collaborating to develop and test the new diagnostic device. Gomez-Diaz is an associate professor and chancellor's fellow in the Department of Electrical and Computer Engineering, and Carney is an associate professor in the Department of Biomedical Engineering.

"The goal is to put forward a new portable neural network platform that [can] analyze several biofluids — like saliva or blood — inside a small and compact device [that will] combine and then utilize the portion of the infrared spectrum of those biofluids for cancer detection," Gomez-Diaz said.

Identifying the "fingerprints" of cancer

The team is designing the compact device, more than 100 times smaller than a penny, as a cost-effective tool for infrared absorption, or IR, spectroscopy.

IR spectroscopy uses sensors to differentiate molecules based on how much light energy each one picks up. The idea is that each molecule has a distinctive absorptive fingerprint. When visualized, these infrared fingerprints

J. Sebastian Gomez-Diaz, seated, and Randy Carney pose in Gomez-Diaz's Applied Micro/Nano Electromagnetics Research Laboratory. (Randy Carney/UC Davis)

preliminary data indicate that it's very few," Carney said. "Each of the miniature sensors can be tuned to one of those peaks, with the sensor output fed directly to the machine learning algorithm."

Making cancer care more accessible

The team will focus on using the device for head and neck cancer detection at this stage, with assistance from Andrew Birkeland, a head and neck oncologist and associate professor. The cancer center provided the seed funding for early data collection on this project.

What sets this technology apart from past efforts is the neural network's ability to notice patterns in the full spectrum of a saliva sample. Other projects have used significant energy to isolate a single molecule or metabolite for diagnostic purposes.

The final product, the team explains, will be a small device that a patient can spit into, like a 23andMe genetic test. Once the device receives the sample, the patient can press a button to begin the diagnostic process, which the team expects to take no more than a few seconds.

"What we're trying to do is miniaturize these huge machines that we have in the lab into a small box that the average person can use," Gomez-Diaz said.

The technology could enable small clinics and individuals to conduct disease screening that until now has required large machines in medical laboratories.

"We believe this project is the early step toward a platform that can be miniaturized into a small wearable device that can monitor your cancer state non-invasively throughout the day," Carney said.

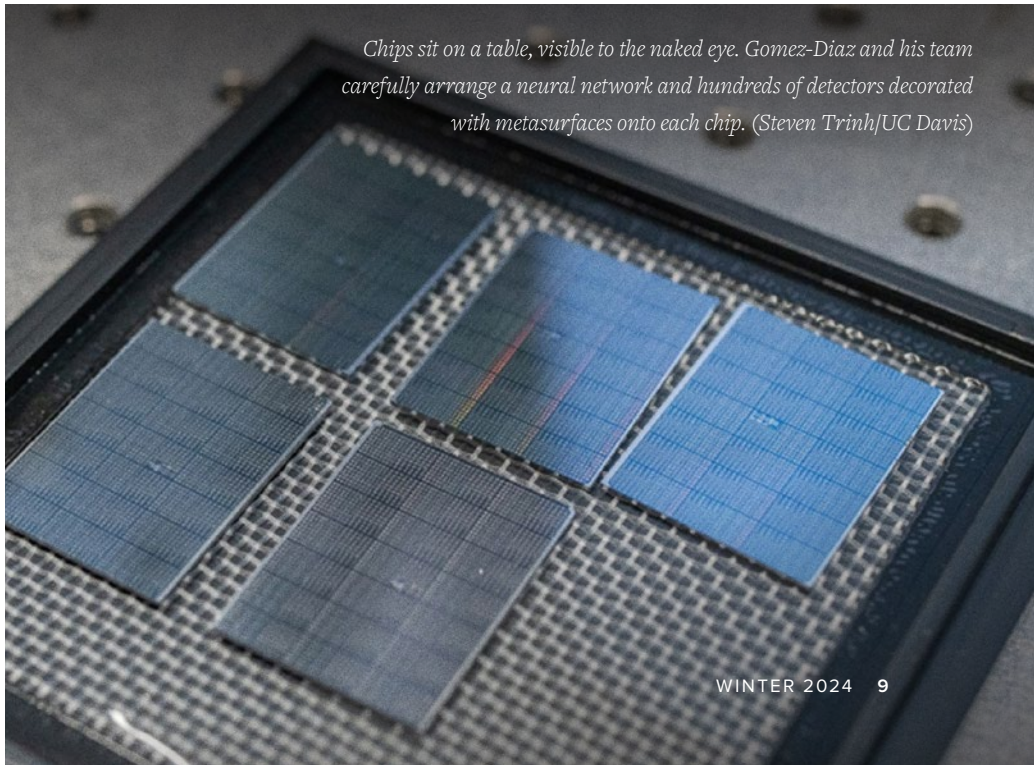
cancer in biofluids

look like an audio file: scraggly lines with sharp peaks and short valleys.

"Infrared absorption spectroscopy is used in basic chemistry labs up to clinical diagnosis, but it's an expensive technique that requires a bulky and difficult-to-use apparatus and yields complicated data for expert interpreters," Carney said.

That's where the neural network comes in. By joining this identification method with machine learning capabilities, the team aims to accelerate and simplify the process.

"We're going to identify the minimum number of those soundwave-like peaks that we need to make diagnostic decisions with machine learning, and our



Chips sit on a table, visible to the naked eye. Gomez-Diaz and his team carefully arrange a neural network and hundreds of detectors decorated with metasurfaces onto each chip. (Steven Trinh/UC Davis)

Cancer center researcher awarded grant *to study lethal cancers in firefighters*


Shehnaz Hussain

UC Davis Comprehensive Cancer Center researcher Shehnaz K. Hussain has received a $1.9 million California climate action grant to lead a study into the cancer risks facing firefighters as they battle climate-driven wildfires.

The grant is funded through a partnership between the University of California and the state of California, which awarded over $80 million in research grants to help put solutions in place that directly address state climate priorities.

Pinpointing the danger

Hussain's research, "Exposure Assessment, Health Monitoring, and Cancer Control in Wildland Firefighters" will examine the main carcinogens and cancer risk factors for firefighters as the number of wildfires escalates with climate change.

"California's firefighters are a climate-vulnerable group due to their heavy burden of occupational exposures related to the increased frequency and scale of wildland fires. The fires are also burning into urban areas where there are many more chemicals and other potential carcinogens that threaten the health of firefighters," said Hussain, who is also a professor of Public Health Sciences at UC Davis.

Cancer is the leading cause of death among firefighters. Hussain said the research will identify areas where equipment, technology, protocols, education, programs and policy can be developed or amended to reduce exposures to carcinogens, mitigate cancer risks and improve early detection of cancer in California's firefighters.

One aim of this research is to capture and test carcinogenic chemicals and other compounds found in wildfire emissions. The team will also study a large group of firefighters to identify biomarkers and occupational and behavioral cancer risk factors that could be reduced in the future. Another objective is to produce stories about California firefighters dealing with cancer. Researchers plan to evaluate the ability of this peer-to-peer storytelling to enhance best practices for cancer prevention in firefighters.

> Cancer is the leading cause of death among firefighters.

Hussain will lead a team of biochemical, engineering, microbiology, environmental and occupational scientists on the research initiative. The team will include co-lead Derek Urwin, assistant adjunct professor of chemistry and biochemistry at UCLA and a career firefighter. Other members of the research team include UC Davis colleagues Sheri Belafsky, Cristina Davis, Janine LaSalle, Irva Hertz-Picciotto and Thomas Young.

Cancer center partners with oncologists in the Philippines

UC Davis Comprehensive Cancer Center leaders traveled to the Philippines in 2023 to collaborate with doctors at Makati Medical Center on the latest oncology treatments. They took part in a postgraduate course in oncology jointly organized by the cancer center and Makati Medical Center, in the metropolitan Manila area.

The symposium was established after the two centers signed a memorandum of understanding creating a partnership to work together on cancer care and research, and to provide educational opportunities for physicians and staff.

Speakers included cancer center Director Primo "Lucky" Lara Jr., former Physician-in-Chief Richard Bold and Associate Director for Clinical Research Megan Daly. Other cancer center leaders who attended the event included Chief Administrative Officer Gina Dayton and Executive Director of UC Davis Health Integrated Service Lines, the Cancer Care Network and Regional Affiliates Kristin Mensonides.

"The collaboration between our cancer center and Makati Medical Center brings together the many talents and passions of local and international physicians and researchers who are devoted to solving the problem of cancer across the entire spectrum, from prevention to survivorship, worldwide," Lara said. "As we continue to develop our global oncology partnership, we will advance our unique second opinion program at UC Davis Comprehensive Cancer Center, creating innovative training initiatives in oncology."

Eventually, administrators and researchers at the two institutions hope to develop an international cancer care network that leads to clinical trial collaboration and cancer research opportunities.

> "The collaboration between our cancer center and Makati Medical Center brings together the many talents and passions of local and international physicians and researchers."
>
> —PRIMO "LUCKY" LARA JR. CANCER CENTER DIRECTOR

Makati Medical Center (Photo courtesy of Makati Medical Center)

Unlocking immunotherapy cancer treatment

Researchers confirm reliability of a marker to guide immunotherapy cancer treatment


David Gandara

Cells that become cancerous due to mutations — genetic changes — typically develop telltale "markers" on their surface signaling that they are abnormal. When the immune system detects such biomarkers, that can trigger an immune response to fight the cancer.

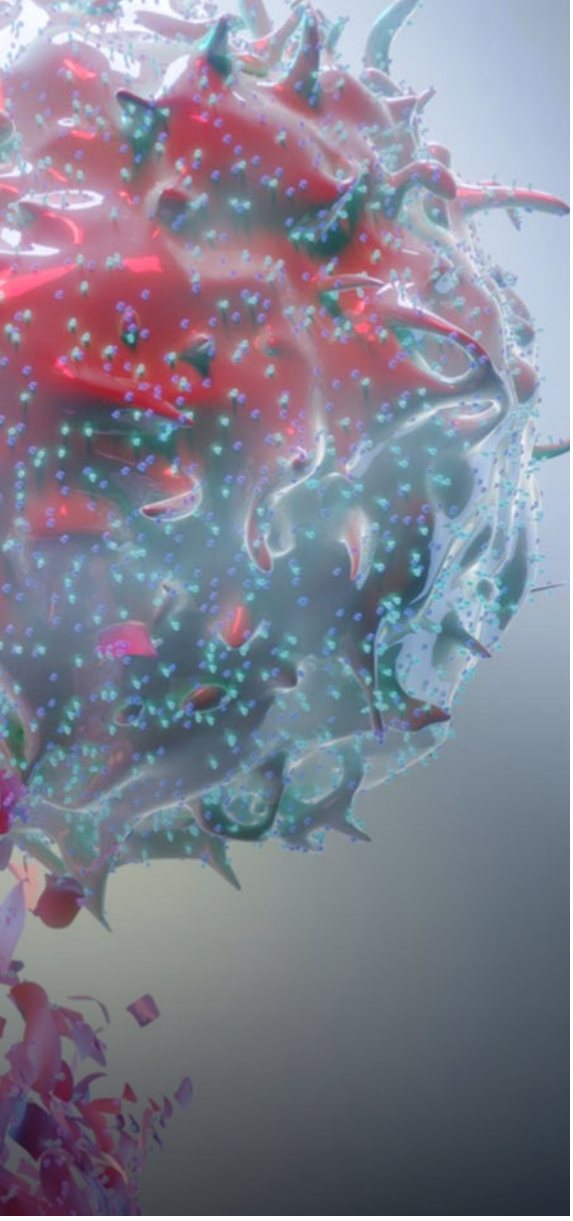
Medical researchers measure the number of genetic changes within cells using "tumor mutation burden" (TMB) as an indicator. Cancer cells containing numerous genetic changes are said to exhibit a high TMB. But cells with a low TMB may not produce any surface markers, thereby escaping detection by the immune system.

