THE MAGAZINE OF **UC DAVIS COMPREHENSIVE CANCER CENTER** VOL 28 NO 2 / SUMMER 2025

SYNTHESIS

Cancer research *hub opens at* Aggie Square

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Photo credit: Jeremy Bittermann (© BITTERMANN)

Dear Reader,

Welcome to the summer issue of Synthesis. We are pleased to present an issue full of news about promising developments, positive patient outcomes and the personal touches we are bringing to cancer care.

This is both a time of excitement and challenge for UC Davis Comprehensive Cancer Center and the communities we serve.

Our cover story illustrates what happens when the best minds in academia work together with private industry and city leaders to create entrepreneurial science.

Referred to as a "knowledge community," Aggie Square is a collaborative living laboratory and learning complex that will spark discoveries that we plan to take to market at a speed no one has accomplished before.

Read in this issue of Synthesis about the integral role the cancer research hub will play at Aggie Square. Researchers have moved into the innovative space with the latest biomedical technology and a spirit of determination to solve the mysteries of cancer and find cures.

Aggie Square springs to life as federal funding for cancer research comes under the microscope. The cancer center is working rigorously to meet expectations, build upon what we have achieved, and ensure that we are efficient and accountable.

You will read in this issue of Synthesis about our expanded clinical trials program, enrolling more patients than ever before. New cancer treatments, such as the use of immune checkpoint inhibitor drugs (immunotherapy) and targeted therapies, are significantly increasing patient survival rates.

It isn't just about curing cancer, but also about helping our patients live full lives with alternative therapies. Learn about a highly innovative clinical trial that focuses on fighting blood cancers with fermented wheat germ.

So many articles to explore in this issue of Synthesis! As always, we aim to inspire with stories of grateful patients and their families giving back. You'll read about a young sarcoma survivor whose family's Subaru dealership has found a creative way to do just that.

Enjoy the issue. We hope Synthesis shows how we leverage your support and trust to the very best of our ability.

Primo "Lucky" Lara Jr., M.D.
DIRECTOR, UC DAVIS COMPREHENSIVE CANCER CENTER

BREAKING BARRIERS TO **BEAT CANCER**℠

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Scan this code to learn more about the UC Davis Comprehensive Cancer Center and its leadership.

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in this issue

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New clinical leadership

David Tom Cooke has been permanently appointed the physician-in-chief for UC Davis Comprehensive Cancer Center after serving in an interim role since 2023. He is a UC Davis Health professor and founding chief of the Division of General Thoracic Surgery.

Andrew Bresnahan and David Tom Cooke

Working closely with Cooke is Andrew Bresnahan who is the new vice president of Oncology Services and Cell/Gene Therapy.

"We are thrilled to welcome Andrew to UC Davis Health as we continue to advance patient-centered, comprehensive cancer care and innovative therapies for our community," said Cooke. "His unique expertise in oncology and cell and gene therapy will help us expand access, improve operational efficiencies, and enhance the experiences of our patients, providers and staff."

Bresnahan brings more than 15 years of progressive leadership experience, including most recently as the director of oncology at Northwestern Memorial Hospital in Chicago. There, he led operations for the inpatient and outpatient cell therapy departments, oncology services, apheresis center, and cell lab. He played a pivotal role in establishing CAR T-cell and TIL therapies. He also managed non-malignant programs, advancing cell and gene therapy initiatives, and ensuring compliance with industry regulatory and accreditation standards.

BECKER'S HOSPITAL REVIEW

Becker's Hospital Review puts UC Davis on top oncology programs list

Becker's Hospital Review included UC Davis Comprehensive Cancer Center on its list of 100+ Hospitals and Health Systems with Great Oncology Programs. Becker's said the cancer center and other institutions are advancing cancer care via leading-edge clinical trials and life-changing research.

Marc Dall'Era named chair of the Department of Urologic Surgery

The UC Davis School of Medicine has appointed Marc Dall'Era, professor of clinical urology, the permanent chair of the Department of Urologic Surgery. Dall'Era has been the interim chair since September 2023.

Marc Dall'Era is the new chair of the Department of Urologic Surgery.

"Dr. Dall'Era is a highly respected clinician and researcher who has made many impactful contributions to his field," said UC Davis School of Medicine Dean Susan Murin. "The Department of Urologic Surgery has grown and thrived under his leadership and I'm excited to see the department reach new heights, further benefitting our patients and trainees."

Dall'Era specializes in the management of urinary tract cancers. His research interests include using MRI imaging to detect and evaluate prostate cancer. His focus also includes biomarker discovery and validation in cancer patients. He is a principal investigator on several clinical trials, including those for men with high-risk prostate cancer. He has also pioneered the use of high-intensity focused ultrasound in Sacramento for early-stage disease.

Urologic oncology team expands

The team that treats cancers of the urinary tract has expanded at UC Davis Comprehensive Cancer Center by adding two urologic oncologists.

Health Sciences Clinical Associate Professor Jared Whitson is a fellowship-trained urologic oncologist. His clinical interests include treatment of prostate, kidney, adrenal, bladder, testicular and penile cancer. Whitson specializes in active surveillance for low-risk prostate cancer and small renal masses. He also offers advanced genomic testing of urologic cancers. Whitson performs robotic surgery and specializes in radical nephrectomy with vena cava thrombectomy, retroperitoneal lymph node dissection, and urinary diversion (ileal conduit and neobladder).

Whitson obtained his M.D. in 2003 at Columbia University in New York, and completed his internship, residency and fellowship at UC San Francisco.

Assistant Clinical Professor Avery Elizabeth Braun is a fellowship-trained urologic oncologist. She treats tumors of the prostate, kidney, adrenal gland, bladder, testes and other genitourinary organs. Her expertise includes traditional open surgery as well as minimally invasive techniques including laparoscopy and robotics. She is committed to delivering high-quality, team-based and patient-centered care where she tailors personalized treatment plans for her patients using leading-edge techniques and multidisciplinary collaboration.

New urologic oncologists Jared M. Whitson and Avery Elizabeth Braun.

After obtaining her D.O. in medicine in 2017 from Ohio University Heritage College of Osteopathic Medicine in Athens, Ohio, Braun completed her residency in urology in 2022 at Einstein Healthcare Network, Philadelphia, Pennsylvania. That was followed by a fellowship in urologic oncology at UC San Francisco.

First annual California tobacco cessation summit held to address the leading cause of cancer

UC Davis Comprehensive Cancer Center Director Primo "Lucky" Lara Jr. opens the inaugural Tobacco Cessation Policy Research Center summit.

The Tobacco Cessation Policy Research Center (TCPRC) held its inaugural summit in late 2024. The event at the UC Center in Sacramento was an opportunity to learn, engage and network on tobacco cessation policy issues. More than 200 attended, including policymakers, researchers and partners in health care and education who work on tobacco-related issues.

The TCPRC is a community-academic partnership housed at the UC Davis Comprehensive Cancer Center. Its mission is to advance health care access, delivery, engagement and equity for tobacco cessation by conducting rapid response policy studies and training the next generation of cessation specialists.

"These key areas for existing and potential legislative policies for tobacco cessation are essential in order to make progress in lowering tobacco use," said Elisa Tong, director of TCPRC. "Cigarette smoking is responsible for a third of all cancer deaths and helping people quit saves lives."

The studies address health care access with community pharmacies, health care delivery with substance use disorder facilities, health care engagement on flavored tobacco product cessation, and health insurance reform.

Beverly Garber honored by the Greater Sacramento Smoke & Tobacco Free Coalition

Natividad Silva, left, coordinator for the Greater Sacramento Smoke & Tobacco Free Coalition, presents an award to UC Davis Health nurse practitioner Beverly Garber.

UC Davis Health nurse practitioner Beverly Garber was honored at the Greater Sacramento Smoke & Tobacco Free Coalition annual recognition event earlier this year. The event celebrates people who made a significant impact toward attaining a smoke- and tobacco-free community in 2024.

The Sacramento Smoke & Tobacco Free Coalition recognized Garber for organizing a free head and neck cancer screening event at the Shifa Community Clinic, a student-run clinic affiliated with UC Davis School of Medicine. The community event helped educate people about the signs, symptoms and risk factors for head and neck cancer. Free head and neck screenings were provided.

"I nominated Beverly for this award because, as someone with a clinical background, it warmed my heart to see a practitioner take the extra care to make sure the patients attending the head and neck cancer screening also had access to educational resources for prevention and treatment," said Natividad Silva, coordinator for the Greater Sacramento Smoke & Tobacco Free Coalition.

Garber is a certified tobacco treatment specialist and a nurse practitioner in the UC Davis Department of Otolaryngology – Head and Neck Surgery. She primarily works with cancer patients pre- and post-surgery and handles their follow-up care.

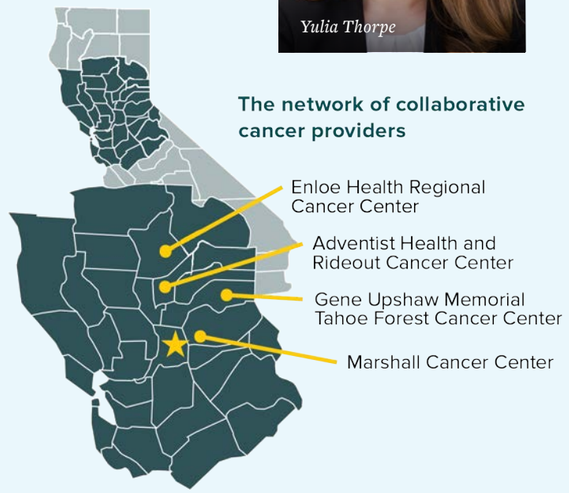
Yulia Thorpe appointed director of UC Davis Cancer Care Network

Yulia Thorpe

Yulia Thorpe has been named director of the UC Davis Cancer Care Network (CCN). Thorpe will manage the day-to-day operations of the CCN team and its relationship between UC Davis Health and affiliated cancer centers.

