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Dear Reader,



Cancer does not respect pandemics.

Since the beginning of the current COVID-19 crisis, our UC Davis Comprehensive Cancer Center has kept its doors open, providing people with cancer the world-class services and care that they need. Despite the many operational challenges and personal risks, our dedicated team of physicians, providers, nurses and staff have come in every single day to ensure that our patients receive uninterrupted care.

In this issue of *Synthesis*, you will find inspiring stories of Northern Californians who didn't let fear of the virus stop them from going to their

doctor. Their decision to continue pursuing cancer care in the face of a pandemic has been inspiring to many and is very likely to positively influence their outcome.

You will also read about lessons learned from COVID-19 in the realm of cancer health disparities: that is, how health outcomes are shaped by conditions such as where you live, what you eat and drink, and how you make a living.

Our vulnerable communities in the rural areas of Northern California and the Central Valley have lower household income, lower health insurance rates, and less education than other areas of the state. And, they are exposed to considerable amounts of pesticides, herbicides and toxic air contaminants.

What role do environmental exposures play in our cancer rates? You'll find out in this issue how we are confronting that critical question, while also doing what we can to stop cancer before it starts, with specific outreach to Latino, Native American and African American communities who carry most of the regional cancer burden.

Also, in this issue of *Synthesis*, we showcase how we are tackling the toughest of cancers, such as pancreatic cancer, which just this year took the lives of admired Americans Ruth Bader Ginsburg, John Lewis and Alex Trebek. Our scientists and doctors are tirelessly developing new strategies to diagnose and treat pancreatic cancer with innovative new technologies found only at UC Davis.

You will learn, too, about our focused efforts to cure kids of cancer. Dedicated donors have created a fund to support a new position to help families manage the psychosocial issues facing them when their child is diagnosed with cancer.

We are also excited about our new comparative oncology training program through which we are joining forces with the world's No. 1 ranked UC Davis School of Veterinary Medicine to try to save the lives of dogs with cancer while supporting development of new therapies for both dogs and humans.

Thank you for your continued commitment to the UC Davis Comprehensive Cancer Center. We could not continue what we are doing without your tireless support.

Thank you and stay safe!

Primo "Lucky" Lara, Jr., M.D.

DIRECTOR, UC DAVIS COMPREHENSIVE CANCER CENTER

BREAKING BARRIERS TO BEAT CANCERSM

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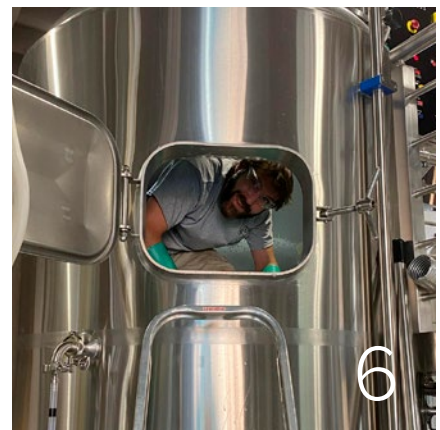
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Two female UC Davis Comprehensive Cancer Center researchers conducted new studies that examined the risk factors and the right treatment for breast cancer, integrating race and ethnicity considerations into their work. The studies were published in recent issues of *Cancer Epidemiology, Biomarkers & Prevention*, a journal of the American Association for Cancer Research.

Study #1: Is being overweight or having dense breasts a risk factor for breast cancer, regardless of race or ethnicity?

UC Davis cancer researcher Diana Miglioretti and epidemiologist Michael Bissell collaborated on a study for the U.S. Breast Cancer Surveillance Consortium.

The study was the first to directly investigate and report important racial/ethnic differences regarding the risk of breast

breasts accounted for a large proportion of breast cancers in white, Black, Hispanic and Asian women despite large differences in the prevalence of these risk factors across these racial/ethnic groups:

- Dense breasts are an important risk factor for breast cancer in both premenopausal and postmenopausal women of all races/ethnicities examined, with breast density playing a larger role in premenopausal women.
- A high BMI is a strong risk factor for breast cancer among postmenopausal women, especially in Black women. Across all racial/ethnic groups examined, dense breasts were a moderate-to-strong risk factor. In premenopausal women, a high BMI was not significantly tied to future breast cancer risk except for a small percentage of white women. However, in postmenopausal women, a high BMI was a strong risk factor for all races examined. The findings showed that if all overweight/obese postmenopausal women achieved a normal BMI, breast cancer incidence could be reduced by 12%–15% in white, Asian and Hispanic women, and 28% in Black women.

Female researchers make significant findings in the prevention and treatment of the most common cancer impacting women

cancer associated with body mass index (BMI) and breast density among premenopausal and postmenopausal white, Black, Hispanic and Asian women. BMI reflects body weight adjusted for height. Women with a BMI over 25 are considered above normal and overweight.

The research appeared in the October 2020 issue of *Cancer Epidemiology, Biomarkers & Prevention* and found that a BMI in the overweight or obese range and dense

Sustained weight loss in women over 50 has been shown to reduce breast cancer risk. In addition, changes in lifestyle, such as increasing exercise, reducing alcohol consumption and eating plenty of fruits and vegetables can also help in maintaining a healthy body weight.

Diana Miglioretti,
cancer researcher



Candice Sauder,
surgical
oncologist



Study #2: Breast cancer survival rates after having cancer as an adolescent or young adult

A troubling new discovery has Candice Sauder, a surgical oncologist at the UC Davis Comprehensive Cancer Center, rethinking the best approach to treating breast cancer in premenopausal women who had cancer as a child or young person and were treated with radiation.

A recent study conducted by Sauder and published in the September 2020 issue of *Cancer Epidemiology, Biomarkers & Prevention* shows that survival rates among premenopausal women with breast cancer were significantly worse if they had been treated with radiation for a prior cancer when they were young.

In fact, the women with breast cancer who had a prior cancer and were treated with radiation had roughly twice the risk of breast cancer-specific death compared to similar-aged breast cancer patients who had no previous cancer diagnosis.