A team led by David Gandara, co-director of the Center for Experimental Therapeutics in Cancer and senior adviser to the director of UC Davis Comprehensive Cancer, confirmed through a recent research study that high TMB can be used as a reliable biomarker for immunotherapy treatment of cancer.

Advancing immunotherapy

Immunotherapy cancer drugs bind with receptor sites on tumors, helping the immune system recognize and destroy cancers. While some biomarkers previously had proven effective in predicting efficacy of targeted therapies, biomarkers to identify which types of cancer patients could benefit from immunotherapy remained elusive.

In 2020, the U.S. Food and Drug Administration (FDA) approved the use of a specific biomarker TMB to guide treatment decisions for the checkpoint immunotherapy drug pembrolizumab (also known as Keytruda). The FDA allows the use of the drug in patients whose TMB has 10 or more mutations



> "When a checkpoint inhibitor is given, your immune system realizes there's a problem, wakes up and goes after the cancer."
>
> — DAVID GANDARA, CO-DIRECTOR, CENTER FOR EXPERIMENTAL THERAPEUTICS IN CANCER

per megabase of tumor DNA. Foundation Medicine, a Massachusetts company that performs molecular profiling for cancer, has developed the only FDA-approved TMB biomarker test.

Gandara and his research collaborators supported the FDA's decision. Their study confirmed that a high TMB triggering an effective immune response increased overall survival for 24 types of tumors among a large group of cancer patients.

The human immune system, through the coordination of innate and adaptive immune cells, is able to combat cancerous cells once they're identified. However, cancer cells can create mechanisms that shield them from immune system attacks. For example, tumors can use checkpoint PD-L1 — a protein that "masks" the tumor — to hide and grow within the body. Checkpoint proteins can either initiate or suppress an immune response.

Checkpoint immunotherapy doesn't directly kill cancer cells.

"Pembrolizumab binds to PD-1/PD-L1 and removes the 'mask' from the tumor," explained Gandara, a UC Davis professor of medicine emeritus. "When a checkpoint inhibitor is given, your immune system realizes there's a problem, wakes up and goes after the cancer. Patients love it when you tell them immunotherapy helps their own bodies fight the tumor."

Before Gandara and his colleagues presented their research findings, practicing oncologists were uncertain how closely they could rely upon TMB in initiating immunotherapy for differing types of tumors. Previous studies showed variable results for TMB as a predictive biomarker for immunotherapy treatment, especially when paired with chemotherapy. Additionally, immunotherapy can have harmful side effects for patients who are prone to autoimmune disorders, and it isn't effective with every cancer type.

To clarify the role of TMB as a justification for treatment with pembrolizumab across various tumor types, Gandara and his colleagues turned to the combined clinical genomic database of Foundation Medicine and health technology company Flatiron Health.

Gandara and his team studied more than 8,000 patients who had advanced-stage cancer of numerous types and who had received the Foundation Medicine TMB test and been treated with single-agent immunotherapy. The researchers found that TMB ≥ 10 (TMB with 10 or more mutations per megabase of tumor DNA) is an effective biomarker for immunotherapy use and is associated with improved survival in almost all tumor types. The more mutations that a tumor had, the more likely it would respond to immunotherapy.

"The consistency of the data exceeded my expectations," Gandara said.

Previous studies of TMB efficacy were limited because they investigated it only in conjunction with chemotherapy.

"That's because TMB is a biomarker associated almost entirely with immunotherapy efficacy. When you give a combination of immunotherapy and chemotherapy, it tends to dilute the predictive value of TMB," Gandara explained.

He plans to analyze the database records of 6,000 patients to discover more about how combination therapy affects the predictive value of TMB.

NCI renews major collaboration to find cancer cures for racially and ethnically diverse populations

Renewal of the first National Cancer Institute grant to fund a University of California Cancer Consortium research collaboration is inspiring UC scientists to continue their quest to develop targeted therapies to treat gastric cancer and non-small cell lung cancer.

UC Davis Comprehensive Cancer Center serves as the lead research institution. It is also the only minority-focused research center to have participated in the Patient-Derived Xenograft Development and Trial Center since its inception five years ago. The $5.2 million renewal of the NCI grant will span another five years.

Patient-derived xenografts (PDXs) are created by implanting tumor tissues from human patients into immunocompromised mice to create an environment that increases understanding of tumor development and spread. Other participants include all five University of California comprehensive cancer centers, and the Harold C. Simmons Comprehensive Cancer Center at the University of Texas Southwestern Medical Center in Dallas.

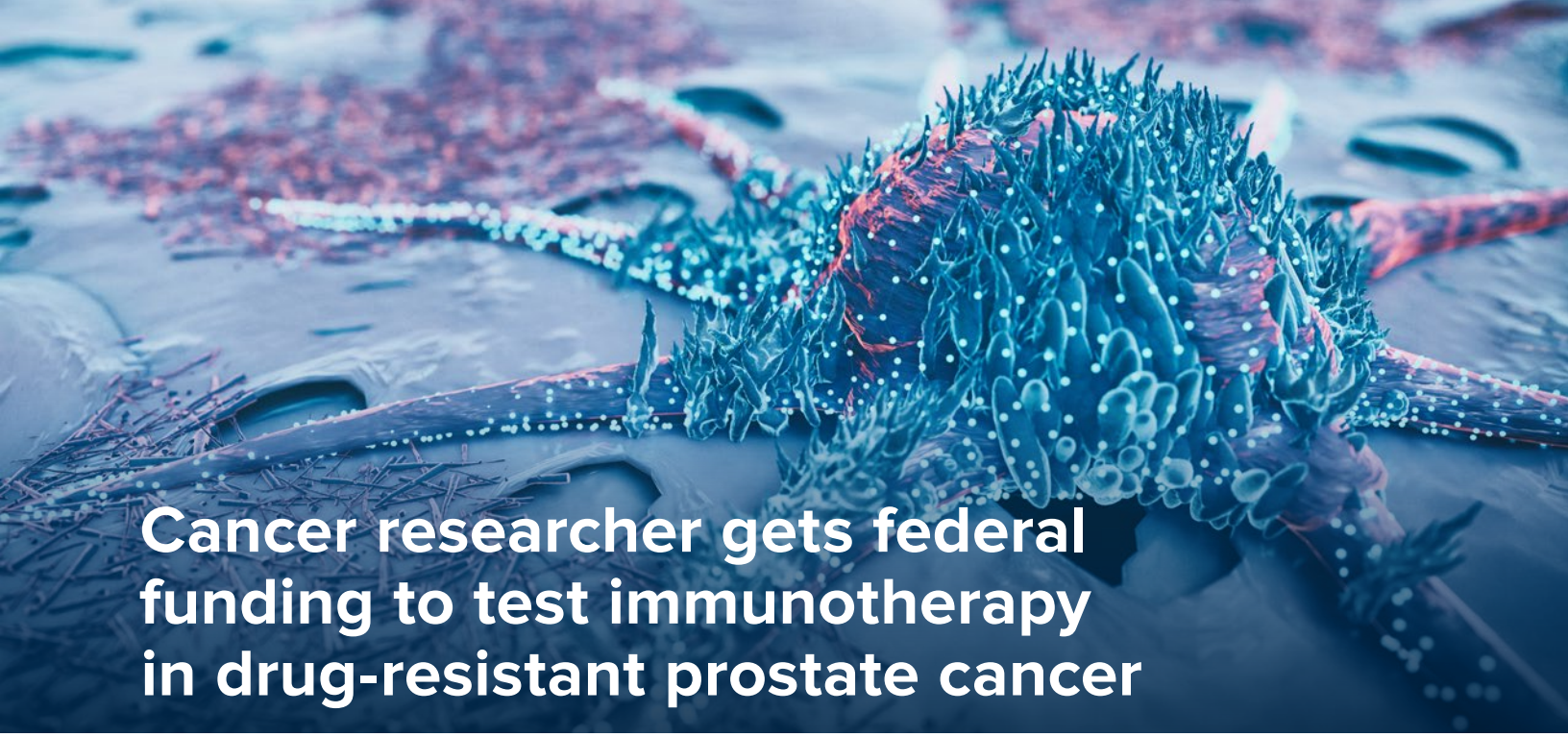
The goal of the research alliance is to establish and characterize at least 120 new PDXs from racially diverse populations and study them to better understand the specific genetic factors that may underlie certain cancer disparities. The scientists also are testing precision medicine therapies that may be successful in overcoming gene mutations specific or more common to certain races or ethnicities.

"The impact of the collaborative is to understand the biological processes involved in cancer health disparities and to develop effective new treatments that we can then offer to patients as clinical trials," said Luis Carvajal-Carmona, associate vice chancellor for the UC Davis Office of Academic Diversity and founding director of the cancer center's Center for Advancing Cancer Health Equity.

Carvajal-Carmona said researchers will implant human fresh tumor samples into mice. The goal is to assess how ancestry influences patients' response to anti-cancer drugs and what types of drug combinations will work more effectively in certain populations. The models and data generated in the study will be made available as a resource for UC scientists and those around the country.

"The impact of the collaborative is to understand the biological processes involved in cancer health disparities and to develop effective new treatments that we can then offer to patients as clinical trials."

— LUIS CARVAJAL-CARMONA, ASSOCIATE VICE CHANCELLOR FOR THE UC DAVIS OFFICE OF ACADEMIC DIVERSITY AND FOUNDING DIRECTOR OF THE CANCER CENTER'S CENTER FOR ADVANCING CANCER HEALTH EQUITY



Cancer researcher gets federal funding to test immunotherapy in drug-resistant prostate cancer


Chengfei Liu

UC Davis Comprehensive Cancer Center clinical scientist Chengfei Liu is on a mission to improve treatment for prostate cancer and a new federal grant will help his research

Liu, an assistant professor in the Department of Urologic Surgery, was recently awarded a $1.4 million grant from the Department of Defense Congressionally Directed Medical Research Program. He aims to explore why some advanced prostate cancer is resistant to immunotherapy and to develop new possible avenues for treatment.