"We are thrilled to have Yulia join the CCN given her unique blend of successful business development experience, and personal commitment to extending outstanding cancer care to our entire region and particularly to underserved rural communities," said CCN Medical Director Edward J. Kim.

Thorpe, who has been with UC Davis Health since October 2021, worked first in strategic business development before bringing that expertise to affiliate networks.



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.

Would you like a topic covered?
Email us at **beatcancer@ucdavis.edu**.

Aggie Square: Catalyst for innovation

Stunning architectural angles and giant glass panes mark the foundation of something new and ambitious at UC Davis: a marriage of academic know-how and industry can-do.

Aggie Square is a first-of-its-kind $1 billion innovation district anchored by UC Davis and developed by Wexford Science + Technology of Baltimore, Maryland. The new 1.1 million-square-foot mixed-use facility encompasses commercial labs, classrooms, a residential tower and ground floor public space.

Fast-growing Sacramento becomes medical research hot spot

The sustainably designed "campus within a campus" is located near UC Davis Comprehensive Cancer Center on the vast UC Davis Health complex in Sacramento.

Think of Aggie Square as a living laboratory linking academic research with private industry and communities to help solve society's most pressing challenges.

A diverse lineup of researchers, technologies and programs moved into Aggie Square this summer, each bringing a unique focus and a shared belief in innovation with purpose.

As Sacramento's first "knowledge community," Aggie Square is where talent, industry and top-tier institutions connect, amplify and accelerate new discoveries.

Common ground leading to big ideas

Inside its state-of-the-art facilities, scientists share labs, open office spaces, communal kitchens and Wexford Science + Technology's Connect Labs — flexible, turnkey facilities for early-stage and growth companies. The 50,000-square-foot space offers access to wet labs, dry labs, offices and a comprehensive set of shared technical equipment. Classrooms, event space and publicly accessible meeting areas are also part of the mix.

The goal of Aggie Square is to encourage what the district's developer calls "intentional collisions." These are spontaneous encounters that spark new ideas and unexpected collaborations.

"Aggie Square is where the university transforms innovation into impact," said UC Davis Chancellor Gary S. May. "It represents our university's research, teaching and public service mission by bringing together the brightest minds in research with entrepreneurs, industry partners and neighbors, all in one place."

Aggie Square is expected to generate about $500 million in regional economic output and support 3,200 jobs annually when all phases are fully built.

Cancer research hub to advance discoveries at Aggie Square

UC Davis Comprehensive Cancer Center's new "cancer research hub" is where cancer care will be transformed through leading-edge, paradigm-shifting research.

Cancer center researchers already have a successful track record of bridging the gap between scientific discovery and clinical trials. The hub will accelerate progress through collaboration and teamwork. An interdisciplinary group of cancer center members will support the work at Aggie Square. This will include early-career, mid-career and senior-level faculty and research staff from across UC Davis.

"We are pushing the boundaries of innovation with Aggie Square," said UC Davis Comprehensive Cancer Director Primo "Lucky" Lara Jr. "The cancer center is proud to bring world-class researchers, industry leaders and entrepreneurs together to advance lifesaving science to the bedside, and we're excited about the potential for major medical breakthroughs."

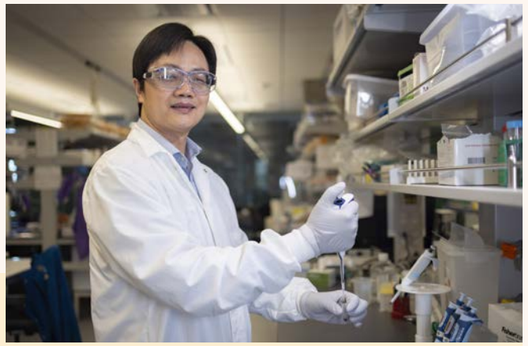
The hub will house many of the cancer center's highly innovative shared resources, including facilities for flow cytometry, a technique that uses laser technology to measure and sort cells. This enables researchers to identify cancer-related markers and monitor treatment responses.

"Being in close proximity to the shared resources at Aggie Square will make our work easier," said prostate cancer researcher Alan Lombard. "Additionally, the intellectual expertise that will be present will foster opportunities for new and exciting collaborations."

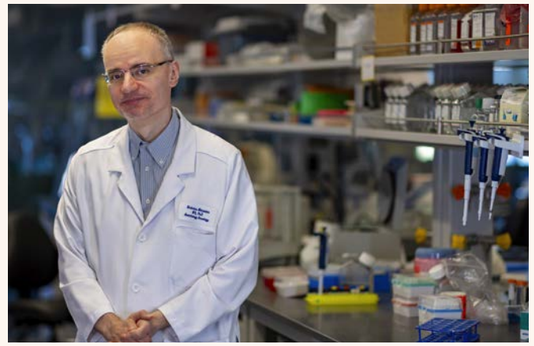
The cancer research team also routinely works with industry partners on early-phase clinical trials. Aggie Square will increase access to strategic partners within industry, academia and government, all working together on cancer drug and biomarker development.

Located at Aggie Square along with the core facilities are six laboratory teams and four cancer center offices:

- Office of Workforce and Leadership Development
- Tobacco Cessation Policy Research Center
- Office of Population Health
- Office of Community Outreach and Engagement



Yuanpei Li's lab is developing intelligent nanomedicine platforms and new therapeutics. These innovations show great promise to improve diagnosis and therapy in preclinical cancer models.



Nicholas Mitsiades is leveraging genomics and proteomics, including studying the role DNA, RNA and protein molecules play in cancer development. His goal is to advance novel targeted therapeutics and make them available to patients via biomarker-driven cancer clinical trials.

UC Davis researchers help decode the cause of aggressive breast cancer in women of color

Findings point to a biomarker that may give a “head start” to triple-negative breast cancer in Black women


Sanchita Bhatnagar

Triple-negative breast cancer (TNBC) is an aggressive breast cancer for which few treatment options are available. It is serious because it spreads quickly and has a high rate of recurrence.

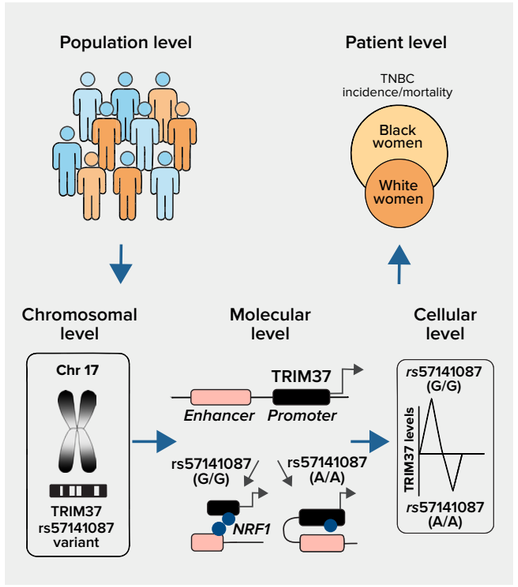
Black women are twice as likely as white women to be diagnosed with TNBC. They are also more likely to die from the devastating disease. The five-year survival rate for TNBC in Black women is only 14% compared to 36% in women from other racial backgrounds.

Multiple biological and socioeconomic factors are blamed for this higher risk. UC Davis Comprehensive Cancer Center researcher Sanchita Bhatnagar and her team have been working to get to the bottom of the genetic determinants of the racial disparity in TNBC. Results from their research were published in EMBO Reports in November 2024.

Unraveling the mystery

The Bhatnagar Laboratory team has been studying a protein called TRIM37 for over 10 years, ever since Bhatnagar discovered its role as a breast cancer-causing gene. The researchers are studying the protein encoded by that gene because it is associated with poor patient survival and resistance to chemotherapy.

Bhatnagar and her research team suspect it may hold the key to Black women developing and dying of TNBC at high rates. The study’s findings could help establish TRIM37 as a predictive biomarker, which eventually could improve TNBC diagnosis and prognosis in Black women.



TRIM37 is a genetic driver of aggressive TNBC in Black women. The risk variant rs57141087 is predominant in Black women and modulates TRIM37 levels.

The hunt for the biomarker

Bhatnagar, who is an associate professor with the UC Davis Department of Medical Microbiology and Immunology, said the missing link appears to be a predictive biomarker.

“We discovered that the TRIM37 variant known as rs57141087 is predominant in Black women and modulates TRIM37 levels,” Bhatnagar said. “Specifically, TRIM37 overexpression in early stages of triple-negative breast cancer promotes neoplastic transformations [tumor inception], accelerates tumorigenesis [tumor growth] and drives cells into malignancy [spread of cancer].”

Essentially, the presence of tumors in a patient with high levels of TRIM37 protein indicates poor prognosis and overall survival, and greater likelihood of metastasis.

Increased early-stage TRIM37 levels appear to give cancer cells a “head start,” accelerating the disease trajectory and compromising outcomes.