Sauder and her colleagues turned to the California Cancer Registry to analyze data from women ages 12 to 50 diagnosed with primary or second primary breast cancer between January 1, 1988, and December 31, 2014.

A second primary cancer is a new cancer that occurs in someone who had cancer in the past. In the study, patients with second primary breast cancer were limited to those who had a first primary cancer treated with radiation between the ages of 12 and 39.

Surprisingly, women who typically have a better prognosis with breast cancer — including those with hormone receptor-positive tumors, tumors without lymph node involvement, stage 1 disease and women of Asian or Pacific Island ethnicity — had a lower survival rate after a second primary breast cancer.

As a result of the findings, Sauder says we need to look for tailored treatment strategies for women with a second primary breast cancer.

“In second primary breast cancers it is really important to consider all options for treatment,” said Sauder. “At UC Davis Comprehensive Cancer Center, we feel a one-size-fits-all methodology to treating breast cancer is likely not the best approach.”

The study was sponsored by UC Davis Health and UC Davis Comprehensive Cancer Center.

Welcome Researchers

The UC Davis Comprehensive Cancer Center is increasing diversity in its researcher ranks as it reduces health disparities. Two female scientists with experience investigating social determinants of health have joined the research team.

Laura Fejerman – Co-director of LUCHA Initiative and co-director of the Women’s Cancer Care Program



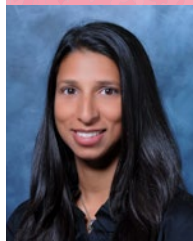
Laura Fejerman focuses research on genetic and non-genetic factors contributing to breast cancer risk and prognosis in Latinas. Her past work established a relationship between genetic ancestry and breast cancer risk, in which U.S. and Mexican Latinas with more European ancestors were at increased risk of breast cancer as

compared to women with more Indigenous American ancestors.

Fejerman earned her doctorate in biological anthropology and master’s in human biology at the University of Oxford, England. She completed her undergraduate degree in social anthropology at the University of Buenos Aires, Argentina.

Originally from Buenos Aires, Fejerman left Argentina in 1998 to study in England. She and her husband, a fellow Argentine, have two teenagers. Her husband is a political economy professor at UC Berkeley.

Shehnaz Hussain – Associate director of population sciences



Shehnaz Hussain’s research explores the intersection of infection and cancer. As a molecular epidemiologist, she looks at public health impacts while researching cancer etiology, pathogenesis, chemoprevention and early detection.

Her current research examines the disease continuum from non-alcoholic fatty liver disease to liver cancer. She is focusing on the potential biological basis for disparities in liver cancer, which disproportionately affects Latinas.

Hussain earned a master’s in epidemiology from Johns Hopkins University and a doctorate in epidemiology from the University of Washington. She completed a first postdoctoral fellowship in genetic epidemiology at the Karolinska Institute in Sweden and a second fellowship in cancer prevention and control at UCLA.

Along with science, Hussain enjoys outdoor adventuring with her two young sons and her husband, an emergency room physician.

Sepideh Gholami wins prestigious young investigator award



UC Davis Health surgeon and cancer researcher Sepideh Gholami was recently honored with the 2020 Society of Surgical Oncologists Young Investigator Award, which was created in 2016 to promote translational research, bringing new discoveries from scientific labs to clinic settings. Gholami is the fifth person to receive the award.

The \$25,000 grant will provide seed funding to support the assistant professor of surgery's innovative efforts to improve cancer care. Gholami investigates new tools to treat patients with metastatic colorectal and liver cancer.

By studying the body's immune response to tumors, she hopes to develop more effective immunotherapeutic strategies.

Gholami says she is honored to receive the award and is grateful to Steven George, UC Davis professor and chair of biomedical engineering, and many others who were instrumental in advancing this critical research.

"I'm very excited about this project and tremendously grateful of my mentors, who have expertise in bioengineering, immunology, molecular biology and surgical oncology," she said. "One of the unique aspects about this research experience is that we truly work as a team and learn from each other's experience and perspective."

Gholami says she finds that by using this multidisciplinary approach, the UC Davis team's research is providing the most comprehensive approach for the best patient outcomes.

SUTCLIFFE ADVANCING PANCREATIC CANCER TREATMENTS WHILE TAKING NEW LEADERSHIP ROLE

Professor of Biomedical Engineering and Hematology/Oncology Julie Sutcliffe is making a difference in the pancreatic cancer fight while taking a new leadership role in the molecular imaging field.

As part of its New Therapies Challenge Grants program, the Pancreatic Cancer Collective awarded her research team up to \$4 million in additional funding to support their work on peptide receptor radionuclide therapy (PRRT). The team is co-led by Richard Bold, physician-in-chief of the UC Davis Comprehensive Cancer Center. This new grant builds on a previous \$1 million grant from the Collective.

To advance their PRRT work, the research team developed two peptides (pieces of proteins) that focus on $\alpha\beta_6$, a cell surface receptor commonly found in pancreatic cancer cells, and deliver radioactive isotopes to the tumor. One peptide/isotope combination helps identify the patients who are most likely to benefit from PRRT. The other is designed to help kill tumor cells. Promising preclinical results led to the second grant, which is supporting an early-stage human clinical trial to test safety and efficacy.

In another recognition of her cancer research leadership, Sutcliffe was elected 2020 president of the World Molecular Imaging Society (WMIS). As president, she is working to strengthen alliances between academia and industry, improve education, and engage patients and advocates to help scientists better understand the issues they face.

"It's an honor to be elected president of WMIS," said Sutcliffe. "I'm excited to work with all stakeholders to advance our field."



*Julie Sutcliffe,
cancer researcher*



ALVAREZ RECEIVES HYUNDAI HOPE ON WHEELS GRANT TO STUDY CHILDHOOD CANCER

Elysia Alvarez, assistant professor of clinical pediatrics, received a \$50,000 Hyundai Hope On Wheels grant to advance her work with childhood cancer. Alvarez seeks to understand how the facilities where pediatric cancer patients receive care affect their survival. Because care location can be changed, this research could have a profound impact on cancer care.