Prostate cancer remains lethal in advanced cases

Prostate cancer is diagnosed more than any other type of cancer in men and is the second leading cause of cancer-related deaths in men, next to lung cancer.

Over the past decades, new advances in immunotherapy have led to promising discoveries regarding the immune system and how it can be harnessed to treat cancer, including prostate cancer.

For instance, preclinical research suggested that the standard prostate cancer-fighting drug enzalutamide may work better when combined with the immunotherapy drug atezolizumab, which fuels the body's T cells to kill cancer cells.

Unfortunately, past clinical trials using this drug combination failed to extend the overall survival in late-stage prostate cancer patients and the underlying mechanisms are still elusive.

"We will provide new insights into the role of immune checkpoint inhibitors, such as atezolizumab, with the goal of developing new immune therapeutic strategies that have great potential to increase efficacy of enzalutamide in lethal prostate cancer cases," Liu said. "Our ultimate hope is that our research will translate into clinical trials."

> "Not only will our research help us gain knowledge of prostate cancer disease progression and understand the mechanisms of immunotherapy resistance, but it will also facilitate new strategy development to treat advanced prostate cancer."
>
> — CHENGFEI LIU, UC DAVIS COMPREHENSIVE CANCER CENTER CLINICAL SCIENTIST

Some cancers thrive by shutting down the body's immune response that otherwise would attack cancer cells. Liu explained that immune checkpoint inhibitors work by blocking certain cancer or immune cell surface proteins from binding with their partner proteins, thereby preventing them from interfering with the immune response mechanism.

The anticipated results of the study will provide a strong rationale to initiate clinical trials to treat prostate cancer patients by developing strategies to target signaling of a certain gene (CD200/CD200R) in the foreseeable future.

"Not only will our research help us gain knowledge of prostate cancer disease progression and understand the mechanisms of immunotherapy resistance, but it will also facilitate new strategy development to treat advanced prostate cancer," Liu said.

SWOG CANCER RESEARCH NETWORK

Researchers identify strong link between bone **biomarkers and prostate cancer survival**

New research led by UC Davis Comprehensive Cancer Center revealed a link between bone metabolism biomarkers and survival among men who were recently treated with androgen deprivation therapy (ADT) for hormone-sensitive prostate cancer (HSPC).

The study analyzed results from a SWOG Cancer Research Network phase 3 trial of nearly 1,000 patients who were being administered ADT, including some who were also on the novel hormonal therapy orteronel. Bone biomarkers for both bone loss and bone formation were measured in HSPC patients enrolled in the trial. ADT sharply reduces production of the male sex hormone testosterone, which prostate cancer cells ordinarily need to grow.

The researchers found that elevated bone biomarkers were associated with an increased risk of death. Bone biomarkers have been found to influence overall survival in men with castration-resistant prostate cancer (CRPC), which continues to grow even after testosterone levels have been greatly reduced. However, bone biomarkers have not been fully established for HSPC.

"Our findings show that high levels of bone turnover biomarkers are associated with a shorter lifespan in men newly diagnosed with metastatic HSPC," said cancer center Director Primo "Lucky" Lara Jr., who was one of the key investigators of the study. "In the future, knowing one's bone biomarker status could improve how we predict patient outcomes and enhance treatment considerations for men with HSPC."

Managing bone health during prostate cancer treatment

A finely balanced interaction between cells that rebuild bone and cells that destroy bone is common in men with advanced prostate cancer. Prostate cancer in these men often spreads to their bones, a common source of pain and fractures that can affect their survival.

In addition, men with metastatic HSPC are typically treated with ADT, which disrupts bone turnover and contributes to the development of osteopenia, osteoporosis and other bone diseases. Previous studies have shown that elevated levels of blood-based biomarkers of bone turnover predict survival in men with CRPC and that bone-targeted therapy may help patients with highly elevated markers.

Teaming up with Lara was fellow cancer center clinical scientist Mamta Parikh. She is also the cancer center's director of genitourinary malignancies.

"Ultimately, our findings add to the growing understanding of the complex interplay between cancer and bone metabolism, which will also help us design future clinical trials," Parikh said.

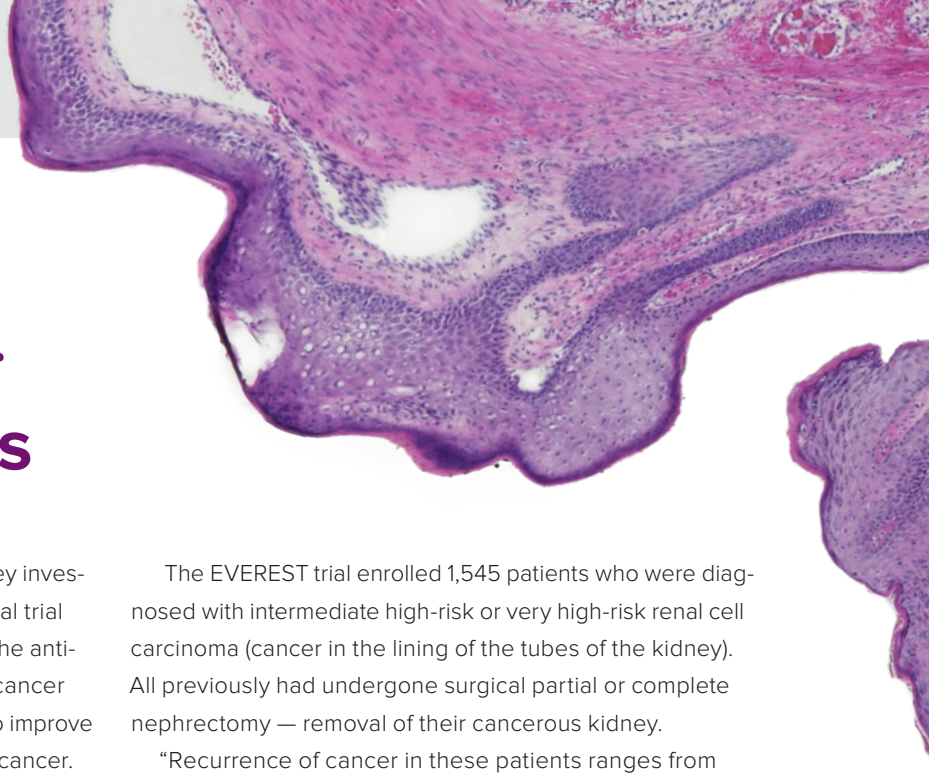
Further maximizing SWOG study

Parikh did additional research, leveraging the same SWOG study to determine if early prostate-specific antigen (PSA) test results, especially in tandem with treatment, can be used to predict the survival probability of people with prostate cancer.

"The study focused on how well PSA readings at three months and seven months of treatment correlated to overall survival," Parikh said. "Our results showed that regardless of whether clinical trial participants took bicalutamide or orteronel, if their PSA dropped below 0.2, those patients in general did much better with longer overall survival than those whose PSA was greater than 4.0 at seven months."

Parikh's findings also signal the need for new, more aggressive interventions for patients whose PSA values at those two intervals remain high.

Mamta Parikh, Primo "Lucky" Lara Jr., and Suchi Gulati



National kidney cancer study shows **promising results**

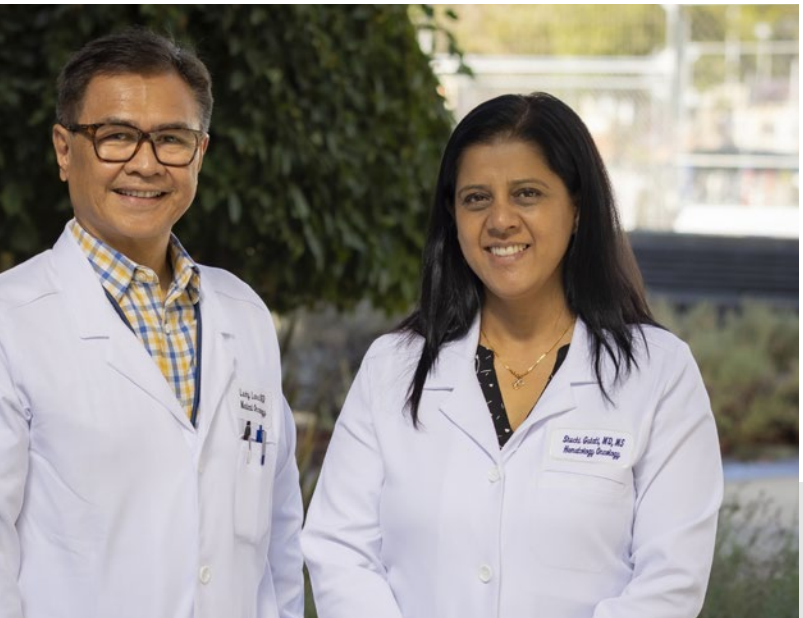
Cancer center Director Primo "Lucky" Lara Jr. was a key investigator of the SWOG Cancer Research Network clinical trial known as the EVEREST study. The goal was to see if the anti-cancer drug everolimus helped people with kidney cancer following surgery. Similar therapies are already used to improve the outcomes of patients with breast, colon and lung cancer.

Results from the clinical trial showed that many kidney cancer patients who took the drug, including those at high risk of relapse, remained alive longer after they underwent surgery to remove the cancer. The findings were published in The Lancet, one of the world's highest-impact academic journals.

Patients from UC Davis Comprehensive Cancer Center and nearly 400 other U.S. cancer centers were enrolled in the study. Over a 54-week period, participants received 10 milligrams daily of oral everolimus or a placebo.

"Improvement was seen primarily in patients with very high-risk disease, while patients with intermediate high-risk disease saw no improvement," Lara said. "This encouraging observation warrants further study. We must continue our work to discover and test new agents to improve outcomes in people with kidney cancer."

Everolimus is among a class of drugs known as mTOR inhibitors, which block the growth of cancerous cells.



The EVEREST trial enrolled 1,545 patients who were diagnosed with intermediate high-risk or very high-risk renal cell carcinoma (cancer in the lining of the tubes of the kidney). All previously had undergone surgical partial or complete nephrectomy — removal of their cancerous kidney.

"Recurrence of cancer in these patients ranges from 2% to 40% following surgery," Lara said. "It is important to test active new agents as part of clinical trials after their surgery and before their cancer returns and spreads."

Multiple purpose research

The large, high-impact SWOG trial provided a rich body of research for Shuchi Gulati, an assistant professor of hematology and oncology at UC Davis. She was able to explore a type of kidney or renal cancer that is seldom studied because it is not as common.