Findings reveal key variant

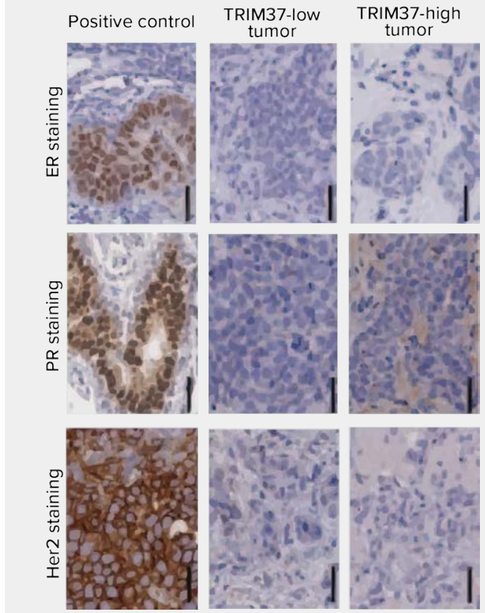
In this latest research, Bhatnagar’s lab showed that cancer-free breast tissue from Black women expresses a relatively high level of the protein, which predisposes them to development of aggressive disease. The rs57141087 variant might be the reason why.

The researchers’ meta-analysis of data from 319 patients revealed TRIM37 expression in early histological stage 1 TNBC tumors that was about 1.63 times higher in Black women than in white women, which was not the case for stages 2–4.

The findings showed Black women with TNBC tumors expressing high TRIM37 had a median survival rate of about 114 months (9.5 years) while white women had a median survival of about 245 months (20.4 years). Notably, no significant differences in overall survival were observed between Black women and white women who had low TRIM37-expressing TNBC tumors.

The team previously engineered a novel TRIM37 targeting approach. They implanted a TRIM37-specific, synthetic RNA-based inhibitor in living cells by means of small vesicles, tiny substance-containing capsules called nanoparticles. A patent for targeting TRIM37 using nanoparticle delivery mechanisms is pending.

Representative immunohistochemical images



Representative immunohistochemical images of estrogen receptor, progesterone receptor, and Her2 for the tumors isolated from the mouse model for the study.

OTHER AUTHORS:

Along with Bhatnagar, other UC Davis Comprehensive Cancer Center contributors include Laura Fejerman, Jogender Tushir-Singh, Xiaoson Huang, Hong Li and Jie Li. The lead authors include Rachisan Tihagam, a graduate student, and Song Lou, a project scientist in the Bhatnagar Lab. Piotr Przanowski, who was a member of the Bhatnagar Lab when it was located at the University of Virginia, also contributed to the research.

This project provided research opportunities to UC Davis undergraduate students Kammi Song-Yan Liu and Bon Il Koo as well. Arjun Tushir Singh, a senior at Davis High School, was also involved with the study as part of a high school science program hosted by the UC Davis Department of Medical Microbiology and Immunology.

Do you want to help find a cure for cancer? Donate your leftover lab samples

Universal Consent Registry advances science and allows patients to make a difference


Shehnaz Hussain

UC Davis Comprehensive Cancer Center is making it easier for patients to contribute lab samples to support cancer research. The cancer center and the Clinical and Translational Science Center have created a Universal Consent Registry, a secure database of patients who have opted into the program. The registry is designed to boost prospective research, which follows patients over time.

"Any patient that comes to the cancer center has the opportunity to sign an informed consent form that gives our researchers permission to access any leftover biospecimens and data from their care," said Shehnaz K. Hussain, professor and associate director of Population Sciences. "The patient doesn't have to do anything beyond signing the form. Everything is taken from routine care."

How the registry works

The data and samples of patients who opt in and grant permission can be used for cancer research if they meet a study's requirements. This can include cancer type, tumor characteristics or treatment received.

For instance, a researcher could be interested in a protein biomarker that might predict triple-negative breast cancer patients' risk of recurrence. The registry would give them access to samples and data from all triple-negative patients who consented.

Using these resources, the researcher would investigate whether that biomarker can accurately predict outcomes. Work like this could ultimately give oncologists and patients better tools to determine how aggressively to treat each unique cancer.

"If a patient has signed on to the consent registry, and their diagnosis meets the requirements for a specific study, we can flag their blood or other specimens to be saved for research," said Hussain. "Otherwise, the samples are only used for standard clinical care and then discarded."

The data and samples of patients who opt in and grant permission can be used for cancer research if they meet a study's requirements.

who might qualify for their studies. Each patient was asked individually for their consent and then had to submit to collection of new specimens for analysis.

The approach was labor-intensive and more intrusive for patients. The Universal Consent Registry streamlines the process for patients as well as for scientists, and gives researchers more immediate access to samples, which could accelerate their work and ultimately improve care for cancer patients.

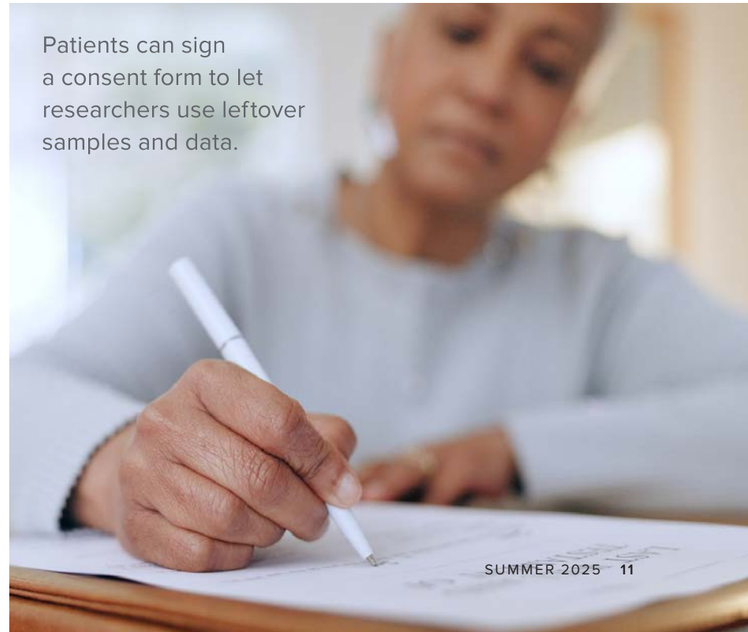
"When people have signed the consent, it gives our researchers a pool of patients who directly contribute to their work," said Hussain. "If an investigator wants to study a very rare form of cancer, we look at the registry, and perhaps we can find 20 patients who meet the criteria. Over time, the registry will build, and that will provide more research opportunities. Eventually, we plan to expand it beyond the cancer center to other areas in UC Davis Health."

Preserving privacy

Patient privacy is one of the highest priorities for the registry, and the cancer center has developed rigorous protocols to ensure it is never violated. An expert committee reviews each request. If approved, the medical informatics team, led by Nick Anderson, the Robert D. Cardiff Professor of Informatics and director of Informatics Research, securely delivers the data to the research team.

"Anytime an investigator needs patient data, the informatics team acts as an honest broker," said Hussain. "They transmit that data but do not release any information that might identify the patient."

This is a highly efficient way to support cancer research. Before the establishment of the registry in August 2024, investigators often hired research coordinators to identify people


Patients can sign a consent form to let researchers use leftover samples and data.

Career development program advances cancer research by building bench strength

Four UC Davis Health scholars received a Paul Calabresi Career Development Award for Clinical Oncology to conduct research at the cancer center. Intended to increase the number of clinician scientists trained in clinical and translational cancer research, the funding comes from a National Cancer Institute K12 grant.

The career development program began in 1991. It was designated in honor of the late Paul Calabresi, a pioneering oncologist who led the development of cancer drugs. Calabresi was the former chair of the Cancer Advisory Board at the National Cancer Institute.

Scholars are selected by individual cancer centers through a rigorous process. They are expected to develop their own investigator-initiated clinical trial during a training period.

"This is a high-impact program to nurture patient-oriented cancer researchers early in their career to become independent investigators," said UC Davis Comprehensive Cancer Center Director Primo "Lucky" Lara Jr. He is the program director and principal investigator for the grant-funded project.

The mentored research training plan will be supervised by two senior, independently funded faculty members (one basic-translational mentor and one clinical mentor). They will guide participating scholars in the development and conduct of their research projects.

Selected scholars will receive 75% protected time for research and formal mentored training in clinical cancer research. They will also receive $100,000 per year (for up to three years) to support salary and benefits, and $13,000 per year (for up to three years) for research and travel expenses.

The cancer center uses the program to train junior faculty (basic or translational scientists and clinician scientists) as investigators in team-based, patient-oriented cancer research. Upon successful completion of a three-year, salary-supported core curriculum, scholars receive a UC Davis Comprehensive Cancer Center Certificate in clinical cancer research.

TRAINEE	MENTORS	PROJECT
Surbhi Singhal	David Gandara, Jonathan Riess	A novel plasma proteomic biomarker to predict treatment efficacy of immune checkpoint inhibitors among older adults and patients with refractory non-small cell lung cancer
Shiruyeh Schokrpur	Jonathan Riess, Xiao-Jing Wang	Using novel preclinical models of lung squamous cell carcinoma to guide breakthroughs in combination immunotherapies
Ebaa Al-Obeidi	Edward J. Kim, Aiming Yu	Signed in blood: Plasma circulating tumor DNA kinetics as an early biomarker of treatment response and disease
Siao Yi Wang	Xiao-Jing Wang, Andrew Birkeland	Recurrence improving a cell-based immunotherapeutic model from patient-derived head and neck squamous cell carcinoma through modulation of the tumor microenvironment in pancreatic cancer

First-ever Cancer Leadership Academy launched

UC Davis Comprehensive Cancer Center has launched its inaugural Cancer Leadership Academy this year with seven participating fellows. The 18-month academy prepares aspiring faculty to become highly effective leaders in the future.