Specifically, Alvarez is studying whether a group of pediatric and young adult patients receiving care at specialized cancer centers have better outcomes. Her initial work focused on patients with rare non-rhabdomyosarcoma soft-tissue sarcomas.

Alvarez's efforts provide important data to better understand how care disparities affect survival, particularly in cancers that require complex care, such as non-Hodgkin's lymphoma and acute myeloid leukemia.

In addition to this study, support from Hyundai Hope On Wheels has funded efforts to develop the pediatric, adolescent and young adult oncology programs at UC Davis Health.

2020 Innovators of the Year

Ramsey Badawi and Simon Cherry were honored at the 2020 Chancellor's Innovation Awards as Innovators of the Year for their efforts to revolutionize how cancers and other diseases are studied and diagnosed after developing EXPLORER, a total-body scanning technology that provides comprehensive images of the entire body in seconds.

Badawi, professor and vice chair of research in the Department of Radiology, and Cherry, distinguished professor in the Department of Biomedical Engineering, will receive \$10,000, which they plan to use to fund pilot studies for new investigators using the EXPLORER system.

EXPLORER can image the entire body simultaneously, providing new insights into how different systems interact in real time. This approach is an improvement over traditional positron emission tomography (PET) scanners. Typical PET scanners use short-lived radioactive tracers to illuminate how organs and tissues function and can scan only 20-centimeter segments at a time. EXPLORER can also produce much higher quality images than other PET scanners and can significantly reduce patients' radiation exposure.

The Food and Drug Administration approved EXPLORER in late 2018 and, soon after, UC Davis Health opened its EXPLORER Molecular Imaging Center in Sacramento, the first combined



research and clinical total-body PET center in the world.

The technology has been used in groundbreaking studies to help patients with latent states of HIV not responding to conventional treatments; to measure cancer metabolism in the body; and to investigate systemic inflammatory responses in patients to assist with staging and to measure response to treatment. More than 600 research and clinical cases were completed in the center's first 18 months of operation.

Colorectal cancer under 50: three journeys

Oncologist May Cho’s patients share their stories. Their journeys, at times long and confusing, are a testament to the importance of colon cancer screenings and advocating for your care. Their positive outcomes provide hope for younger adults diagnosed with colorectal cancer.



“DON’T LET ANYONE TELL YOU THAT YOU ARE TOO YOUNG”

**TERI RIVERA, SYMPTOMS AT 43,
DIAGNOSIS AT 51**

It started eleven years ago. Teri Rivera, then age 43, began noticing blood after using the bathroom. For years, she was told the blood was due to hemorrhoids, which seemed a likely diagnosis for the young mother of five.

But Rivera sensed that something was not right. “Remember that you

know your body best,” she said. “If you don’t like the answer you’re getting, keep asking questions and get a second opinion.”

Not until almost seven years later, in July 2016, a primary care provider suggested a colonoscopy, a common procedure that can screen for colorectal cancer. Within the year, Rivera was diagnosed with stage III colorectal cancer. She was 51.

At stage III, colorectal cancer may have spread to nearby lymph nodes but

not yet spread to other parts of the body.

Rivera wanted her treatment to move more quickly. A colleague and friend encouraged her to go to the UC Davis Comprehensive Cancer Center, where the friend’s father had received excellent care.

Just a few weeks later, Rivera received a call from UC Davis. “They reached out to me!” exclaimed Rivera. “Within the week I was meeting with Dr. Cho.”

A tumor board, a group of cancer specialists to reach an opinion on how to handle a case, immediately reviewed Rivera’s case. She was set to start chemotherapy within two weeks, followed by radiation therapy and surgery.

“Dr. Cho explained everything to me, and how it was going to work,” she said. “It was the quickest response I had ever received since the time of my diagnosis.”

In December 2017, Rivera received excellent news: “Your cancer may have been over-staged. It looks like you have a stage II cancer.”

Rivera would not need radiation. Her treatment consisted of surgery followed by a round of chemotherapy.

“There have been some difficult ups and downs, but I was treated by a very thorough, understanding, caring and supportive team at UC Davis. I am happy to say that currently I have no indication of cancer,” she said.

She is grateful for the support of her five children, now ages 14 to 32, and

other family and friends while going through treatment. For others finding themselves with a cancer diagnosis, she encourages them to be an advocate for their own care.

“SO YOUNG TO FACE SOMETHING SO HEAVY”

**NEIL PETERSEN,
DIAGNOSED AT AGE 36**

Neil Petersen was an avid backpacker and naturalist living in Weaverville, a remote part of Northern California. At 36 he was close to realizing his dream of opening a brewery when his life changed in early 2018.

Petersen was rarely sick, but some flu-like symptoms prompted him to go to a clinic for help. He was given some pain medicine and did not pursue further care. However, the symptoms returned a few months later, along with pain and trouble urinating. He drove



he wanted to be at the UC Davis Comprehensive Cancer Center. Having grown up in the Sacramento area, he knew about its positive reputation, and his parents still lived in the area. He went to the emergency department

His treatment included initial chemotherapy and then surgery, which was scheduled right after Christmas followed by groundbreaking immunotherapy monthly treatments that enable the body's immune system to fight the cancer cells.

"I really appreciated the straightforward, honest, not-sugar-coated explanations the doctors offered me," Petersen said.

Petersen also praised the holistic care offered at UC Davis. He was fortunate to have support from UC Davis social worker Sara Conning. "It helped keep my brain straight through this complex roller coaster that I had been on," he said.

Petersen finished his treatment in May of 2020 and is in remission. He will soon return to UC Davis for a robotic colostomy reversal by Wissam J. Halabi, a surgeon trained in general surgery and colon and rectal surgery. He encourages anyone who experiences symptoms like his to request a colonoscopy.