Most forms of renal cancer are either clear cell or non-clear cell renal cell carcinoma (RCC) — so called because of their appearance under a microscope. The National Cancer Institute reports that about 80% of kidney cancer cases nationwide are attributable to clear cell RCC.

"Consequently, most clinical trials focus on patients with clear cell histology, and unfortunately patients with more rare forms of kidney cancer tend to be left out," Gulati said. "There is a signal that everolimus might benefit patients with chromophobe RCC that forms in the cells lining the small tubules in the kidney. We were not able to definitively support that based on this analysis, probably because of the small number of patients in these subgroups. But combining results from numerous studies could potentially lead to meaningful results."

That prospect motivates Gulati to continue her work.

"We know that the standard treatments that work for clear cell RCC, like immunotherapy and targeted therapy, don't work for the rare types of kidney cancer," Gulati said. "The impetus now should be to focus on these smaller subsets of non-clear cell RCC, to start finding not only what doesn't work, but rather what does work."

New Lung-LEAD Clinic to increase lung cancer screening and save lives

Even though lung cancer is the No. 1 cause of cancer death for both men and women, relatively few people undergo screening. Only about 1% of those eligible in California are getting checked, which troubles doctors.

"We need to address this crisis," cancer surgeon David Tom Cooke said. "People who are between 50 and 80 years of age who smoke or who used to smoke need to talk to their doctor about getting screened for lung cancer."

Cooke, who is the chief of the Division of General Thoracic Surgery, said that new robotic procedures his team uses make life-saving diagnosis and removal of lung cancer possible during a single surgery — but patients must be screened to detect the lung cancer before it spreads.

"Most of the lung cancer patients I operate on were never screened," Cooke said. "Many come to me only after they experience symptoms, which usually means the cancer has progressed to an advanced stage when it is harder to treat."

UC Davis Health launches new program to increase lung cancer screening

UC Davis Health has launched a new method of comprehensive lung cancer screening with its primary care patients. The Lung Cancer, Lung Nodule Early Detection (Lung-LEAD) Clinic is part of the new lung cancer integrated service line. The goal of the Lung-LEAD Clinic is to provide dedicated "lung care navigators" to increase screening of eligible patients.

The navigators are proactively engaging with eligible patients to conduct virtual screenings. They then schedule convenient appointments for patients with health care providers to encourage them to receive a low-dose CT scan to check for lung cancer.

Low-dose CT scans take less than five minutes to complete, and do not require any injections or blood draws. They're called "low-dose" because the radiation delivered is far less than that of conventional CT scans.

"Getting a low-dose CT scan is painless and patients don't even need to remove their clothes or shoes," said Chinh Phan, director of the UC Davis Health Interventional Pulmonology Program. "In many ways, low-dose CT scans are much easier than getting a mammogram."

Phan teamed up with Cooke, who is the associate physician lead of the Lung-LEAD Clinic, to raise awareness about the need for UC Davis Health primary clinics to initiate contact with patients rather than wait for patients to schedule a checkup with their physician.

"There is a stigma associated with smoking that, frankly, prevents a lot of people from bringing up lung cancer screening with their doctor," Phan said. "There is no judgment here. Tobacco addiction is tremendously powerful and harmful. With 80% of all lung cancer tied to tobacco use, we have to talk about it openly and encourage our patients to get screened so that, if they do get lung cancer, it is caught early when there's a best chance for it to be cured."

As part of the new lung cancer integrated service line, UC Davis Health supplies doctors and other health care practitioners with educational materials. These increase awareness about the need for lung cancer screening and new federal guidelines that qualify patients more easily for low-dose lung cancer screening.

"We know our UC Davis Health primary care physicians are committed to their patients' well-being," said Kristin Mensonides, executive director of UC Davis Health integrated service lines. "They will be a key factor in the success of this new program and potentially save lives through early detection and intervention."

New lung cancer screening guidelines:

- 50–80 years old
- Smoked 20 "pack-years" and either still smokes or quit within the past 15 years

Pack-year means smoking a pack of cigarettes a day for a year or an equivalent amount.

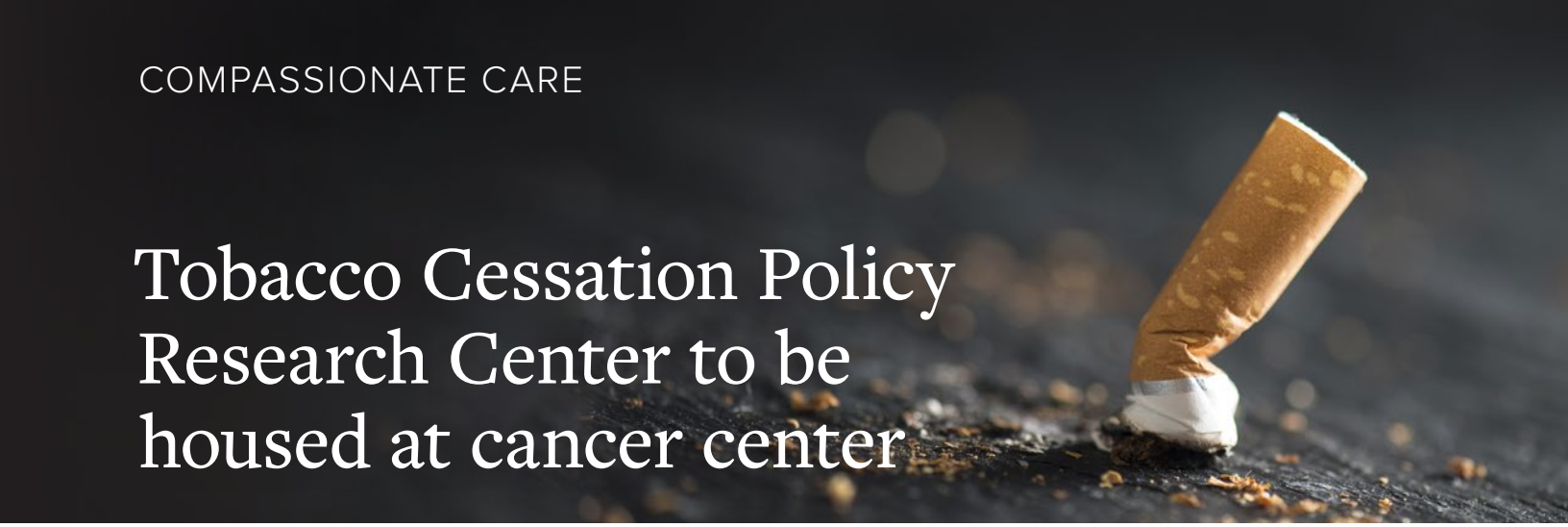
UC Davis Health clinics are taking new steps to increase screening of eligible patients:

- Established patients with an upcoming primary care appointment will be flagged as eligible for screening if they are aged 50–80 and have a history of smoking.
- New patients meeting the age and smoking criteria will be flagged as eligible for screening following their first primary care appointment.

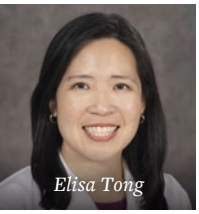
Patients whose screening through the Lung-LEAD Clinic reveals a lung nodule are quickly scheduled with specialists at UC Davis Comprehensive Cancer Center for further diagnostics. If cancer is confirmed, they are prepared for lung cancer surgery or other treatments, including potential enrollment in innovative clinical trials.

"Early detection of lung cancer through a screening low dose CT scan offers vital advantages," said Jonathan Reiss, medical director of Thoracic Oncology and the physician lead for the Lung-LEAD Clinic. "By identifying potential early-stage lung cancer before symptoms arise and it spreads, we can bring to bear timely interventions and treatments such as surgery or focused radiation, thereby improving the chance of a cure. Our multidisciplinary team will work diligently to make sure our patients will get timely, leading-edge treatments by our lung cancer experts."

A new lung cancer survivorship and surveillance program is also in place for those who do go through treatment.



Tobacco Cessation Policy Research Center to be housed at cancer center


Elisa Tong

UC Davis Comprehensive Cancer Center is launching a new Tobacco Cessation Policy Research Center. The Tobacco-Related Disease Research Program, a state research agency administered by the UC Office of the President, has authorized $3.7 million in funding to operate the center for four years.

Elisa Tong, a nationally recognized tobacco researcher and an internist at UC Davis Health, will serve as the center's director. Tong is medical director of UC Davis Comprehensive Cancer Center Stop Tobacco Program and principal investigator for CA Quits, which works with the state's Medi-Cal managed care plans and providers to improve tobacco treatment delivery.

"The mission of our center is to build capacity for health care access, promote excellence in health care delivery, facilitate health care and community engagement and achieve equity in health plan coverage," Tong said. "Our center will generate evidence for policy adoption and implementation, collaborate with community and policy stakeholders and develop the pipeline of researchers to sustain the mission."

Center partners include the American Cancer Society Cancer Action Network (ACS CAN), UCLA Health and UC Center Sacramento, a UC systemwide program for public policy teaching, research and public service. Both the cancer center and ACS CAN have a history of working together throughout Northern and Central California. Both are members of the Greater Sacramento Smoke & Tobacco-Free Coalition, an important foundation of community collaboration.

Advancing tobacco cessation policy research

Four "rapid response" policy projects will address key areas for current and future legislative policies for tobacco cessation:

- **Health care access.** Community pharmacies are important points of health care access and California pharmacists can furnish nicotine replacement therapy without a prescription. This study will examine barriers to implementing Assembly Bill (AB) 1114. Enacted in 2016, the law allows Medi-Cal plans to reimburse community pharmacists affiliated with Community Pharmacy Enhanced Services Network for tobacco counseling services.
- **Health care delivery.** People with substance use disorders have high rates of tobacco use but people in the facilities don't always get the help they need to quit. This study will examine barriers to implementing AB 541 (enacted in 2021) for substance use disorder facilities to conduct tobacco status assessments and treatments.
- **Health care engagement.** California's Senate Bill 793 (effective January, 2023) bans the retail sale of most flavored tobacco products and is an opportunity for people to quit menthol and other flavors in e-cigarettes. This study will examine a strategy to engage health care providers on local policy adoption and implementation.
- **Health care plan reform.** Comprehensive tobacco treatment coverage is in place for Medi-Cal but not other publicly covered health plans, such as those for state employees, with two failed bill attempts. Research can help define health economic scenarios for policy decision makers.

"Study findings will support efforts to expand into subsequent studies or generate new policy efforts," Tong said. "The long-term impact is to improve population-based cessation outcomes that will help fulfill California's aspirations of an endgame to end the commercial tobacco epidemic and help save lives."