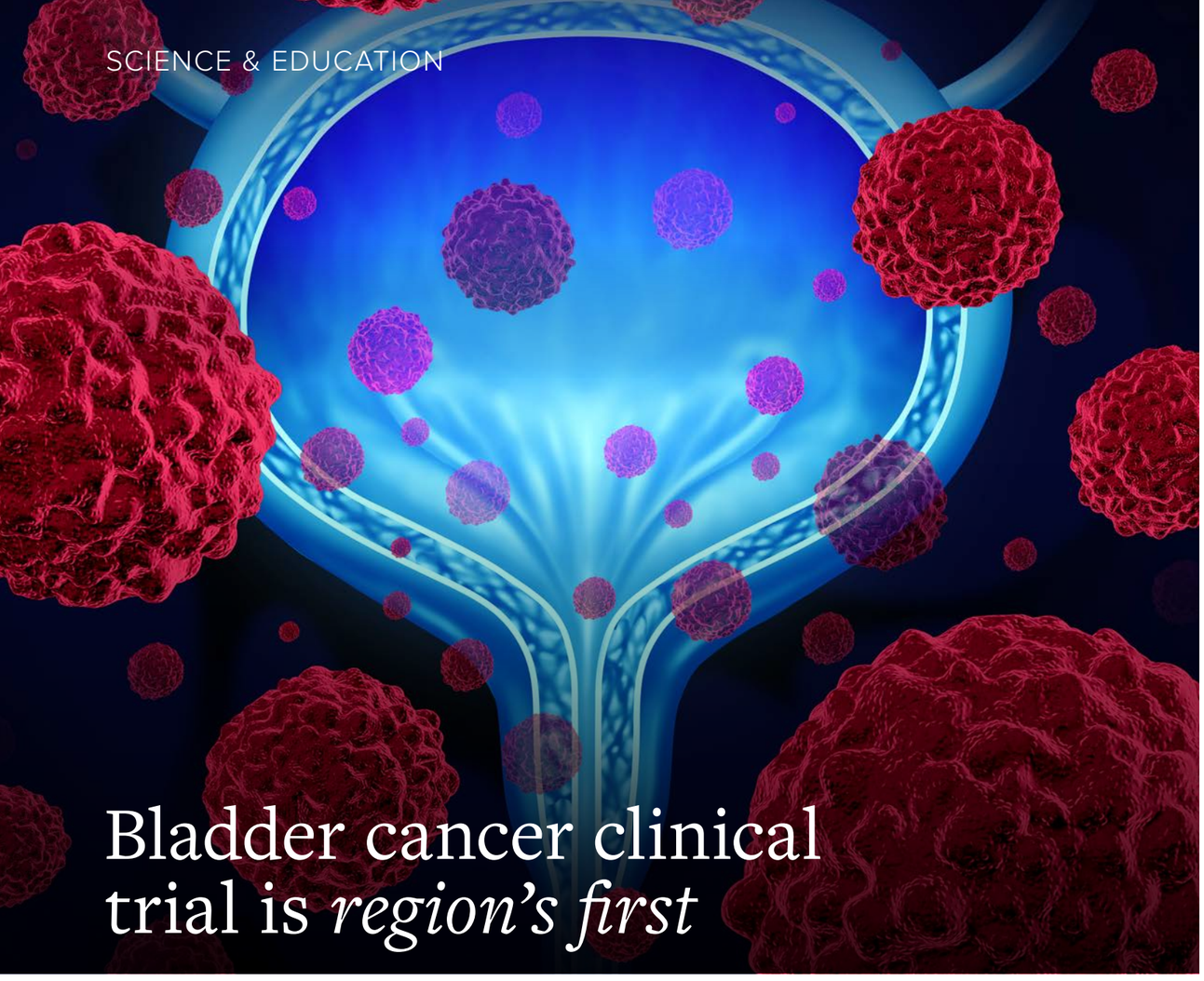
The academy uses individualized mentoring, lectures, group mentoring sessions and professional coaching. Fellows enrolled in the program apply knowledge and skills to respond to a real-world cancer problem in which they must demonstrate proficiency through a capstone project.

"Our vision is to cultivate and empower a community of cancer researchers, clinician scientists, and clinician educators as inclusive leaders who will confidently guide and expect innovation within the center and will advance health fairness to the benefit of the surrounding communities," said Frederick J. Meyers, associate director of the cancer center's Cancer Research Training and Education Coordination and director of the Office of Education, Training and Workforce Development. "We need to inspire the next generation cancer health leaders."

With support from cancer center Director Primo "Lucky" Lara, Jr. and Physician-in-Chief David Tom Cooke, Meyers will lead the academy with Laura Fejerman, director of the Office of Community Outreach and Engagement.

The inaugural Cancer Leadership Academy cohort of early-stage to mid-career faculty includes:

- **Shuchi Gulati**, Hematology and Oncology
- **Sanchita Bhatnagar**, Medical Microbiology and Immunology
- **Randy Carney**, Biomedical Engineering
- **Alan Lombard**, Urologic Surgery, Biochemistry and Molecular Medicine
- **Cameron Gaskill**, Surgical Oncology
- **Janai Carr-Ascher**, Medical Oncology
- **Miquell Miller**, Colorectal Surgery



Bladder cancer clinical trial is *region's first*

UC Davis Comprehensive Cancer Center is the first in the region to offer a new groundbreaking clinical trial for bladder cancer patients.

The innovative treatment could reduce significant stress for patients who have intermediate-risk non-muscle invasive bladder cancer (IR-NMIBC) by increasing their options for treatments to preserve their bladder. Before this trial began, about 70% of these patients could only "watch and wait" and hope that their cancer did not return.

A surgical procedure called transurethral resection of the bladder tumor to remove cancerous cells is the most common method of treating IR-NMIBC. But despite use of medication to suppress future tumor growth, many of these bladder cancer patients experience cancer recurrence.

Monitoring for any recurrence of cancer requires patients to undergo cystoscopy periodically. This involves inserting a tiny video camera through a tube into the urethra and bladder every 3–6 months to check for cancerous tumors.

Researchers test virus engineered to kill cancer cells

UC Davis is one of a handful of sites across the country trying something new for bladder cancer patients. The PIVOT-006 clinical trial will test the effectiveness of cretostimogene grenadenorepvec (cretostimogene) with IR-NMIBC patients.

Cretostimogene is a laboratory-altered virus designed to target and kill cancer cells. It is unique because it can replicate within bladder cancer cells and then trigger an anti-tumor response. This means it destroys cancer cells while sparing normal, healthy cells.

"We are excited to participate in this nationwide clinical trial. The results will provide crucial data to determine if cretostimogene can help reduce recurrence and improve survival rates for our patients with this type of bladder cancer," said Thenappan Chandrasekar, a urologist and associate professor with the UC Davis Department of Urologic Surgery. Chandrasekar is leading the PIVOT-006 clinical trial at UC Davis Health.

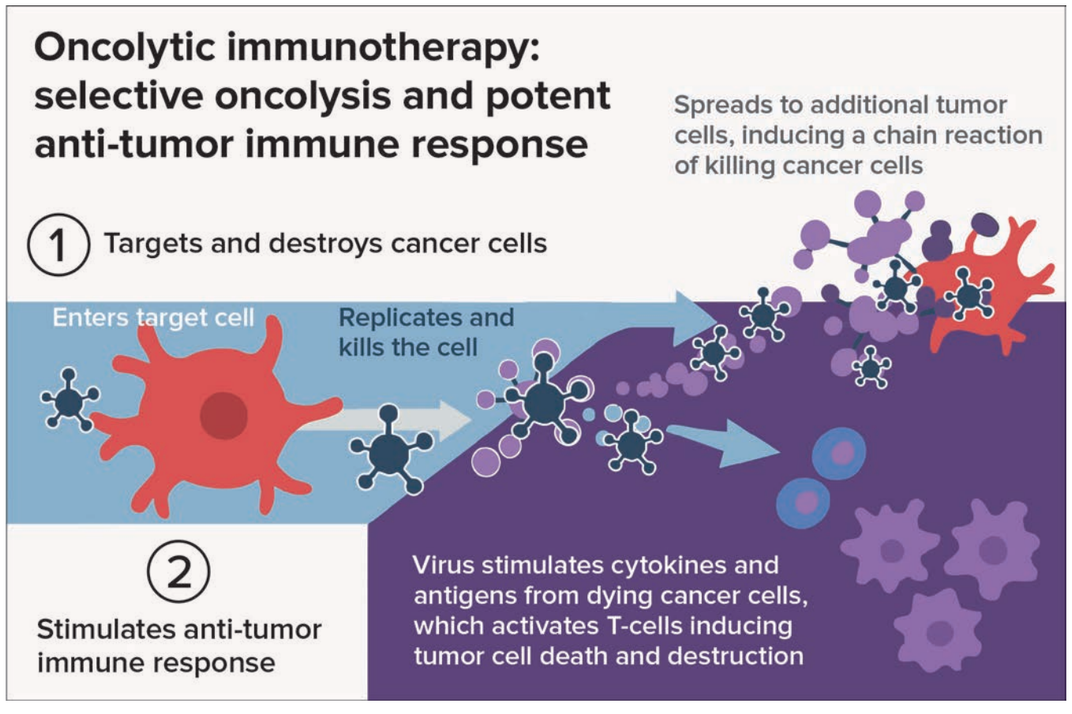
Clinical trial may make big strides in creating treatment alternative

In the past, a drug therapy called Bacille Calmette-Guerin that comes from a form of the tuberculosis vaccine has been used in IR-NMIBC patients to try to activate the immune system to attack the cancer. However, the live vaccine has been in short supply for many years due to stringent manufacturing requirements. As a result, only a small percentage of IR-NMIBC patients can access the drug.

> "We are hopeful that this will allow us to do much more than monitor for recurrence and actually give us a fighting chance to stop the cancer in its tracks."
>
> —THENAPPAN (THENU) CHANDRASEKAR, ASSOCIATE PROFESSOR, DEPARTMENT OF UROLOGY

The phase 3 PIVOT-006 study in which UC Davis is participating is a randomized trial. It's designed to assess whether adding cretostimogene therapy after surgery improves patient outcomes compared to surgery alone. If successful, this therapy could offer a new, more effective treatment option for patients struggling with this stubborn cancer.