At the time of Petersen's cancer diagnosis, he and a business partner had just closed escrow on a building

Three patients in their 30s and 40s struggled searching for a diagnosis and treatment until they found UC Davis Comprehensive Cancer Center.

himself to the nearest emergency room, which was 45 minutes away.

After a CT scan he received sobering news: he had a mass in his colon.

"I was hospitalized immediately," said Petersen. "The doctors started talking about options, including a colostomy bag and palliative care. I thought, 'Let's slow down.' I was aware that they did not have a cancer program."

Petersen immediately knew that

at UC Davis Medical Center and was immediately admitted to the hospital based on his condition.

That's where he met Cho. She told Petersen that his tumor had grown from his colon into his bladder, blocking his ability to urinate.

In October 2018, Petersen was diagnosed with stage IV colorectal cancer with metastasis to the liver.

"I was so young to face something so heavy," said Petersen.

that would house their new brewery. “Dr. Cho told me to let her worry about the cancer and for me to worry about starting my brewery,” he recalled. Trinity County Brewing Company opened in May 2020!

“BE BOLD AND UNAPOLOGETIC”

**JENNIFER DUNN,
DIAGNOSED AT AGE 40**

Jennifer Dunn was having excruciating stomach pains, and she couldn’t find relief.

“The pain was so intense,” said Dunn. “I started seeking treatment in as many places as I could.”

Her journey included multiple visits to various health care providers. Dunn was a teacher living in Humboldt County, California, a rural area where doctors sometimes rotate through their services, making it challenging to obtain specialty care.

“It was always someone different — a health care professional meeting me for the first time, and we’d be starting from zero again,” she said.

Dunn was 39 years old. Due to her young age, the possibility of a colon



budge that day until more was done.”

Finally, a CT scan identified multiple lesions occupying 70% of her liver. Later, a biopsy confirmed that her disease was very advanced.

Dunn thought of her daughter, who was just 9 years old at the time. “There has to be options,” Dunn thought.

Her brother, a professor of evolutionary biology at Yale, searched for a place for her to receive better care and was recommended the UC Davis Comprehensive Cancer Center.

Soon after setting an appointment,

— this team that opened their arms. It was a totally different relationship.”

When Gholami learned of the severity of the colonic obstruction, she immediately sought out UC Davis surgeon Wissam J. Halabi. From there, things moved fast: Dunn’s tumor was removed within 24 hours. She stayed in the area to recover before returning to Humboldt. Oncologist May Cho oversaw Dunn’s chemotherapy regimen.

In April, despite the COVID-19 pandemic, Dunn and her family relocated to Sacramento to be close to the cancer center. Dunn’s husband secured a job teaching and her 10-year-old daughter is distance learning with her elementary school in Humboldt County.

Dunn is participating in an innovative treatment for patients with colon and bile duct cancers, in which chemotherapy is delivered both systemically and directly into her liver. She is one of the first patients to undergo the treatment at UC Davis.

“I have fortunately responded very well,” said Dunn.

By sharing her experience, Dunn hopes to make a difference in someone else’s life.

“I didn’t know oncologists pick up the phone and call! I was so surprised.”

—JENNIFER DUNN

cancer diagnosis was overlooked for more than a year.

In 2019, two months after her 40th birthday, she made what would be a critical visit to the emergency room.

“It became very hard to trust my own body. The long ordeal had drained me of my confidence,” she said. “It was desperation that helped me refuse to

Dunn received a call from Sepideh Gholami, a UC Davis surgeon-scientist specializing in cancers of the gastrointestinal tract, liver and pancreas.

“I didn’t know oncologists pick up the phone and call! I was so surprised,” said Dunn. “I had gone from feeling like a ghost, going around asking everyone I could to help me find care, to — finally!

Death of Chadwick Boseman highlights colon cancer among younger patients

The death of 43-year-old “Black Panther” actor Chadwick Boseman in August 2020 has brought renewed attention to colon cancer and the need for regular screenings.



May Cho is a medical oncologist specializing in the treatment of gastrointestinal cancer, including colorectal cancer, at the UC Davis Comprehensive Cancer Center. She also is an assistant professor at the

UC Davis School of Medicine. She answered some common questions about colorectal cancer.

What is colon cancer, or colorectal cancer?

Colorectal cancer includes bowel cancer, colon cancer and rectal cancer — any cancer that affects the colon and the rectum. According to statistics from the American Cancer Society (ACS), the overall lifetime risk of developing colorectal cancer is about 1 in 23 for men and 1 in 25 for women. Hereditary, environmental and lifestyle factors can affect your risk for developing colorectal cancer.

What was your reaction when you heard about the death of Chadwick Boseman due to colon cancer?

He was so young and productive. It was so heartbreaking to hear but unfortunately it wasn't much of a shock to me.

The incidence of colorectal cancer in people under 50 is on the rise and I'm seeing this alarming trend in my clinic. We also are seeing a shift in the past couple decades, with most patients showing sporadic cancer. This could be due to environment or lifestyle changes, but we are trying to learn the cause.

What are the symptoms of colorectal cancer? Why are they overlooked?

Symptoms include rectal bleeding, often misdiagnosed as hemorrhoids, changes in bowel movement, new constipation or diarrhea, unexplained weight loss, fatigue and bloating. All of these are symptoms. You should be alarmed if the symptoms persist. Don't wait more than two or three months. You should see your doctor to seek procedures such as a colonoscopy.

When should people start getting screened for colon cancer?

The ACS guidelines now call for screening at the age of 45, rather than 50, due to increasing rates of colorectal cancer in younger patients. Precancerous polyps can be safely removed and prevent the development of colon cancer if nothing is found and there are no symptoms, then the patient can be checked every 10 years.

If a person is having symptoms, don't wait. Advocate for yourself to get the screening done, even if your age does not fall into the obvious guidelines.

What's involved in the screening?

A colonoscopy is the gold standard for screening and the preferred way to diagnose gastrointestinal cancers. It is the only way you can really look at the colon and detect polyps. There are screening tests that look at cancer DNA or blood in the stool (feces), but they are not as good a tool as a colonoscopy.