New CDC guidelines urge everyone over 18 to be screened for hepatitis B

Most people with the hepatitis B virus don't know they have it and have no symptoms

UC Davis Comprehensive Cancer Center is bringing attention to newly updated guidelines about who should be screened for hepatitis B virus (HBV), the most common cause of liver cancer worldwide.

The new Centers for Disease Control and Prevention (CDC) recommendation is simple: Everyone age 18 and over should be screened for HBV at least once in their lifetime.

To help spread awareness about HBV, the cancer center's Office of Community Outreach and Engagement launched its END B program. It is funded by a $1.5 million grant from the Office of Minority Health in the U.S. Department of Health and Human Services.

"If undiagnosed, hepatitis B can lead to liver damage, and even cause liver cancer. Most people living with hepatitis B have no symptoms, so it is important to get screened," said UC Davis hepatologist Eric Wai Chak, who specializes in liver cancer.

Spreading the word

The END B campaign includes print and radio ads in multiple languages (Chinese, Hmong, Punjabi, Spanish, Thai and Vietnamese) with a universal screening message. The awareness campaign also includes social media.

Multilingual posters and flyers also are being distributed to federally qualified health centers, community clinics and student-run clinics in the Sacramento area and other parts of the region served by the cancer center, extending to Merced in the Central Valley.

According to the CDC, two-thirds of Americans with HBV do not even know they are infected. Prior to the new guidelines, doctors tested people for HBV based on where they were born or where their parents were born, as well as other risk factors. But now, universal screening recommendations indicate that everyone, no matter where they were born, should be screened for the virus.

If left untreated hepatitis B can damage your liver and cause liver cancer.

Talk to your doctor and get screened for HBV today. For more information, visit: **cdc.gov/hepatitis/HBV**

#togetherwecanENDB

Clinical trial underway at Marshall Cancer Center, *the newest UC Davis Cancer Care Network affiliate*

The first clinical trial is now available at Marshall Cancer Center in Cameron Park, which joined the UC Davis Cancer Care Network in early 2022. The trial tests a new approach for monitoring breast cancer during treatment using blood tests called serum tumor marker (STM) tests. STM measures the amount of tumor markers that cancer and other cells release into the blood. This information can show doctors if the cancer is responding to treatment.

Researchers are comparing this approach to traditional monitoring using imaging scans, which can be expensive and make many patients anxious. Using blood tests instead of scans might improve the quality of life for some patients and lower costs. The clinical trial is enrolling women with metastatic hormone receptor positive Human Epidermal Growth Factor Receptor-2 (HER-2) negative breast cancer.

Under the UC Davis Cancer Care Network affiliation, Marshall's oncologists work directly with UC Davis Comprehensive Cancer Center's oncology team to design leading-edge diagnostic and treatment plans. This enables Marshall's patients to access the latest cancer clinical trials — which typically are available only through large academic research centers.

Joanne's story

One of the first women to participate in the clinical trial was thrilled to gain access to a clinical trial close to home. Joanne, a great grandmother who asked to be identified in this article by only her first name, was first diagnosed with early-stage breast cancer in 2013 while living in Santa Cruz. She opted for a double mastectomy and reconstructive surgery and had to drive four hours round trip for each of her treatments at a Bay Area comprehensive cancer center. After Joanne recovered, she moved to the Sierra Nevada foothills to be closer to her family members.

"When I had my first journey with cancer, it would take two hours to drive to my appointments and two hours back," Joanne said.

In February 2023, just two months after celebrating her 45th anniversary with husband Larry, her high school sweetheart, Joanne learned that she had metastatic cancer in her liver. Larry, who owns three medical clinics and was by Joanne's side every step of the way during her original cancer journey, quickly began his research. He focused on the nearby Marshall Cancer Center, which he found out was a UC Davis Health affiliate.

Joanne began treatment immediately at the Marshall Cancer Center.

"Now, we're just 10 minutes from Marshall's Cancer Center. It is much less stressful not to spend the time on the freeway and it eliminates the hours in the car anticipating treatment and the mental stress of wondering 'what's next?,'" Joanne said.

Following her third round of chemotherapy, when her doctor was hoping to see a 10–12% reduction in cancer markers, Joanne received the extraordinary news that they had dropped by more than 53%.

Today, Joanne is receiving periodic hormonal therapy and is on a positive path, grateful to receive world-class care in the foothills.

"The care has been excellent," Larry added. "The people, the facility, the work that they do — they make you feel like a person, not a 'cancer patient'. The more we learn through the trials, hopefully there will be fewer people that have to go through these journeys."

Marshall Medical Center (photo courtesy Marshall Medical Center)

Learn more about the Marshall Cancer Center, a UC Davis Health Affiliate. Call **530-676-6600** or visit **marshallmedical.org/services/cancer-center**. For more information on UC Davis Comprehensive Cancer Center clinical trials, visit **cct.ucdmc.ucdavis.edu/cct/**or call **916-734-0565**.

Breast cancer screening guidelines updated *(again)*

The United States Preventive Services Task Force (USPSTF) issued new draft guidelines in 2023 recommending women start breast cancer screening at a younger age. Leading breast cancer screening expert Elizabeth Morris, chair of the UC Davis Department of Radiology and a breast cancer survivor, answers questions that are on the minds of many women.

What do the new draft guidelines recommend?

- Start breast cancer mammograms at age 40 instead of the previously recommended age of 50.
- Schedule mammograms in alternating years between the ages of 40 and 74.

Weren't the guidelines changed not long ago?

Yes. The most recent USPSTF breast cancer screening update was issued in 2009 and finalized in 2016. Back then, the recommendation was for women with an average breast cancer risk to undergo mammographic screening every other year between the ages of 50 and 74. Those guidelines also advised women to ask their doctors whether they should start screening mammograms when in their 40s, especially patients whose mother or sister had been diagnosed with breast cancer.

Why were the guidelines revised again?

More women are being diagnosed with breast cancer while in their 40s. Also, cancer disparities needed to be considered. For instance, research has shown that Black women are 40% more likely than white women to die from breast cancer. They also are more likely to be diagnosed in their 40s and with more aggressive breast cancer.

Should women get a mammogram every year or every other year?

The USPSTF did not revise its stance on whether women should be screened every year or every other year; in these new draft recommendations, it continues to encourage women to be screened every other year. However, I strongly recommend annual screening for women within the indicated age groups.

Why do the USPSTF guidelines matter?

USPSTF is an independent panel of experts that issues reports that can help doctors and health care professionals as well as guide patients in making health care decisions. Its guidelines also can influence insurance coverage and other aspects of public health.

What should women keep in mind?

These guidelines apply to average women at average risk of breast cancer. Women with dense breasts should also consider the benefits of breast ultrasound or getting an MRI. I've long advocated for women with dense breasts to get these more accurate screenings, if only every couple of years.

Is it possible to be screened too often?

Mammograms do pose some potential risks. Women may be given false positive results that lead to biopsies or surgery, which can put them at risk of harm as well as cause stress. The goal is to balance the benefits against overtreatment.

New *'all-natural'* breast reconstruction technique available for cancer patients at UC Davis

Women who undergo mastectomies to treat breast cancer will have the option of a new technique at UC Davis to receive "all-natural" breast reconstruction following surgery.

For many women who have undergone mastectomies, recreating a sense of normalcy and wholeness is an important part of their cancer journey.

Plastic surgery plays a key role as women get back to life after cancer treatment and UC Davis Comprehensive Cancer Center has an exciting new option for patients.

The profunda artery perforator (PAP) flap technique for breast reconstruction is now available at UC Davis. The "PAP" is a blood vessel that runs through the thigh and the "flap" is tissue taken from the inside of the upper thigh. The PAP flap gives women another option for natural reconstruction of the breast.

For many years, similar "all-natural" reconstruction methods such as the DIEP flap have been used to take tissue from the tummy to shape into a reconstructed breast. However, some women don't have enough abdominal tissue to make a natural breast or have had certain prior abdominal surgeries that prevent use of this tissue.

First patient

In 2023, breast cancer survivor Leslie Peek was the first patient at UC Davis Health to undergo the PAP flap procedure. At 43, the athletic mother of two was diagnosed with breast cancer during a routine mammogram.

Peek, who manages a career counseling team supporting pre-med students at UC Davis, knew it was important to research her medical options and gather as much information as possible. She decided a bilateral mastectomy (removing both breasts) would bring her the best peace of mind. The next choice involved exploring options for breast reconstruction.

"I knew my body would expand and contract as I enjoyed the rest of my life, so a natural reconstruction was appealing to me rather than breast implants," Peek said. "However, there was not enough tissue in my abdomen for the traditional type of natural reconstruction."

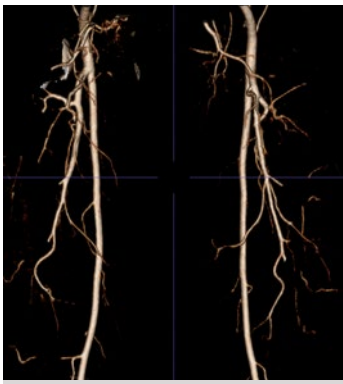
As a former triathlete and current strength-training coach, Peek doesn't have a lot of extra fat and tissue to spare.

"However, my thighs turned out to be a rich source of tissue," Peek said with a laugh.

How it works

Small blood vessels that feed the thigh tissue are sewn to vessels in the chest to allow the tissue to survive in its new location. This involves connecting the small vessels (2 millimeters in diameter) under a microscope in what is called "microsurgery." The PAP flap consists of skin and fat that is removed from the thigh and then molded into a breast shape.

Ara Salibian, a plastic surgeon and assistant professor in the UC Davis Department of Surgery, and his fellow plastic surgeon Michelle Zaldana-Flynn performed the PAP flap procedure on Peek.



Specialized CT Scan of blood vessels in the thigh used for planning PAP flap surgery for breast reconstruction

"After the procedure, I felt hope for the first time — like I was going to be okay. For me this was the right choice."

— LESLIE PEEK, BREAST CANCER SURVIVOR

Leslie Peek with her husband, Ryan, daughter Genevieve and son Connor

Salibian is the new director of breast microsurgery at UC Davis. He recently joined UC Davis after completing a microsurgery fellowship at the Keck School of Medicine of USC. Salibian specializes in reconstructive microsurgery of the breast and lower extremities as well as lymphatic surgery, or microvascular surgery for the treatment of lymphedema.

"Many women do not want artificial breast implants that contain silicone or saline," Salibian said. "The ability to offer this surgery has allowed us to expand the options for patients to have a natural breast reconstruction after a mastectomy who otherwise would not have been candidates for this type of procedure."

Back to a busy life

Peek said she was up and walking around within a couple days of the PAP flap procedure and returned to caring for her kids at home and her career on campus within a few weeks.