"This could represent a major step forward in addressing the unmet medical needs of these patients," Chandrasekar said. "We are hopeful that this will allow us to do much more than monitor for recurrence and actually give us a fighting chance to stop the cancer in its tracks."



Clinical trials expand to serve more cancer patients

New cancer treatments, such as the use of immune checkpoint inhibitor drugs (immunotherapy) and targeted therapies, are significantly increasing patient survival rates. Advanced genomic diagnostics are providing more information about tumors to guide care. New ways to apply existing therapies are reducing treatment burdens on patients and families.

These advances often start in academic medical centers such as UC Davis Comprehensive Cancer Center, where they undergo rigorous clinical trials to document their safety and efficacy.

"There's a lot of really exciting work going on in oncology right now, and clinical trials are a major part of that," said Megan Daly, associate director for clinical research at the cancer center. "Immunotherapy alone has extended lives by many years. In some cases, patients enrolled in clinical trials have gotten access to groundbreaking therapies well ahead of the curve."

UC Davis Comprehensive Cancer Center has been expanding its clinical trials program to give patients more options. In 2024, the cancer center enrolled more than 350 patients in various studies, up from around 300 in previous years.

"We expanded our trials in areas where we had many patients who didn't have an available trial," said Daly. "By systematically reviewing our portfolio we identified those gaps and are actively finding trials for those patients."

What clinical trials do

Clinical trials are rigorous studies that test new treatments, diagnostics or other aspects of care. The goal is to find better ways to help cancer patients. Over the past 50 years, almost every cancer care advancement was validated through clinical trials.

Trials are generally divided into three phases. Phase 1 studies are intended to determine safety and, if testing a therapy, to identify the most appropriate dose. Phase 2 trials are larger studies that involve more participants and focus on both safety and efficacy. Phase 3 is often the pivotal trial that determines whether the intervention can receive FDA approval.

"Randomized phase 3 trials are what bring new therapies to us," said Daly. "At the same time, they are also how we avoid implementing therapies that don't work. A negative trial helps us avoid approaches that may not be better for patients."

The cancer center's clinical trials come from numerous sources. Some are investigator-initiated, with UC Davis scientists advancing new ways to improve care. Others come from research collaborations, such as cooperative groups. Examples include the Southwest Oncology Group (SWOG), NRG Oncology (National Radiation Group) and the University of California Cancer Consortium. Others are sponsored by life sciences companies to test their drugs, devices or diagnostics.

Even before a new approach enters a clinical study, it must undergo years of lab testing to ensure its safety. From there, the cancer center rigorously oversees clinical trials to protect participants by means of the Institutional Review Board, a scientific review committee, disease-specific teams and other groups.

While some patients may worry about inadvertently being assigned to a group receiving only an ineffective placebo substance, that is never the case. In randomized trials, a new therapy is typically tested against the existing standard of care. Clinical trials are carefully designed to ensure that everyone receives effective care.

"The investigators at UC Davis, or any NCI-designated cancer center, take clinical trials incredibly seriously," said Daly. "There are many safeguards for patient safety and privacy. Also, by taking part in a trial, participants often get an extra layer of support from the clinical trial team."

Making trials easier for patients

UC Davis has a huge patient catchment area, extending from the Central Valley north to Oregon and east to Nevada. As a result, many patients must travel long distances to participate in a trial. The cancer center is testing ways to lessen this burden. The team recently sponsored several trials involving fewer visits to study high-dose, ablative radiation to precisely target tumors.

> "We expanded our trials in areas where we had many patients who didn't have an available trial."
>
> —MEGAN DALY, ASSOCIATE DIRECTOR FOR CLINICAL RESEARCH

"We tried to minimize the extra visits to make this available to as many patients as possible," said Daly. "We specifically limited additional imaging studies or blood draws and tried to keep the data collection easy. These trials have been quite popular, and the patients coming from several hours away are excited to take part because there are no extra visits on top of what they would do for standard of care."

Patients who live far away from the cancer center also are gaining access to clinical trials through the UC Davis Cancer Care Network (CCN). Enloe Health in Chico, which recently became a CCN affiliate, is making leading-edge clinical trials more accessible to rural residents in the northern part of the state. Other affiliates are located in Marysville, Cameron Park and Truckee.

Another way to improve cancer care is to de-escalate treatments without sacrificing efficacy. Hodgkin lymphoma is a good historical example. Early chemotherapy and radiation regimens were effective but toxic. However, in a series of trials, chemotherapy and radiation doses were reduced to make treatment safer and equally effective, leading to excellent outcomes for most Hodgkin patients today.

"We should always be asking if we are providing the best possible treatments in the best possible ways," said Daly. "Can we lower the radiation dose or the number of chemotherapy infusions? Can we still maintain high cure rates for low-risk patients with slightly reduced schedules?"

Megan Daly, associate director for clinical research

Clinical trial shows biomarkers hold clue in treating aggressive prostate cancer

Many men with aggressive prostate cancer can experience a high rate of recurrence despite treatment.

A new phase 2 clinical trial at UC Davis Comprehensive Cancer Center unveiled clues as to why these patients are doing poorly and may offer hope in the form of targeted therapy.

The findings were presented at the annual American Society of Clinical Oncology conference on June 3 in Chicago.

Pilot trial sheds new clues

UC Davis Comprehensive Cancer Center is testing a drug called niraparib (Zejula), given before prostate cancer surgery. Researchers think it could enable more personalized treatments — especially for men with prostate cancer that has specific DNA repair gene mutations.

The pilot trial looked at whether giving the PARP inhibitor niraparib before surgery could help prevent cancer from returning in men with aggressive prostate cancer.

A total of 11 men with high-risk prostate cancer and certain biomarkers, specifically gene mutations, took part in the study. Each patient received 200 mg of niraparib daily for 90 days before undergoing surgery.

The study group had a median age of 68 years and a median prostate-specific antigen (PSA) at diagnosis of 10.7 ng/mL. Genetic alterations included germline mutations in BRCA2, MSH6 and CHEK2, and somatic mutations in ATM, SPOP, KMT2C and KMT2D, among others. Germline mutations in DNA are inherited while somatic mutations happen after conception.

Outcome shows the complexity of prostate cancer

While the drug didn't dramatically shrink tumors before surgery, the study showed the potential of using genetic testing and blood-based monitoring to better understand and track prostate cancer. Notably, circulating tumor DNA (ctDNA) biomarker analysis proved useful in tracking tumor evolution and resistance mechanisms in real time. The term ctDNA is small fragments of DNA that cancer cells release into the bloodstream.

"This study shows how complex prostate cancer can be, especially in men with certain gene mutations," said Marc Dall'Era, chief of UC Davis Health's Department of Urologic Surgery and lead researcher. "Although responses were variable, especially in patients with BRCA2 mutations, this study points to ctDNA as a promising tool to identify who might benefit from targeted neoadjuvant therapies."

The research team is now continuing to analyze the data to better understand why some cancers resist treatment and how to design future therapies that are more tailored to each individual.

Other researchers included Primo Lara Jr., Nicholas Mitsiades, Mamta Parikh, John McPherson and Kenneth Iczkowski, Irene Mitsiades and Aedric Lim.

Wheat germ may boost immunotherapy

Clinical trial is testing an extract that could unlock the body's natural ability to fight cancer.

Many cancer patients are fearful of undergoing treatment because they've heard about the difficult chemotherapy and radiation side effects that commonly occur.

UC Davis Comprehensive Cancer Center is working on alternative therapies as it cares for cancer patients. The hope is to not merely help people endure cancer treatment but to help them beat cancer and live full lives.

One source of promise may be a natural product that has been around a long time and often is a staple in "health food" diets.

It's fermented wheat germ and it's being examined in a whole new way, thanks to basic research and a clinical trial underway at the cancer center.

Turning something old into something new and exciting

A unique cancer clinical trial is being pioneered by oncologist Joseph Tuscano, who specializes in leukemia, lymphoma, multiple myeloma and other cancers of the blood. He's also the director of stem cell transplantation and cellular therapy at UC Davis Health.

Tuscano has received local and Veterans Administration funding to better understand how wheat germ may augment a patient's immune response. He is conducting a clinical trial testing the benefits of the nutritional supplement fermented wheat germ extract.

Wheat germ is the healthiest part of the wheat kernel, containing protein, fiber, healthy fats, antioxidants, and various vitamins and minerals. Although humans have consumed wheat germ for centuries, it wasn't until the 1990s that a chemist, Máté Hidvégi, first began using a fermented form to treat cancer patients in Hungary. The biochemist is the co-inventor of a patented fermented wheat germ extract-based nutraceutical.

Evidence comes home

"I stumbled upon fermented wheat germ serendipitously," Tuscano said. "One of my patients, a very smart aeronautical engineer-turned-winemaker, developed a particularly deadly form of lymphoma called mantle cell lymphoma. He feared the toxicity of conventional therapy even though he was excited about immunotherapeutics we were working on at UC Davis Comprehensive Cancer Center."

Immunotherapeutics are a promising class of treatments harnessing the body's own immune system to fight cancer. Checkpoint inhibitors are used in delivering immunotherapy. They work by turning off proteins that block a person's T-cells from attacking and killing cancer cells.

Tuscano said while he treated his patient, Norman deLeuze, with immunotherapies at the cancer center, the patient traveled the world looking for alternative therapies.

One day his patient came back and tests showed his lymphoma was shrinking.