What do you tell patients who are nervous about colonoscopies?

This is a cancer that can be prevented through early detection. A colonoscopy is a routine procedure that we've been doing for decades. The patient is asked to prepare in advance, including a

special liquid diet. Then they are given anesthesia and typically have no memory of the procedure. The risks associated with the procedure are very low compared to the immense benefit of finding underlying disease that is going undetected.

What kind of work is UC Davis doing to advance colorectal cancer research and care?

We work with our communities to offer prevention screening and education. We also have several active clinical trials studying colorectal cancer.

If you or someone you know is interested in participating in one of these studies, please reach out to your doctor to find out more, or visit the list of cancer clinical trials at the UC Davis Comprehensive Cancer Center.

A black and white portrait of actor Chadwick Boseman, smiling and looking upwards and to the left. He is wearing a patterned shirt.

The actor's death reflects a rise in colorectal cancer rates among young adults

Pancreatic cancer is often fatal and it's on the rise

Passing of icons John Lewis and Ruth Bader Ginsburg as well as 'Jeopardy!' host Alex Trebek are tragic reminders



Peabody Awards / Wikimedia Commons

Pancreatic cancer is stubborn. Despite recent developments in treatment, 90% of people with the disease die within five years of diagnosis.

In 2020, Americans mourned the passing of three luminaries who died from the disease: U.S. Supreme Court Justice Ruth Bader Ginsburg, civil rights leader and congressman John Lewis, and popular "Jeopardy!" game show host Alex Trebek.

Their deaths are reminders of the tragic toll of pancreatic cancer, which has the ominous ranking of being the third leading cause of cancer-related death

in the U.S. Unfortunately, it is expected to move into second place soon.

"It is disappointing that advancements in cancer research have been unable to rein in pancreatic cancer," said Richard Bold, the physician-in-chief of the UC Davis Comprehensive Cancer Center. "In fact, it's one of the few cancers for which survival has not improved substantially in nearly 40 years."

Bold is determined to change that trend.

"We are doubling down on pancreatic cancer at the UC Davis Comprehensive Cancer Center," said Bold.

"If we can make progress fighting this insidious cancer, we can take on any type of cancer."

A \$4 million Pancreatic Cancer Collective grant recently awarded to UC Davis will fund an early-stage clinical trial to test delivering radioactive isotopes directly into pancreatic cancer cells (see page 4).

Pancreatic cancer is a leading cause of death mostly because there are no early detection tools to diagnose it in its early stages. Age, gender, race and family history are thought to play a role, and UC Davis researchers are uncovering more risk factors and ways that you can reduce your chances of getting pancreatic cancer, including tobacco and alcohol use.

UC Davis Comprehensive Cancer Center patient holds on to hope



Pancreatic cancer survivor Pam Weydert

Pam Weydert is one of the lucky ones. The 66-year-old Stockton woman is recovering from chemotherapy and surgery to remove a tumor in her pancreas.

Weydert is fortunate for two reasons: she didn't let a global pandemic get in the way of getting medical care, and she quickly accessed state-of-the-art treatment at the cancer center at UC Davis.

"Coming down with cancer during the coronavirus pandemic was bad enough," said Weydert. "Finding out I had pancreatic cancer terrified me because I know it is a difficult cancer to beat. Dr. Bold gave me hope that I could beat it."

Other than possible signs of jaundice early on, the symptoms of pancreatic cancer are often subtle until the cancer starts to advance.

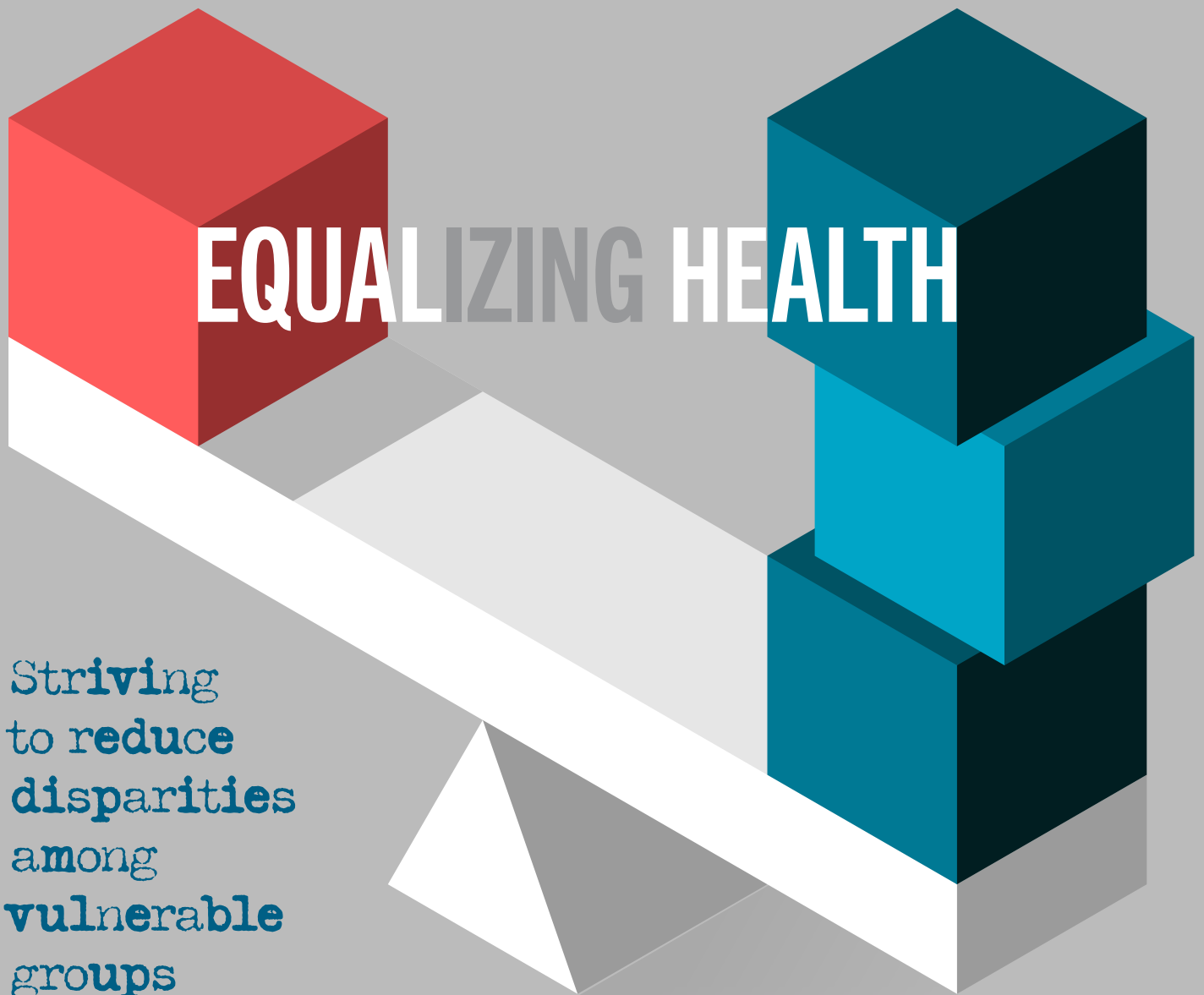
Weydert's daughter pleaded with her mother to get medical attention after Weydert repeatedly complained of feeling nauseous right after eating and felt a nagging pain in the right side of her abdomen.