"The symmetry of my breasts is great and I feel like myself," Peek said. "After the procedure, I felt hope for the first time — like I was going to be okay. For me this was the right choice."

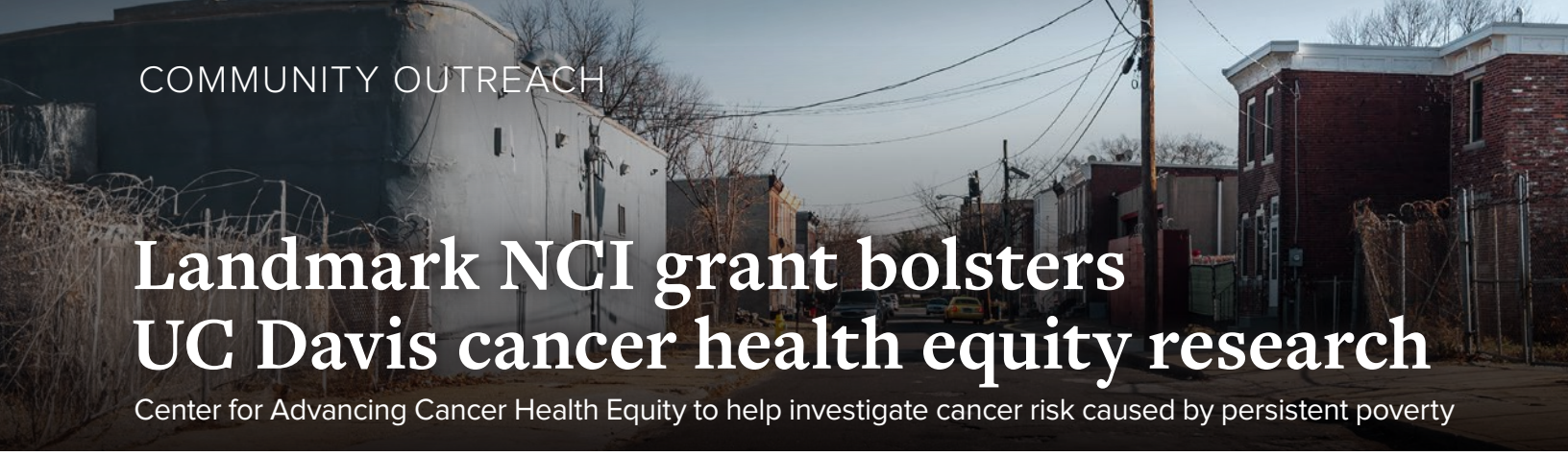
Peek is back doing what she enjoys, including playing softball and running. She's even planning to enter the annual Davis Turkey Trot this year with her family — a Thanksgiving tradition she wasn't able to take part in last year.

"Leslie had an incredible attitude throughout her entire breast cancer treatment and breast reconstruction journey. It was an absolute pleasure to be a part of her treatment team and we are thrilled she can now get back to normal life," said Salibian.

Peek said she credits Salibian for being a champion for breast cancer survivors and said the supportive environment created by her medical team, including Candice Sauder who performed her bilateral mastectomy, was truly remarkable.

"Breast cancer is challenging no matter what stage, but Leslie's was caught early which gave her the most options for treatment and reconstruction," Sauder said. "She really thought about her options and made the right choice for her. This is our goal for all of our patients, and she has done amazingly well."

"My experience throughout treatment and follow-up care has made me even more proud to work for UC Davis," Peek said. "I'm grateful because I know some women have to wait a couple of years to receive this type of reconstruction or are forced to travel a long way to receive it — and, yet, we have access to this innovative technology right here."



Landmark NCI grant bolsters UC Davis cancer health equity research

Center for Advancing Cancer Health Equity to help investigate cancer risk caused by persistent poverty

The risk of dying from cancer is greatly influenced by your ZIP code. If you live in a poor neighborhood, you face cancer death rates that are 12% higher than if you live in a wealthy neighborhood.

Persistent poverty areas are defined as those where, for the past 30 years, 20% or more of the population has lived below the federal poverty level. In 2023, that threshold is $14,580 for individuals, $19,720 for a family of two people, and $30,000 for a four-person household.

People who live within those financial constraints have a higher incidence of cancer, experience delays in cancer diagnosis and treatment, and are more likely to die from cancer in comparison to people who do not live in poverty. However, little research has been conducted on how to improve cancer outcomes in these areas.

Physicians and researchers in UC Davis Comprehensive Cancer Center have long been aware of the cancer burden faced by poorer communities. Now cancer center researchers investigating the causes of cancer health disparities are receiving a major boost from the National Cancer Institute (NCI).

The Center for Advancing Cancer Health Equity is participating in the Persistent Poverty Initiative, the first federally funded program to address the cancer risks associated with chronic financial hardship.

NCI is coordinating the $50 million National Institutes of Health program through which five new Centers for Cancer Control Research in Persistent Poverty Areas are being created. Stanford University has been awarded $15 million to form one such center, the UPSTREAM Research Center in Northern California.

The role of UC Davis

As part of the UPSTREAM Research Center, Stanford will partner with UC Davis and UCSF researchers. The team will investigate whether and in what ways regular income supplementation affects health behaviors and cancer risk for people living in poverty in several Northern California communities.

Luis Carvajal-Carmona leads research into ways in which persistent poverty influences cancer risk. He is the study's principal investigator at UC Davis and the head of the Center for Advancing Cancer Health Equity based at the cancer center.

"Specifically, my team will assess how state and federal programs such as guaranteed basic income or the Earned Income Tax Credit affect cancer outcomes in Latino and Vietnamese communities in the Central Valley," Carvajal-Carmona said. "We want to see if the basic income program and the earned income tax credit promote the adoption of healthy behaviors related to reducing cancer risk."

The researchers will investigate whether the earned income credit may diminish various risk factors for cancer as a result of reducing poverty-related stress factors by helping to pay for food, housing, transportation, other daily expenses and health care.

The study also will examine the reasons why many people who are eligible for an earned income credit are not applying, especially among newly eligible people identified in the Latino and Vietnamese communities in Yolo and Santa Clara counties.

Understanding the cancer burden facing the poor

"This is an exciting opportunity to look at the root causes of the unfair cancer burden faced by impoverished communities," said Carvajal-Carmona, who is also the associate vice chancellor for the Office of Academic Diversity at UC Davis. "We know that there are inequities, such as food deserts where healthy food options are not readily available, that have a disproportionately high impact on health care patterns in areas where people are experiencing persistent poverty."

Each of the persistent poverty centers works with targeted low-income communities to implement and measure the effectiveness of interventions for cancer control and prevention, follow-up care and survivorship. These centers also will conduct research in reducing obesity, improving nutrition, increasing physical activity, helping people quit smoking and improving living conditions through supplemental income. In addition, the centers will help train a pipeline of early-career investigators to conduct cancer research in underserved communities.

New outreach specialist will serve as liaison to tribal nations in the Sacramento region

Nicole Halmai on her wedding day with husband Julian Halmai

Cancer center seeks to understand cancer burden of Northern California's Indigenous peoples

Many Indigenous communities, including Native Americans in California, suffer from significant cancer health disparities, which are evident in high rates of death from colon, kidney and stomach cancer. UC Davis Comprehensive Cancer Center recognizes the unfair cancer burden shouldered by Indigenous peoples and the unique combination of risk factors that may be contributing to the inequity.

Diets lacking fresh produce and other healthful foods, as well as limited access to health care screenings and care, increase the cancer risk. This is particularly true for rural communities that make up a significant proportion of tribal lands. Environmental exposures and genetics also can play a role in the cancer risks threatening Native people.

The cancer center wants to understand these disparities, so its Center for Advancing Cancer Health Equity created a new tribal community engagement liaison role. UC Davis Genome Center postdoctoral researcher Nicole Halmai was appointed to the position and is working to identify cancer health priorities for Indigenous peoples in the northern and central parts of California. She is also seeking to better understand the factors that might influence their willingness to take part in cancer precision medicine research.

Halmai's current research is focused on the development of pre-clinical cancer models and epigenomic data from racial/ethnic minority populations to advance cancer health equity.

Personal connection

Halmai is passionate about building relationships with Native communities. That's because she is Diné, a citizen of the Navajo Nation. Her mother grew up on the Navajo Nation, located in the Four Corners region of the Southwest.

Growing up in Phoenix, Arizona, Halmai spent every summer with her maternal grandparents on the family's 1,650 acres in the Navajo Nation. Halmai still visits her family's land, where she and her husband were recently married in a traditional Navajo wedding ceremony.

> "Before we do anything else, we need to build partnerships with Indigenous communities and tribal leadership to guide cancer disparity research.
>
> — NICOLE HALMAI, UC DAVIS GENOME CENTER POSTDOCTORAL RESEARCHER

New tribal outreach begins with building trust

"California has the largest population of Native Americans in the country, but there is a certain level of distrust when it comes to medical care and biomedical research, given historical mistreatment of Native peoples and misuse of samples and data," Halmai said. "Before we do anything else, we need to build partnerships with Indigenous communities and tribal leadership to guide cancer disparity research."

Halmai said she feels building an advisory board is critical. She is hopeful that suggestions from the Native communities will eventually lead to community-driven research projects that will both help to improve Native representation in cancer precision medicine research and rectify cancer health disparities experienced among Native communities.

Along with recruiting for the advisory board, Halmai is generating commentary from community members by attending talking circles at local tribal events and health fairs, and asking people to take part in health surveys to help identify what is important to them.

"We are also working closely with Native community-focused health care providers to support cancer health and research education," Halmai said. "Ultimately, one of our main goals is to support capacity-building efforts for tribal nations, allowing them to expand their own health care infrastructure and improve cancer care for their citizens."

Teens for Screens program **recruits the next generation of breast cancer educators**

Teens for Screens is new to UC Davis Comprehensive Cancer Center. Started in 2018 by the San Francisco Cancer Initiative breast cancer task force, a Teens for Screens chapter was brought here when Laura Fejerman, associate director of the cancer center's Office of Community Outreach and Engagement, joined UC Davis in 2020.

Fejerman helped develop the program while she was an associate professor at UC San Francisco. The program was piloted at the high school level, training teen breast cancer educators to take breast cancer awareness messages home to their mothers and other relatives.

"We've added a new twist to the Teens for Screens program at UC Davis. We now seek to train undergraduate college students as breast cancer educators who, in turn, are educating middle and high school students either in person or remotely," Fejerman said. "As a part of our efforts, we are partnering with high schools with high populations of underserved groups, such as low-income students and minorities, to provide them with information about breast cancer and the importance of screening."

Brittany Clary is one of the co-founders and the current president of Teens for Screens at UC Davis. As an undergraduate student, she started the campus club and has been recruiting members, which now number 60. More than 20 have become trained breast cancer health educator mentors, meeting with students in health and biology classes and other events to recruit teens to become breast cancer educators in their own homes.