Norman deLeuze (courtesy of ZD Wines)

"I asked Norman what he was taking, and he said fermented wheat germ product from Hungary," Tuscano said. "That was 2007 and let's just say my interest was sparked. I wanted to learn more. What I found out was that there wasn't a lot of research that had been done."

To the lab to find out more

The fermented wheat germ that was used in Hungary was a crude product. And there weren't many rigorous studies examining exactly how it worked. So, Tuscano set out to test fermented wheat germ extract in the laboratory with models of human cancer.

"It really did kill the cancer cells in the tissue culture dish, as well as in animals with cancer," Tuscano said. "These components directly kill cancer cells, but they also enhance the immune system."

Tuscano's patient began helping to raise money to fund the research because alternative research is very difficult to get funded, primarily because it's not mainstream medicine.

Unfortunately, after an unexpected remission, deLeuze eventually lost his cancer battle but he far outlived expectations.

Thanks to the deLeuze family, over $1 million has been generated to support the wheat germ research.

"What we found is that it not only helps to kill lymphoma cells, which was my primary interest, but it also appears to have the potential to kill colon, breast, lung and other malignancies and with little toxicity," Tuscano said.

Fermented wheat germ extract is also inexpensive.

The Veterans Administration gets behind the research

A clinical trial underway at UC Davis Comprehensive Cancer Center is funded by the deLeuze family and the Veterans Administration. Researchers are studying the immune effects of fermented wheat germ extract in patients with advanced cancers of the colon, bladder, breast and kidney as well as melanoma who are being treated with checkpoint inhibitors.

"We're getting close to identifying the active components in the fermented wheat germ, which would create a new drug that could be applied to many different types of cancers being treated with checkpoint inhibitors," Tuscano said.

The product has thousands of proteins and peptides. Tuscano explained that he is trying to whittle the science down to understand the specific mechanisms that make the fermented wheat germ work and why it causes so little toxicity.

"We're giving patients the wheat germ for a few weeks and then we're studying their immune system before and after, Tuscano said. "The reason we are giving it to immunotherapy patients is that we know their own immune system mediates a response and we believe the fermented wheat germ may augment the immune response in these patients."

The gut could hold the key

"The secret of fermented wheat germ could lie in the microbiome of the gastrointestinal tract, which is critical for not only regulating the immune system, but also modulating the ability to repair cells," Tuscano said. "I believe that this fermented wheat germ product probably modulates that microbiome and in turn augments the immune response to help fight cancer."

Using animal models, Tuscano and his team found that fermented wheat germ enhanced the immune response in animals with cancer. It was able to kill the cancer when paired with traditional immunotherapies which they found works as well as, or better than, standard chemotherapy without toxicity.

As part of the research, some animal subjects received immunotherapy alone, some were given the wheat germ alone, and some received the wheat germ with the immunotherapy.

"When we compared them all to see who had the highest cure rate, we found that the highest cure rate was with the immunotherapy and the wheat germ. That rate was also better than the standard chemotherapy," Tuscano said.

The hope is that chemotherapy may someday be eliminated. And, in its place, cancer patients will see a better remission from it. And it may be a lot cheaper, too.

"My friend and patient Norman deLeuze would be pleased to see how far we have come," Tuscano said. "The clinical trial is proof that our greatest inspirations come from our patients."

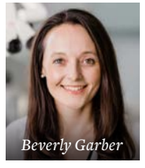
To learn how to enroll in the fermented wheat germ clinical trial, visit **health.ucdavis.edu/patients-visitors/clinical-trials/** or call **916-734-0565**.

The protocol

Each day, patients receive fermented wheat germ orally, beginning three days prior to the start of standard-of-care checkpoint inhibitor therapy. This continues for days 1–56 for eight weeks. Patients undergo blood sample collection during screening, on days 1, 4, 15, 43 and at the end-of-treatment visit. Patients undergo stool sample collection during screening, days 1, 4 and at the end-of-treatment visit. After completion of study treatment, patients are followed up to 90 days.

Child life services are *lifelines* **for parents with cancer**

When a cancer specialist became a patient herself, her daughter struggled until receiving help from UC Davis child life services.


Beverly Garber

Parents of young children who are diagnosed with cancer are naturally concerned about how to convey that news in a way that will help their youngsters cope emotionally.

Beverly Garber is a nurse practitioner with the Department of Otolaryngology – Head and Neck Surgery at UC Davis Health. After continually caring for patients with cancers, she was shocked in 2022 when she became a cancer patient herself.

Garber said she was blindsided by a stage 2 breast cancer diagnosis following her first mammogram at age 41.

"As a nurse practitioner caring for patients with cancer, telling them they have cancer has never been easy but that was something I became accustomed to in my day-to-day work," Garber said.

Suddenly, she was the patient hearing the words, "It's cancer."

Garber was diagnosed with invasive lobular carcinoma, the second most common cause of breast cancer. She knew enough about the disease to be aware that it was treatable but unique. Its specific biological makeup requires extensive therapeutic strategies.

Treatment would include surgery, eight cycles of chemotherapy and five weeks of radiation.

Beverly and her daughter, Gwen

Her mother had completed breast cancer treatment a few years prior. Garber knew what to expect.

"Because I worked at UC Davis Health, I knew I would get the best care," Garber said. "I felt confident that my team of oncologists at UC Davis Comprehensive Cancer Center would give me the best chance at beating the disease."

But what about the impact to her family?

Garber said while she knew that she was in the right hands and felt prepared for the all-encompassing treatment ahead, she wasn't so sure her then 8-year-old daughter, Gwen, was ready to witness the effects of the treatment.

"I knew what it would take to get through treatment because I watched my mother go through treatment. I also coached my patients on what was necessary: resilience, courage and strength," Garber said. "Watching others go through their cancer journeys with bravery showed me that I, too, could handle it."

Garber said her focus turned to what she could do to prepare her family and especially her daughter for the life-altering experience of having a parent with cancer.

Daughter's reaction

"Gwen didn't seem worried about the surgical drains, incisions and the chemotherapy port that was implanted. In fact, she seemed to like playing nurse," Garber said.

But when Garber lost her hair, she said her daughter wanted nothing to do with it.

"She favored her dad taking her to school instead of me and asked that I wear a hat to hide my hairless head anytime I was in public, or near her friends. Sometimes she even wanted me to wear one at home. This was unexpected, and it stung a little," Garber said.

But then something magical happened.

Child life specialists to the rescue

As Garber was contemplating how to help her daughter accept the changes she was experiencing, she received an email message from Emily McDaniel, a child life specialist with the UC Davis Child Life and Creative Arts Therapy Department.

McDaniel manages the cancer center's Parenting Through Illness program, which offers support and resources to children who have a parent undergoing cancer treatment.

"Experiences related to a parent's cancer affect the whole family. These situations can challenge a child's natural ability to cope," McDaniel explained. "Parents are often thinking about how to best share information and best support their children as they go through cancer treatment. In my one-on-one work with parents and children, I focus on communication, connection and coping skills that support the whole family."

The support is designed specifically for families and children who are affected by a parent's cancer diagnosis and treatment.

McDaniel provided Gwen a safe space with other children her age to talk about their worries and their questions. Garber said it allowed her daughter to be a kid and feel special.

"Emily also helped me understand Gwen's reaction to my hair loss," Garber said. "She explained that Gwen likely just wanted me to look like the same mom she saw every day before."


Gwen Garber having fun at Camp Kesem with her UC Davis student camp counselors.

McDaniel explained that at Gwen's stage of development, she probably didn't want to stand out or be different and instead wanted her mother to look like her friends' moms, who weren't bald.

"This allowed me to not overact or personalize Gwen's reaction, and to empathize with her," Garber added.

Resources for parents undergoing cancer treatment

The cancer center has many resources available on its website for parents with cancer. The informative materials include a "Parenting Through Illness" booklet containing specific advice and suggesting words to use with children to tell them about a cancer diagnosis, tailored to the age and stage of cancer care or treatment.

In addition to identifying resources, McDaniel told Garber and Gwen about Kesem, which means "magic" in Hebrew. Kesem is a nationwide nonprofit organization that conducts support services and free summer camps for children who are affected by a parent's cancer. Locally, the camps are staffed by college students, and UC Davis hosts a student-run camp every summer.

UC Davis Camp Kesem

The UC Davis Camp Kesem that Gwen attended in the Sierra Nevada foothills opened a world of fun, wonder, kindness and joy for her. Campers spend time with other kids who are going through similar experiences.

Gwen has participated in Camp Kesem twice and plans to return each summer. She is even talking about becoming a camp counselor one day.

"I like Camp Kesem because I make new friends and it helps me feel like I'm not alone," Gwen said.

Because cancer imposes a financial burden on families, Camp Kesem raises money throughout the year to present the summer camp free of charge for children whose parents have or have had cancer. Email **davis@kesem.org** for information on how to become involved.

Breast Cancer Survivorship Clinic opens

UC Davis Comprehensive Cancer Center has opened a Breast Cancer Survivorship Clinic, the first in the region. The clinic offers guidance in mental wellness, physical functioning, fertility, nutrition and other aspects of health for breast cancer survivors.

Located at the UC Davis Health medical offices at 3301 C Street in Sacramento, the new clinic is open to all breast cancer survivors.

"We are thrilled to be able to offer comprehensive care and personalized support for breast cancer survivors," said oncologist Mili Arora. "Our clinic focuses on improving long-term health outcomes and quality of life of the patients we treat. We look forward to real-time feedback from patients who participate in the clinic in order to enhance our personalized services."

Arora and Chief of Breast Radiology Shadi Aminololama-Shakeri and breast cancer surgeon Candice Sauder collaboratively administer the Breast Cancer Survivorship Clinic. Nurse practitioners Tara Martinez, Alana Rothman and Mariya Ryazantseva also contributed to the launch of the clinic, along with Melissa Soderlund, clinical director of oncology services.