"Pancreatic cancer doesn't care if there's COVID-19," said Weydert. "It's not going to back down."

Teaming up to take on one of the "world's worst cancers"

The outcome is best when patients are treated by experts who see this cancer frequently. Yet, only 17% of pancreatic cancer patients in California are treated at one of the five top-rated University of California comprehensive cancer centers.

That's where the UC Pancreatic Cancer Center Consortium comes in. The UC Davis Comprehensive Cancer Center is hoping to dramatically change outcomes for pancreatic cancer patients by joining the consortium, which is bringing all five UC comprehensive cancer centers together to share research, coordinate trials, develop therapies, and treat and educate patients.



EQUALIZING HEALTH

Striving to reduce disparities among vulnerable groups

The UC Davis Comprehensive Cancer Center serves a huge, diverse community. Its primary service area is the size of West Virginia and is home to a heterogenous population, half of which lives in rural areas.

This makes cancer care delivery particularly challenging because of the physical distances involved, according to Moon S. Chen, Jr., associate director for Community Outreach and Engagement.

Most UC Davis Comprehensive Cancer Center patients (90%) live in 19 counties in Northern California and the Central Valley. They include a higher percentage of Hispanics, Asian Americans and Native Americans than the national average, as well as a large African American population, which suffers the highest cancer burden in the U.S.

Throughout his career, Chen has worked diligently to mitigate cancer health disparities among underserved

populations while initiating and leading many of the cancer center's community research studies. He places a strong emphasis on screening, vaccination and education strategies among racial and ethnic minorities.

"It's far more effective to prevent cancer than to cure it," he said. Chen says that there are a number of outreach programs now being deployed to reach diverse communities throughout the region.

TAKING THE FLAVOR OUT OF TOBACCO PRODUCTS

The UC Davis Comprehensive Cancer Center played an important role in educating local and statewide policy makers and the public about flavored tobacco products.

Leading up to the City of Sacramento's local ban of flavored tobacco products in spring 2019, the cancer center hosted an educational roundtable with academic and community partners, including partners from the African American community who wanted menthol cigarettes banned in the new law. As a result of targeted marketing, more than 80% of African Americans who smoke use menthol-flavored cigarettes, leading to high rates of lung cancer in these communities.

In the fall of 2019, UC Davis internist and tobacco expert Elisa Tong was invited to present at a joint committee hearing of the California Assembly about flavored tobacco products and vaping at the height of the EVALI (E-cigarette Vaping Associated Lung Injury) epidemic. During the last legislative session, state lawmakers passed restrictions on the sale of most flavored tobacco products in California, a ban that was signed into law by Gov. Gavin Newsom.

for tobacco use and offered treatment. People who use tobacco are strongly encouraged to take part in the UC Davis Comprehensive Cancer Center Stop Tobacco Program (SToP), which includes two highly successful programs that double the chance of staying tobacco-free:

- UC Davis Health's Health Management and Education offers online classes that focus on strategies to quit tobacco. Led by Cari Shulkin, a certified tobacco treatment specialist nurse, classes are provided by a multidisciplinary team and incorporate behavior modification, nutrition, medications and relapse prevention.
- The California Smokers' Helpline, the state quitline, which is affiliated with UC Quits, offers one-on-one counseling support for quitting all tobacco products including e-cigarettes and is offered in multiple languages (Spanish, Chinese, Korean and Vietnamese). It also is available for the hearing impaired, as well as friends and family seeking resources to help loved ones quit. The Helpline is mailing free nicotine patch two-week starter kits to eligible smokers.

tobacco treatment by sixfold over the past couple of years, thanks to implementation efforts with the cancer center clinic staff. With additional telephone outreach led by Shulkin, over 700 patients with cancer who use tobacco have been reached by the program team.

"We tell patients that when they come to the cancer center, UC Davis will provide them with the best available care for their cancer," said Tong. "Tobacco treatment is an important part of that care."

Searching for the basis of breast cancer

Laura Fejerman, associate professor in the Department of Public Health Sciences and co-director of the Women's Cancer Care Program at the cancer center, joined the faculty this past September with clear goals: She wanted to better understand breast cancer in Latina women and reduce disparities in access to prevention and care services.

She has made important headway in understanding the basis of breast cancer among Latinas. For instance, she has identified a genetic variant that is suspected to protect against breast cancer and is present only in women of Indigenous American ancestry, who have relatively low incidence of the disease.