"One of the most common experiences we have witnessed is the lack of awareness of breast cancer and the stigmatization of breast cancer," Clary said. "Many students are not aware of how social determinants affect the risk of breast cancer or the survivability of the disease."

Like many of her fellow Teens for Screens volunteers, Clary has been personally touched by breast cancer and is passionate about spreading awareness to help save lives. Clary's mother is a two-time breast cancer survivor and had a double mastectomy when Clary was in third grade. Her grandmother also survived breast cancer as well as bone cancer.

Both Clary's mother and grandmother are Indigenous women from Guatemala. She found out about Teens for Screens when she came across the Fejerman Lab while taking a public health class.

"When I realized that Dr. Fejerman's lab focused on genetic research on breast cancer in Latinas and Indigenous women I felt inspired to get involved," Clary said.

She believes that many women like her mother may avoid screenings because they fear diagnosis of a disease that could make them unable to care for their families. She knows, however, that screenings can detect breast cancer at early stages, thereby improving the chances of survival.

"A lot of what we do at Teens for Screens is combatting stigmas in place through education and providing informational steps on how to have a healthy conversation about breast cancer. We also give the teens the tools to take their message home and to their neighborhoods," Clary said.

Along with visual aids to explain how to do breast self-exams, Teens for Screens provides information in English and Spanish about free breast cancer resources, such as California's Every Woman Counts program that performs screenings and diagnostic services free of charge to underserved women.

TEENS for screens
Student Educators for Breast Cancer Prevention

For more information on the Every Woman Counts program, call 800-511-2300. If you are diagnosed with breast or cervical cancer, free treatment is available to all Californians who qualify through the California Department of Health Care Services' Breast and Cervical Cancer Treatment Program. For more information, call 800-824-0088.

FANS STUDY

Study investigates high lung cancer incidence **among nonsmoking Asian American women**

UC Davis Comprehensive Cancer Center is participating in a National Institutes of Health (NIH)-funded Female Asian Never Smoker (FANS) study. It's being led by researchers from UCSF Health, UC Davis Health and Stanford Medicine, and has recently expanded into Sacramento County.

An estimated 57% of Asian American females diagnosed with lung cancer have never smoked, compared to about 15% of all other women.

One of the principal investigators is Moon Chen Jr., senior advisor to the cancer center director. Chen is a leading expert on the cancer burden confronting Asian Americans.

"Lung cancer among never-smokers has now emerged as the single most glaring and under-studied cancer health disparity affecting Asian American women," Chen said. "FANS is a study that looks at a wide range of genetic, behavioral, biological and environmental factors and includes the collection of blood and saliva samples."

FANS is the first, largest and only NIH-funded study to examine this phenomenon. Sacramento County residents recently became eligible to enroll in the study, which initially focused on other California counties with high Asian American populations.

Who is eligible?

Asian American females with and without lung cancer are encouraged to enroll if they have:

- Never smoked
- Are between the ages 21 and 90
- Live within any of the following counties: Alameda, Contra Costa, Los Angeles, Marin, Monterey, Orange, Sacramento, San Benito, San Diego, San Francisco, San Mateo, Santa Clara or Santa Cruz

Eligible participants also include the spouse, adult offspring, sibling, close relatives or close friends of someone who was diagnosed and passed away from lung cancer within the past 18 months.

What is required of participants?

1. Completion of a survey that takes approximately 45 minutes (via phone, online or by mail)
2. Collection of a small saliva sample (in the privacy of your own home)
3. For lung cancer patients or survivors, permission to access lung tissue that was removed during surgery or a biopsy

How do participants benefit?

By participating, you can help researchers understand more about the factors leading to lung cancer in Asian American women, which is also the leading cause of death for this population.

Participants in the study will receive a $75 gift card in appreciation. If you are interested in joining this study, please email **fansstudy@ucsf.edu** or call **833-326-7883**.

Childhood cancer survivors paint handprints on car in thanks for help with cancer fight

$100,000 check presented to UC Davis Comprehensive Cancer Center by Hyundai Hope on Wheels

Multi-colored painted handprints covered an electric car as an expression of gratitude after Hyundai Hope On Wheels rolled onto the UC Davis Health campus to deliver a $100,000 check to help with the cancer fight.

Sharing their appreciation were childhood cancer survivors and their families who left their mark with the “high fives” they planted on a white Hyundai IONIQ5. They also left handprints on the white coat of Marcio Malogolowkin, chief of the Division of Pediatric Oncology-Hematology at UC Davis Comprehensive Cancer Center.

“Here, let me give you a hug,” said cancer survivor Jordyn Hernandez as she placed one blue and one red handprint on the back of Malogolowkin, who is also a professor in the Department of Pediatrics. “Thank you for all you do, Dr. Malogolowkin!”

“This is absolutely fantastic, so beautiful,” Malogolowkin said. “UC Davis Comprehensive Cancer Center is very happy with our partnership with Hyundai and their support over these years, as we continue our fight against pediatric cancer.”

Malogolowkin said over the past decade Hyundai Hope On Wheels has given half a million dollars to pediatric cancer research at UC Davis Comprehensive Cancer Center. Hyundai

Marcio Malogolowkin receives check from (left to right) Raj Gupta, regional sales manager in the West, Chris Shaffer, president, Roseville Hyundai, and Michael Orange, general manager, western region at Hyundai Motor America

Childhood cancer survivor Gaia Lee gets ready to handprint the Hyundai Hope On Wheels electric car

Hope On Wheels also supports UC Davis' fundraising campaign "Expect Greater: From UC Davis, for the World," the university's largest philanthropic endeavor to date.

Hyundai has been on a quest to end childhood cancer and has become one of the nation's leading funders of pediatric cancer research, fueling cutting-edge research, igniting public awareness and working together with leading partners nationwide to help create a cancer-free future for kids.

"On behalf of Hyundai Motor America and the Hyundai dealers of Northern California, I thank the brave young children here today to celebrate hope — hope for a cure for cancer," said Michael Orange, general manager, western region at Hyundai Motor America. "Every handprint made today tells a story and shows that it will take many hands working together to cure cancer, including doctors, nurses, researchers, communities and corporations like ours."

Hyundai Hope On Wheels began in 1998 when a small group of New England-area Hyundai dealers joined to support a local children's hospital. Today, more than 830 Hyundai dealers across the nation donate a portion of every vehicle purchase to the cause, paired with support from Hyundai Motor America.

Robots and research

Malogolowkin said the $100,000 check from Hyundai Hope On Wheels will fund two initiatives: one involving robots, the other supporting research.

The first project will enable hospitalized patients to use tele-operated collaborative robots to make real-time "virtual field trips" at various Sacramento-area attractions, including the California State Railroad Museum, Sacramento Zoo and the Effie Yeaw Nature Center. The robots also can be used to connect patients with family members and friends who are unable to be at the hospital.

Tele-operated robot will take hospitalized children on virtual field trips
Photo credit: Xavier Mascareñas

Malogolowkin is collaborating in the innovative robotic assistive technology project with Veronica Ahumada, director of the Technology and Social Connectedness lab at UC Davis. Ahumada, an assistant professor in the Department of Pediatrics with a cross appointment at the MIND Institute, encourages keeping young cancer patients engaged in social and learning activities while they are hospitalized.

"Many children experience weeks of hospitalizations due to treatments for cancer and other conditions but are otherwise cognitively able to learn and engage in social experiences. Instead of being restricted to the hospital environment, it is important to provide them with opportunities to learn and remain connected with their families, friends and communities," Ahumada said.

The grant money also will fund research investigating rare malignant rhabdoid tumors that can start in the kidneys but also occur in other soft tissues or in the brain.

"These are aggressive pediatric cancers, associated with extremely poor outcomes," Malogolowkin said. "These tumors have been treated with a combination of surgery, chemotherapy, stem cell transplant and radiation without much success. Therefore, new treatments are desperately needed."

Malogolowkin is teaming up with UC Davis pediatric clinical scientists Noriko Satake and Reuben Antony to conduct research on a cell process called "RNA splicing" that may be causing mutations associated with both tumor growth and drug resistance related to this type of cancer.

"We hope to test new drugs that may give hope to these pediatric cancer patients," Malogolowkin said.

Many Hyundai dealers in the Sacramento region attended the check presentation and handprint ceremony. After 25 years, Hyundai Hope On Wheels has given $225 million in support of more than 1,300 childhood cancer research grants.

Rock band The Who and its Teen Cancer America organization **fund teen patient lounge**

Thanks to the long-lived British rock band The Who and the band's Teen Cancer America organization, UC Davis Health now has a teen lounge to help young patients recover from cancer or any other condition while hospitalized at UC Davis Children's Hospital.

Patients Noah Chapman and Bentley Hansen help Marcio Malogolowkin with the teen lounge ribbon cutting

Marcio Malogolowkin, chief of the Division of Pediatric Hematology-Oncology, received help during a ribbon cutting ceremony from two patients, 12-year-old Noah Chapman and 11-year-old Bentley Hansen, as he cut the ribbon earlier this year to a room filled with colorful art and activities.

The teen lounge has a PlayStation 5 video gaming console. Noah and Bentley sat together to check it out and played a Spiderman game.

"I just think it is a really cool place to come to, especially when you are healing," Bentley said.

The teen lounge also includes an electronic Infinity Game Table, a book library, movie collection, art corner, and a computer for homework or connecting with friends and family.

"This is about the teenagers," Malogolowkin said. "It is to support them through their health care journey. We cannot forget that they are children and adolescents and that they need to be stimulated and feel connected."

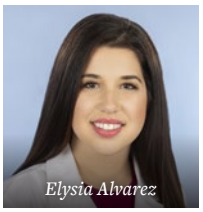
Hospitalized young patients 11–18 years of age are eligible to use the room, with their doctor's okay. Malogolowkin said when young patients feel good, they want to look forward to the future. The teen lounge offers distractions and keeps teenagers moving and looking forward to their bright futures.

The Who's Roger Daltrey and Pete Townshend founded Teen Cancer America in 2012. An autographed electric guitar, signed by Daltrey and Townshend, is displayed in the new teen lounge.

"I just think it is a really cool place to come to, especially when you are healing."

— BENTLEY HANSEN, PATIENT

UC Davis oncologist and researcher honored at annual Spaghetti Western


Elysia Alvarez

The Amador Cancer Research Foundation presented UC Davis pediatric oncologist and clinical researcher Elysia Alvarez with the 2023 Christine and Helen Landgraf Memorial Research Award. The $50,000 award, presented at the foundation's 16th Annual Spaghetti Western Dinner, will help Alvarez expand her investigation of disparities in cancer survival outcomes among adolescents and young adults.