For more information on the Breast Cancer Survivorship Clinic, please call **916-734-5959** or **800-770-9261**.

'Caregivers Corner' helps those supporting a loved one with cancer

Family caregivers provide essential support during all stages of someone's cancer journey, which is why UC Davis Comprehensive Cancer Center has started a new group called the Caregivers Corner.

"If you are caring for someone with cancer, the Caregivers Corner is a place to gain information and support to strengthen and sustain you," explained Sarah Conning, an oncology social worker, who is helping to facilitate the group. "We are in your corner!"

The free group meetings are held on the second Wednesday of every month, from 3:00 to 4:15 p.m. via Zoom.

The sessions will focus on topics related to:

- Communication
- Symptom management
- Role changes
- Decision-making
- End-of-life concerns
- Grief and loss

"Studies show that the number of family caregivers increased by six million between 2011 and 2022, and the population over the age of 85 is estimated to triple by 2050," said Megan Ober, an oncology nurse who partnered with Conning to launch the new support group. "Our hope is that the Caregivers Corner will play a part in addressing this growing need."

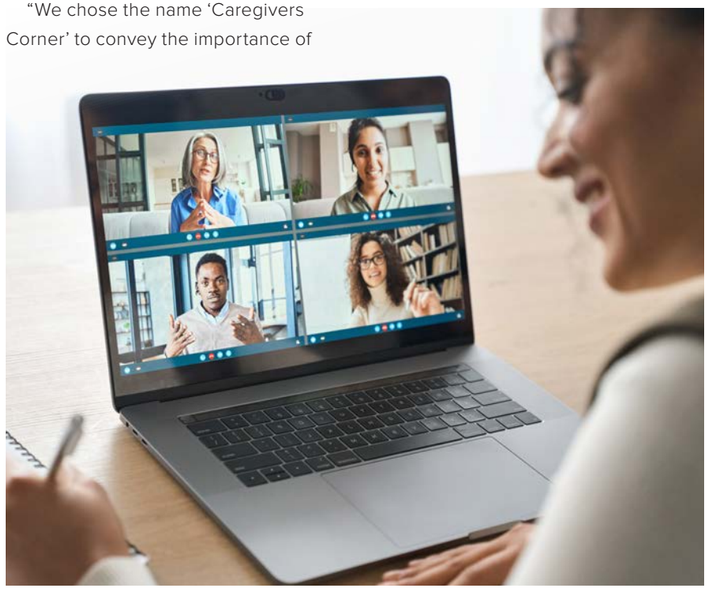
Ober said it is rewarding to see vulnerable conversations and intimate connections surface in the group when caregivers realize they are not alone. The forum allows caregivers to share their feelings and experiences without concern that their loved ones will hear and react.

"We chose the name 'Caregivers Corner' to convey the importance of carving out a special space and time — even if it is just a small spot in the corner — for caregivers' wellbeing," Conning said. "As we know, finding time for oneself can be one of the biggest challenges in caregiving."

The group is open to caregivers of adult patients. Note: Caregivers are not limited to family members, and include anyone regardless of biological or marital relationship to a cancer patient.

Caregivers are invited to attend when they can. A one-time registration is the only requirement.

Caregivers Corner registration link can be accessed via **ucdavis.co1.qualtrics.com/jfe/form/SV_8evIoOaQB61uuCq**.



Survey details cancer burden across inland Northern California

Every five years, UC Davis Comprehensive Cancer Center conducts a survey to gain valuable insight into the cancer burden among communities within the diverse region it serves. The findings inform future research projects, public health initiatives and policy development aimed at reducing cancer disparities and improving outcomes.

Called the catchment area population assessments (CAPA), the survey is a collaboration between the cancer center's Office of Community Outreach and Engagement and the Office of Population Health.

The survey, conducted in the 19 counties served by the cancer center, offers a detailed picture of the extent of cancer in the region.

CAPA collects essential data on the prevalence and public perception of cancer risk factors, health care access, screening behaviors, health outcomes and disparities across the region.

The most recent assessment reached over 2,000 adults. This made it one of the most comprehensive cancer population health surveys conducted within the area to date.

KEY SURVEY INSIGHTS

Screening gaps persist. Nearly half of age-eligible Native Hawaiian, Chamorro, Samoan, or other Pacific Islander participants reported they were behind schedule for cervical cancer screening — the highest non-complaint rate among all groups surveyed.

Screening rates for breast and colorectal cancer were lowest among Asian American respondents. Notably, 56% of South Asian participants had delayed colorectal cancer screening beyond the recommended date, while 17% of East Asian participants were overdue for breast cancer screening.

Lifestyle risk factors included personal habits and diet. Only 6% of respondents identified as current smokers, and 27% were classified as obese based on body mass index.

Respondents expressed environmental concerns. A total of 62% of respondents were concerned about the impact of wildfire smoke on cancer risk, and 44% of residents were uneasy about the effects of industrial air pollution. Respondents who self-identified as non-Hispanic, Asian and Black individuals showed significantly higher concern about air pollution's impact on water safety.

Cancer Center hosts Community Cancer Prevention Academy for Native Americans

UC Davis Comprehensive Cancer Center welcomed Native American health representatives from throughout Northern California for a groundbreaking cancer prevention and education training function earlier this year.

The first-of-its-kind event was held at the California Rural Indian Health Board (CRIHB) headquarters in Roseville, in coordination with the California Tribal Epidemiology Center.

Marissa Bashore, health education supervisor in the cancer center's Office of Community Outreach and Engagement (OCOE) organized the event and conducted most of the training.

Other UC Davis presenters included Nicole Halmai, a member of Navajo Nation and a postdoctoral researcher in the Luis Carvajal Carmona Laboratory at the UC Davis Genome Center. Halmai focuses on improving the cancer health of Native Americans through tribal research partnerships. Mayra Sandoval, health educator in the OCOE, also helped with the training.

Bashore worked closely with Diana Zamora of CRIHB and Celena Donahue, a tribal health consultant for the Pueblo Indian, Hupa, Yurok, and Karuk tribes, in developing the academy topics and content.

The interactive training equipped participants with vital information and practical strategies for improving cancer outcomes in Native communities. In addition to receiving training, attendees earned certificates recognizing their participation and commitment to cancer prevention.

"Native communities have the highest cancer incidence and mortality rates of any major U.S. population group," Bashore said. "These disparities are largely driven by a higher prevalence of risk factors and socioeconomic barriers to cancer screening and vaccinations."

Bashore added that the goal of the Community Cancer Prevention Academy is to bridge educational gaps and reduce health inequities that lead to unequal care in these communities.

"It is crucial that Native communities throughout California have the knowledge and data to effectively address cancer health needs among their citizens and community members," Halmai said. "The academy is part of a larger effort to offer resources to tribal health organizations, which includes research partnerships to develop community-tailored interventions to improve Native cancer health."

Halmai emphasized that the Community Cancer Prevention Academy facilitated two-way communication. In addition to presenting information to Native community members, cancer center personnel encouraged participants to identify their priorities and describe their experiences related to cancer health.

"This helps us to align our efforts with issues that the Native communities we serve believe are important," Halmai said.

The OCOE will coordinate reconvening this inaugural group to provide ongoing education and training.

Participants in the first Community Cancer Prevention Academy.

Fighting for firefighters facing high cancer risks

The intense fires that destroyed lives and homes in our region in recent years are a tragic reminder of the dangers firefighters face. In fact, firefighters' risk of developing lethal cancer increases with every smoke-churning blaze they battle.

The University of California has awarded nearly $6 million in funding in recent months to advance research aimed at reducing cancer risks among firefighters. The grants were awarded through the California Firefighter Cancer Prevention and Research Program, which the California State Legislature established in 2023.

Grantees: Shehnaz Hussain, UC Davis professor of public health sciences

Jamie Gabriel, Los Angeles County Fire Department fire captain

Chemicals in smoke and gear may not be the only reason cancer is the leading cause of death in firefighters. Hussain and Gabriel lead a research team looking at physical, mental and behavioral hazards linked to cancer in firefighters. These include sleep deficiencies, metabolic imbalances and stress. The $1 million grant will expand a study that will follow a group of 800 California firefighters for a year.

The researchers will collect blood samples, body composition analysis, diet assessment, questionnaires and clinical tests. The study also will include continuous monitoring of physical activity, heart rate and sleep.

Cancer risk and protective factors will be examined together with key cancer biomarkers that can gauge cancer risk. Results from this research could lead to safer practices at work and behavioral changes that lower the risk of cancer.

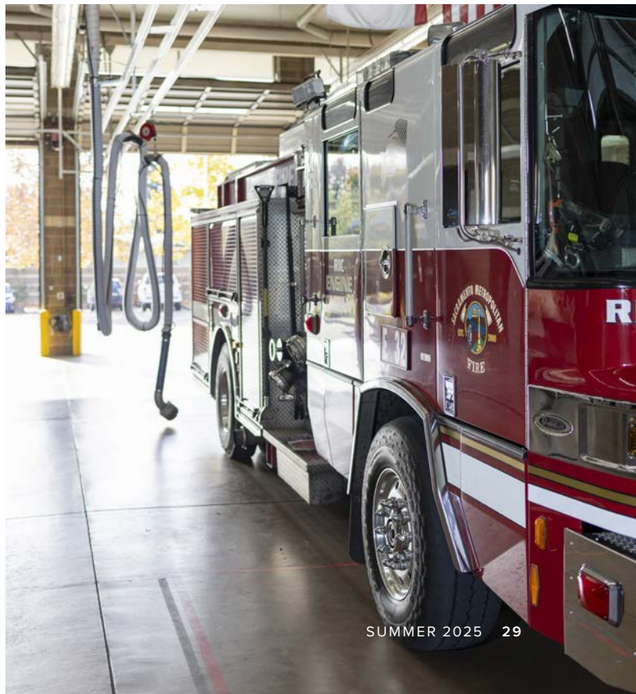
> Four grants will be awarded to cancer center researchers as they team up with fire officials who are equally committed to learning more about cancers that comprise the leading cause of death among firefighters.