"Genetic studies are important because they can provide a basis for more targeted cancer screening, as well as inform research in therapy," said Fejerman.

Fejerman has joined the Latinos United for Cancer Health Advancement Initiative (LUCHA), which she co-leads with Luis Carvajal-Carmona, professor in the UC Davis Department of Biochemistry and Molecular Medicine.

The LUCHA team reaches out to the Spanish-speaking community to educate them about cancer and facilitate access to information, screening and clinical trials. Fejerman noted many barriers for this population to overcome, including language difficulties, lack of health insurance and in some cases, tenuous residency status.

Targeting the biggest cause of cancer

According to Elisa Tong, an internist who directs tobacco cessation initiatives at the cancer center, no cancer prevention strategy has the potential to make a bigger impact than preventing or stopping tobacco use. She cites at least 12 cancers that are caused by tobacco.

With the support of the Cancer Center Cessation Initiative from the National Cancer Institute (NCI) and UC Davis Health, Tong and her team have integrated tobacco treatment into cancer care. Every patient who enters the cancer center is screened



"Stopping tobacco use is not only important for cancer prevention but also for patients undergoing cancer treatment," said Terri Wolf, cancer center nurse program manager for SToP. She explained that tobacco use can impede healing from surgery or radiation treatments and increases the metabolism of some cancer drugs, which can require double dosages and increase exposure to associated toxicity.

Tong noted that SToP has increased

“UC Davis is doing very well in terms of closing gaps in health disparities among different ethnic groups,” she said. “But we can do better, and I look forward to continuing to help in these efforts.”

Increasing HPV vaccination

Vaccination against the human papillomavirus (HPV) has notoriously low acceptance rates compared with other childhood vaccines in the U.S. This very common virus can cause six types of cancer, which the HPV vaccine is highly effective in preventing.

“American Indian and Alaska Native women have the highest rates of HPV-associated cancers,” said Julie Dang, executive director of the UC Davis Comprehensive Cancer Center Office of Community Outreach and Engagement. “This is why we have especially focused on this group to enhance immunization.”

A collaboration between the UC Davis Comprehensive Cancer Center and Northern Valley Indian Health (NVIH) brought Dang’s team into the NVIH Willows Clinic in Glenn County where they trained health care providers and primary care support staff to encourage HPV



vaccination and respond to parent concerns.

“Broken leg — vaccinate!” became a rallying cry to drive home the point that no opportunity should be missed to promote vaccination in patients seen at the clinic, no matter what medical problem they come in for.

The techniques worked, with 61% of the clinic’s Native American adolescents undergoing complete vaccination at the end of the intervention — more than double the baseline rate.

“Because we were able to change the culture within the clinic, we anticipate that the gains will continue,” said Dang.

She is currently implementing an NCI supplemental one-year grant that expands the program to nine more counties with particularly low vaccination rates. The region is home to a large concentration of rural, Latino agricultural workers and traditional Russian-speaking immigrants. The project will assess factors related to vaccine hesitancy among these groups, then pilot tailored interventions.

Taking action on multiple fronts

The cancer center has a clear mandate to reduce disparities in health outcomes, explained Chen, who is proud of the many efforts the cancer center is taking throughout the region through cancer prevention such as tobacco use abatement and HPV vaccination promotion, increasing access to screenings, and laboratory-based work to uncover the genetic bases of disparities.

“No population is too hard to reach, it’s just that they are hardly reached,” he concluded. “We are working to change that.”

From left to right: Teresa Martens, M.S.N., R.N. (NVIH Outreach Director); Chester Austin, M.D. (NVIH Medical Director); Sharon McClure (NVIH Quality Assurance Manager); Arzoo Mojadeedi, R.N. (NVIH Outreach Director); Julie Dang, Ph.D., M.P.H. (Executive Director, Office of COE); and Ulissa Smith, M.P.H. (COE Program Coordinator).

OTHER PROGRAMS ADDRESSING HEALTH DISPARITIES

Other UC Davis Comprehensive Cancer Center programs promoting cancer prevention and detection and working to reach vulnerable populations include:

EXPLORER. Cancer screening, diagnostics and treatment monitoring received a boost from the EXPLORER scanner created at UC Davis Health, which can capture a high-quality 3D image of the whole human body in the time of a single breath. EXPLORER is a combined positron emission tomography (PET) and X-ray computed tomography (CT) scanner. A recent supplemental grant, in collaboration with the Office of Community Outreach and Engagement, is helping to bring the benefits of EXPLORER to racial and ethnic minorities in the region. With advice from our Community Outreach and Engagement Advisory Board, we are preparing YouTube videos to describe the benefits of total-body scans for the earlier detection of cancer in racial and ethnic minorities.

Hepatitis B screening, vaccination among Asians. Asian Americans comprise about 6% of the population but have about 60% of the burden of chronic hepatitis B, a viral infection that is one of the most common causes of liver cancer worldwide. At UC Davis, reducing the impact of hepatitis B has been a decade-long team science effort, and it’s working. Liver cancer is now the fifth leading cause of cancer in our region rather than the fourth.

UC Davis is partnering with the largest primary care provider of Southeast Asians in Sacramento County to increase hepatitis B surface antigen screening among pregnant women so that perinatal transmission of hepatitis B can be eliminated. Along with other efforts, END B, a grant from the U.S. Department of Health and Human Services’ Office of Minority Health, will be helping spare the next generation from hepatitis B-linked liver cancer deaths.

CLOVER. Colon cancer, Lung cancer, Obesity, Vaccine-preventable illness and livER cancer help spell “CLOVER” and are responsible for a great deal of disease burden in people ages 50 and older. Erik Chak, assistant professor of gastroenterology and hepatology, is piloting a National Institutes of Health-funded pilot program to more efficiently bundle cancer screening and reduce cancer-related racial disparities. The program uses Epic Healthy Planet, a platform to manage complex patient data and optimize care.



Candid conversation with UC Davis Health CEO David Lubarsky, M.D., M.B.A.

How do you see the UC Davis Comprehensive Cancer Center evolving in the future?