Alvarez's research focuses on improving the care of adolescents and young adults who have cancer by identifying barriers that have limited their access to treatment. She has expertise in treating young patients with solid tumors and co-leads the Child, Adolescent, and Young Adult Sarcoma Clinic at the cancer center.

"This generous award will help to identify areas of intervention to increase delivery of high-quality and equitable care to adolescents and young adults with cancer in California," Alvarez said.

The Spaghetti Western food and wine event at Cooper Vineyards in Plymouth raises money each summer for the foundation's annual research grant presentation.

History of the memorial fund

The Christine and Helen S. Landgraf Memorial Fund has given annual grants to doctors and research scientists at UC Davis Comprehensive Cancer Center since 1973. John and Helen Landgraf, longtime residents of Sacramento and Sutter Creek, established the endowment in memory of their daughter, Christine, who died from Hodgkin's lymphoma at the age of 27.

The memorial fund awards an annual scholarship to an early-career faculty member who is engaged in cancer research.

"I am very grateful for our board and community who so generously give their support to this cause," said Cathy Landgraf, who organizes the annual event in memory of her mother and sister.

Event sponsors

Presentation event sponsors include UC Davis Health, Cooper Vineyards, Jackson Rancheria Casino and Resort, Ken and Charlene Loveland, Jim and Suzy Gullett, 57th Street Antique and Design Center, 3 Fish Studios art gallery, and David and Diane Logan.

"This generous award will help to identify areas of intervention to increase delivery of high-quality and equitable care to adolescents and young adults with cancer in California."

— ELYSIA ALVAREZ, UC DAVIS PEDIATRIC ONCOLOGIST

Laura Fejerman named **Placer Breast Cancer Endowed Chair**

Building human capital and networks for breast cancer health equity

Laura Fejerman, renowned breast cancer researcher at UC Davis Comprehensive Cancer Center, has been inducted as the inaugural holder of the Placer Breast Cancer Endowed Chair. Endowed chairs are prestigious academic positions that come with funds to support innovative research.

The endowed chair position was created by the Placer Breast Cancer Foundation. The foundation was formed in 2005 by breast cancer survivors and Placer County residents Carol Garcia and Teri Munger.

The initial goal of the foundation was to raise $1.5 million to establish a breast cancer endowed chair at UC Davis. After reaching that goal, the foundation continued to raise funds and donated an additional $275,000 to support efforts to fight breast cancer in the Sacramento region. The foundation continues its work to fight breast cancer and promote education and outreach throughout Placer and Sacramento counties.

"Our board couldn't be happier about the appointment of Dr. Laura Fejerman to the Placer Breast Cancer Endowed Chair," Garcia said during the investiture ceremony held in 2023 at the cancer center's James E. Goodnight Auditorium. "We are committed to continuing our fundraising activities and appreciate the monetary and volunteer community support over the years."

Fejerman is a genetic epidemiologist, studying the genetic contributions to breast cancer in diverse populations and how to best predict risk for specific subtypes of the disease. She is the associate director for the cancer center's Office of Community Outreach and Engagement. In addition, she is co-director of the Women's Cancer Care and Research Program (WeCARE) and co-director of the Latinos United for Cancer Health Advancement (LUCHA) initiative. All the programs are within the cancer center and have the core mission of reducing the cancer burden and achieving cancer health equity.

"The endowment of a chair ensures we can continue this important research and improve outcomes for patients," Fejerman said. "I take the responsibility of being the steward of this generous donation very seriously, and I thank the Placer Breast Cancer Foundation for this tremendous investment to advance our breast cancer research."

Fejerman's past research established a relationship between genetic ancestry and risk of breast cancer among U.S. Latinas, identifying a change in the DNA associated with a lower risk of developing the disease. Funds from the Placer Breast Cancer Endowed Chair will be used to conduct additional research to increase understanding of how this specific variation in the DNA affects breast cancer risk, which could help advance breast cancer prevention and treatment.

Originally from Buenos Aires, Fejerman left Argentina in 1998 to study in England. She earned her master's degree in human biology and her doctorate in biological anthropology at the University of Oxford.

(left to right) Interim Dean Susan Murin; Laura Fejerman, Placer Breast Cancer Endowed Chair; Carol Garcia, Placer Breast Cancer Foundation co-founder; and Primo "Lucky" Lara Jr., cancer center director

Farrah Fawcett Foundation **invests in HPV-related cancer prevention and awareness**

The Farrah Fawcett Foundation has invested $75,000 in the cancer center's Office of Community Outreach and Engagement (COE) to support its program to promote awareness of the cancer risk posed by the human papillomavirus (HPV).

Hollywood icon Farrah Fawcett created her foundation shortly after being diagnosed with an HPV-related cancer in 2006. She had hoped to run the foundation herself, but anal cancer took her life in 2009.

The Centers for Disease Control and Prevention estimates that HPV is responsible for more than 90% of anal and 99.7% of cervical cancers, 70% of vaginal and vulvar cancers, and 60% of penile cancers. Throat cancer is now the leading HPV-related cancer diagnosis among men, affecting them more commonly than women in the U.S.

"Increased education and awareness about HPV prevention and early detection are essential, especially for medically underserved groups," said Laura Fejerman, associate director of the COE.

Alana Stewart, president of the Farrah Fawcett Foundation, said, "We are thrilled to collaborate with the cancer center in helping spread the message of prevention and educating not only parents about the option for a vaccine for children, but also increasing HPV awareness in adults over 35 years (of age) about early cancer prevention and detection."

Fejerman added that the cancer center is grateful to the Farrah Fawcett Foundation for this generous donation. Research shows that awareness regarding HPV-associated cancers can increase the uptake of the HPV vaccine and educate the community about the importance of staying current on screenings.

Julie Dang, executive director of the COE, said that the funding from the Farrah Fawcett Foundation will also help launch a new community-driven HPV education program. The educational material will be in both English and Spanish and improve awareness about HPV-related cancers and the vaccine that can help prevent the disease.

"Led by local lay health educators, both remotely and in person, we also plan to use targeted outreach to address cervical cancer disparities, especially in rural communities," Dang said.

The HPV vaccine has been shown to reduce cases of cervical cancer by nearly 90%. The American Cancer Society recommends vaccination of young people between the ages of 9 and 12, before they become sexually active. The vaccine is advised for those up to the age of 26. Some adults ages 27 through 45 might decide to get the HPV vaccine, based on discussions with their clinicians.

The Centers for Disease Control and Prevention estimates that HPV is responsible for more than 90% of anal and 99.7% of cervical cancers, 70% of vaginal and vulvar cancers, and 60% of penile cancers.

Would you like to support the cancer center — *but you're not sure how?*

The advancements in research, patient care and medical training at UC Davis Comprehensive Cancer Center depend in large part on the philanthropic generosity of private and corporate financial support. The cancer center offers a wide range of creative opportunities for donors to partner with us in targeting and fighting cancer. Reese Olander, UC Davis Comprehensive Cancer Center's new managing executive director of development, summarizes some of the ways you can make a difference. You may want to consider a mix of gift types to help you achieve both your personal and financial objectives.

What is the most popular method of giving?
A cash gift is the simplest and most common giving method. It can be tax deductible in the year it is given. It also makes a difference right away in the studies that our researchers are conducting and in ways in which our clinicians care for our patients.

What about gifts of securities?
Many donors favor gifts of stocks, mutual funds and bonds because they offer a way to diminish or avoid capital gains. Gifts of this type can qualify for an income tax deduction for the full fair market value of long-term, appreciated securities.

What are other means of giving that can yield personal financial benefits?
You can give from your IRA directly to UC Davis without having to pay income taxes on the money. Gifts of $100,000 or less are eligible for this benefit, enabling you to maximize your support and make a tangible difference at UC Davis. This popular gift option is commonly called the IRA charitable rollover, but you may also see it referred to as a qualified charitable distribution or QCD for short. Beginning in the year you turn 73, you can use your gift to satisfy all or part of your required minimum distribution.

Can I give to the cancer center in other ways that offer flexibility and financial benefits?
Bequests and living trusts, retirement plans and life income can all be turned into gifts to the UC Davis Foundation, and all come with tax reduction benefits. Our team is happy to sit down with you and your tax and/or financial advisor to talk about what type of support and method of giving would be the best fit for your philanthropic and financial goals.

Visit **health.ucdavis.edu/giving/ways-to-give.html** to learn more.

National Cancer Survivors Day

Therapy dogs joined patients, survivors, cancer center staff and others celebrating National Cancer Survivors Day, hosted by the cancer center's Supportive Oncology and Survivorship program.

The event in June honors everyone impacted by cancer including doctors and nurses.

National Cancer Survivors Day is a "celebration of life" to show that life after a cancer diagnosis can be full and fun.

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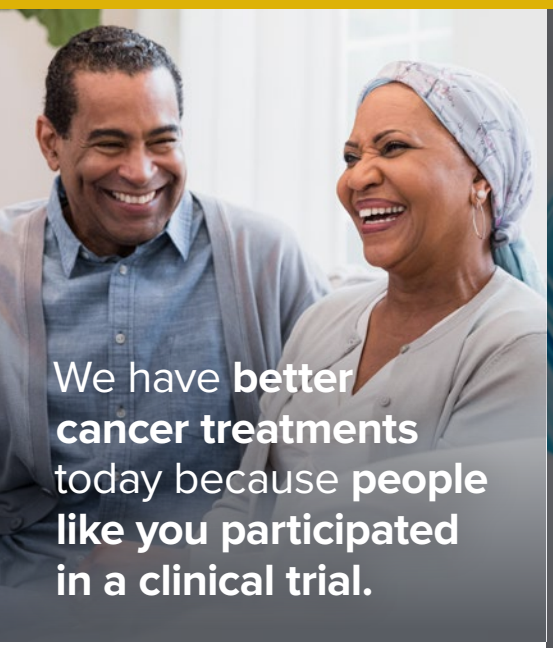

We have **better cancer treatments** today because **people like you participated in a clinical trial.**

If you're interested in exploring new treatment options, a clinical trial may be right for you. **Ask your doctor today about clinical trials.**

Breaking Barriers to Beat Cancer

UC DAVIS HEALTH | COMPREHENSIVE CANCER CENTER

NCI Comprehensive Cancer Center
A Cancer Center Designated by the National Cancer Institute

Synthesis — the art of bringing distinct elements together to form a cohesive whole — is the name of our magazine and our strategy as the Central Valley's only National Cancer Institute-designated comprehensive cancer center. Leveraging UC Davis strengths in innovative cancer models and technologies, precision therapeutics, transformative imaging and mitigation of cancer risks and disparities, we aim to reduce the cancer burden in our region and beyond. Uniting physicians, scientists and public health experts, we are committed to making cancer discoveries and delivering them quickly to patients so they have the best possible outcomes.

Synthesis — linking the best in cancer science to improve patients' lives — is our promise.