Hussain also serves as co-investigator on three other research projects funded by grants from the University of California Office of the President. Researchers in one project are investigating exposure of firefighters to airborne carcinogens. Another grant is supporting the work of scientists who are examining longitudinal changes in DNA methylation in firefighters exposed to combustion products. DNA methylation is a change resulting from attachment of one or more methyl groups that can influence certain cellular processes related to development, aging and development of cancer.

Grantees: John McPherson, UC Davis professor of biochemistry and molecular medicine

Jeff Meston, executive director of the California Fire Chiefs Association

Some cancer-causing chemicals that firefighters encounter can slowly but cumulatively damage their DNA. Project partners McPherson and Meston will lead a team that will study tissue from firefighters who have been diagnosed with cancer. With help from the $350,000 grant, they'll analyze DNA from cells within tumors, looking for telltale signs that each chemical leaves behind. The goal of the grant is to identify the exact carcinogens to which firefighters are exposed over their careers and that are most likely to cause the kind of DNA damage that leads to cancer. This expanded knowledge will enable better practices for limiting exposure through training and changes to protocols and gear.



Chief sarcoma surgeon makes visit to Shingle Springs Subaru

Car dealership is raising money to advance sarcoma research

Sarcoma surgeon and researcher R. Lor Randall headed to the Sierra Nevada foothills to present Shingle Springs Subaru with a symbol of UC Davis Comprehensive Cancer Center gratitude: a race car-style trophy.

Since 2021, the El Dorado County dealership has leveraged Subaru's annual Share the Love Event to raise nearly $400,000 to help with Randall's research into sarcoma.

"The trophy symbolizes to UC Davis the gratitude we feel toward Shingle Springs Subaru, and what they are doing for sarcoma patients today and tomorrow," said Randall. He is the chair of the UC Davis Department of Orthopaedic Surgery and holder of the David Linn Endowed Chair in orthopaedic surgery.

Passion for sarcoma research hits home

Sarcoma invades bone or muscle tissue. Unlike most types of cancers, it is found in children and adolescents as well as adults. Although rare, it constitutes about 15% of all childhood cancers.

Finding a cure for sarcoma is close to the heart of the Shingle Springs Subaru team. The dealership's executive general manager, Bryant McCarver, and his wife, Kirsten, were shocked to learn of their daughter's sarcoma diagnosis when she was only 15.

Kate McCarver talks to R. Lor Randall about what she plans to do after graduating from college.

Kate McCarver was a sophomore at Oak Ridge High School when a sarcoma was detected close to her scapula (shoulder blade). The El Dorado Hills volleyball player thought she had injured her shoulder, but a scan revealed that a tumor was the source of her sharp pain.

Randall was her surgeon. He carefully removed the cancerous growth and, fortunately, it has not returned.

"I actually went on to play more volleyball in high school," said Kate. "Now I'm about to graduate from college and decide what career to go into. There are so many possibilities."

The psychology major is contemplating a future in medical sales or marketing.

The McCarver family receives a trophy from R. Lor Randall – from left, Max McCarver, Bryant McCarver, Kirsten McCarver, Kate McCarver, R. Lor Randall, Lolo McCarver and family friend Hunter O'Connell.

Moving from anxious times to making a difference

The McCarver family was immensely grateful after their daughter's successful surgery and recovery. Bryant and Kirsten committed to working to help find a cure for sarcoma so the lives of other young patients can be saved.

As part of Subaru America's national Share the Love Event, the car manufacturer donates $250 for each new Subaru sold during the holiday season. The Shingle Springs Subaru dealership decided to match that and recommended sarcoma research as one of the nonprofit causes for their customers to pick when buying a vehicle.

"We could not be more grateful for the cancer care she received at UC Davis. We were so impressed to find out we could get this type of high-caliber care close to home," Kirsten said. "We want to help as the cancer center continues with leading-edge sarcoma research."

Shingle Springs Subaru Sarcoma Symposium

In 2024, the McCarvers decided they wanted to do even more to support UC Davis sarcoma researchers. Working with Randall, they founded the inaugural Shingle Springs Subaru Sarcoma Symposium.

Randall is one of the nation's leading sarcoma researchers. He also is collaborating with other sarcoma experts from across the country to advance the fight against the devastating disease that takes more than 5,000 young lives each year. Treatment often results in limb loss.

"Our hope is that this annual event will bring together the brightest minds to find a cure for sarcoma," McCarver said.

Planning is already underway for the next Shingle Springs Subaru Sarcoma Symposium, which will be held on Oct. 7.

If you require additional information regarding the symposium or are interested in supporting sarcoma research at the UC Davis Comprehensive Cancer Center, please contact Emily McNaughton at **emcnaughton@ucdavis.edu** or visit **give.ucdavis.edu/CCAD/CC44955**.

Making the cancer journey less stressful

Keaton's Child Cancer Alliance helps cancer patients and their families get through tough times

A fever on Easter was the first sign 7-year-old Eduardo (Eddy) Zapata was not himself. When the fever didn't go away, his mother, Jessica Gutierrez, took him to the doctor. By that time Eddy was beginning to have pain in his lower back and knees. He also was losing weight. Still, the doctor thought it could be a virus.

When Eddy began struggling to get out of bed, his mother refused to wait any longer. In the middle of the night, she took him to the Emergency Department at UC Davis Medical Center. Blood tests revealed a suspicion that was confirmed by a bone marrow biopsy — Eddy had B-cell acute lymphoblastic leukemia.

Help and support on the way

Chemotherapy started immediately, and Eddy remained hospitalized for weeks. In the middle of it all, an "angel" showed up — a family navigator with Keaton's Child Cancer Alliance.

"Keaton's became part of our family," said Gutierrez. "I feared for my son's life, but I also was concerned about the impact Eddy's cancer would have on his brother and sister."

Gutierrez was keenly aware of how Eddy's siblings could be affected. She was a teenager when her own sister was diagnosed with leukemia.

"I felt neglected and lonely as my sister went through cancer treatment," Gutierrez said. "I didn't want my children to go through that, too."

Keaton's makes sure no family fights alone

"There's enough stress when your child is diagnosed with cancer," said Chief of Pediatric Oncology Marcio Malogolowkin. "At UC Davis Comprehensive Cancer Center, we want our pediatric patient families to focus on healing. That's why we refer them to Keaton's, an amazing resource for helping them get through the cancer journey."

Keaton's provides direct financial support to families, assisting with basic needs such as housing bills, utilities, transportation, groceries and other essential expenses. This support enables parents and guardians to focus on their child's health and well-being without the added stress of financial burdens. If patients are not eating well in the hospital, Keaton's family navigators deliver culturally familiar, nutritionally appropriate food to them.

"We have a family-centric model," said Jessica Alonso, executive director of Keaton's. "Along with supporting the child going through cancer, we make sure siblings and parents are supported, too."

While Eddy was in the hospital, Keaton's delivered "Hope Chests" filled with customized items for him as well as for his siblings. Each contained comfort items, snuggle blankets, colors and toys chosen with each child in mind.

Within a month of his diagnosis, Eddy and his brother and sister were enjoying a day at Funderland Amusement Park in Sacramento, thanks to Keaton's.

"We want children to have joy-filled experiences, making new friends, creating new memories and connecting with other kids going through cancer," said Alonso.

"They make me so much happier," Eddy said about Keaton's.

New family wellness center provides care and sense of community

Recently Keaton's opened an expanded center in Roseville where pediatric patients and siblings engage in healing through art and play therapy. The welcoming space features vibrant and soothing colors, creative toys and musical instruments designed to support emotional well-being. A teen recreation corner focuses on adolescent patients and siblings.

For parents, Keaton's hosts "Muffins with Moms" and "Donuts with Dads" get-togethers at the center to help parents meet other parents of kids with cancer.

Captured moment of Jessica Alonso with Eddy.

Become involved

If you would like to volunteer to help Keaton's Child Cancer Alliance, please go to childcancer.org.

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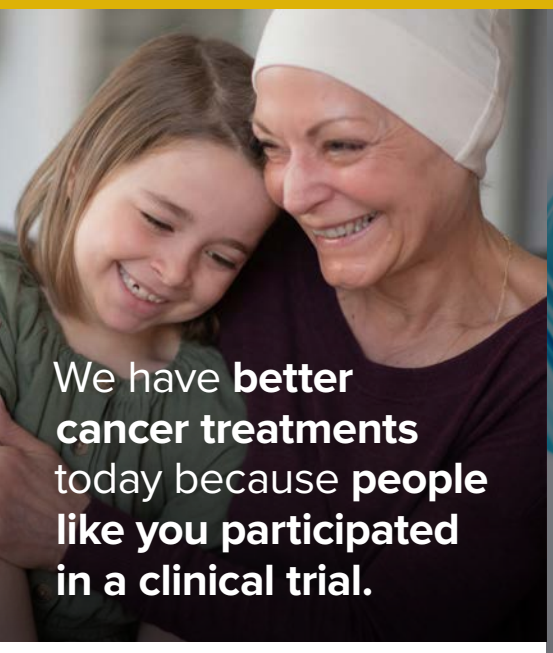

We have **better cancer treatments** today because **people like you participated in a clinical trial.**

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

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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.