Right now, our cancer center is an amazing resource for patients, offering superior health care and outcomes, and a great deal of research; but I see it evolving in terms of helping to eliminate health disparities for populations we haven't yet reached with the latest therapies, diagnostic techniques and sub-specialist support.

We're all about advanced diagnostics. That includes asking questions about what increases individual cancer risks. What is it about our environment, our heritage, our ZIP code, our genetic code that triggers cancer? That's the Holy Grail. And, we are actively chasing it.

What makes our cancer center unique?

There are only 51 National Cancer Institute (NCI)-designated comprehensive cancer centers in the country and we are one of them. The designation is important because it signifies that we are a select cancer center moving the boundaries of care for cancer patients, especially with the ability to conduct early-stage FDA cancer trials.

If we can cure pancreatic cancer, we can cure any cancer — but we are not going to do it alone.

The UC Davis Comprehensive Cancer Center is unrivaled and unparalleled in the region. We enroll many patients in clinical trials, but we need to strive to enroll diverse populations in these trials.

In what ways do you think we could further reduce the cancer burden in our region?

We are uniquely positioned to address health disparities because of our urban location, with African American neighborhoods and other communities of color nearby, and most importantly, we are trusted.

This was evident during the recent Pfizer COVID-19 vaccine trial we conducted, which had some of the largest percentages of minority participation in the country.

There are also demographic differences in the underserved populations in rural areas we serve in Northern California and the Central Valley. We are committed to increasing our community partnerships in these rural areas to not only get them into critical cancer research trials but also give them access to premium cancer diagnostics and treatment.

What are the challenges we face in our mission to fight cancer?

We want to stop cancer before it starts. That means understanding the toxins present in industries such as agriculture and the living conditions that expose certain rural populations, such as farmworkers, to environmental and social conditions that put them at risk for cancer.

More research is needed, and we also need creative solutions to increase access to care. The cancer center is advancing telemedicine in these remote areas. One of the silver linings of the coronavirus crisis is that we have demonstrated we can do more with virtual office visits, including patient monitoring, easy access to films, and even virtual tumor boards.



“We are humbled by the generosity of donors during this unprecedented year, and grateful for the continued commitment to supporting clinical and translational research to stop, prevent and treat cancer. All of this is possible because of your financial support. Philanthropy gives us the flexibility to adapt while keeping the needs of individuals and families at the center of our cause. It is through the generosity of our donors that we will persevere, innovate

at every opportunity and beat this disease.”

Primo “Lucky” Lara, Jr., M.D.
Director, UC Davis Comprehensive Cancer Center

David Lubarsky, UC Davis Health CEO and Primo “Lucky” Lara, Jr., director, UC Davis Comprehensive Cancer Center



UC Davis Comprehensive Cancer Center Points of Excellence

- Treating 24 types of cancer, from the rarest to the most common.
- Recognized by *U.S. News & World Report* as one of the nation’s Best Hospitals in cancer care.
- The region’s only clinic for managing the long-term effects of treatment on childhood cancer survivors.
- More than 400 adult and pediatric cancer clinical trials underway are providing access to novel or personalized therapies and early Phase 1 trials.
- More than 100,000 patient encounters each year, and the only National Cancer Institute-designated comprehensive cancer center in California’s Central Valley and inland Northern California.

How are we leveraging partnerships with other University of California cancer centers?

We are working hand and glove with our affiliated cancer centers through the University of California Cancer Consortium to share research, assets and capabilities so we can have a bigger impact in the cancer fight. Together, we comprise 10% of the NCI-designated cancer centers in the U.S., making us the largest cancer center in the world, treating more cancer patients and conducting more cancer clinical trials than anyone else. By collaborating through the UC Cancer Consortium, we accumulate knowledge and complete clinical trials in a shorter time frame. That’s critical to finding cures faster and more economically.

For instance, our Institute for Regenerative Cures partners with UCSF to take the body’s own defense mechanisms against cancer, T cells, grow them in cultures and supercharge them to create cancer-fighting CAR T cells. We’re about to roll out a new line of CAR T cell therapies at 20% of the previous prohibitive cost. We also started a UC Pancreatic Cancer Center Consortium to address the toughest of all cancers. If we can cure pancreatic cancer, we can cure any cancer — but we

are not going to do it alone. Collaborating with other UC comprehensive cancer centers is critically important.

What do we need to make it all happen?

To give everyone the best odds of surviving cancer, we need to constantly upgrade and expand our facilities. This is why we need help from other people — to make the research happen, to fund the clinical trials, to bring the complex cancer cases into the UC for research. We depend on grateful patients and others, such as corporations, to give back and help us prevent future patients. Our goal is to put ourselves out of business.

There are countless stories of lives cut short by cancer. Those stories would disappear if we made the right investments and instead they could be replaced with stories about families that were not broken apart, and children who didn’t lose a mother or a father, or parents not worried about the hereditary risk they’ve passed along to their child.

We have to be smarter and think carefully. There is so much to be done to remove this scourge, one cancer at a time. Everybody wins when there is greater health for all. That’s why we’re here and that’s what the UC Davis Comprehensive Cancer Center is all about.



MEET SUPER FRITZ

Special boy inspires generous donors to fund new resource specialist position for families facing pediatric cancer

FRITZ STARK LOVES SUPERHEROES. HE'S ALSO A BIT OF A SUPERHERO HIMSELF. FRITZ WAS DIAGNOSED WITH B-CELL ACUTE LYMPHOBLASTIC LEUKEMIA WHEN HE WAS JUST 2 YEARS OLD. BUT PROCEDURES AND HOSPITAL STAYS COULDN'T KEEP THIS HIGH-ENERGY KID DOWN, AND FRIENDS AND NEIGHBORS STARTED CALLING HIM "SUPER FRITZ" FOR HIS CAN-DO ATTITUDE. THIS SUPER-STAR IS NOW CANCER-FREE AND WILL SOON CELEBRATE HIS EIGHTH BIRTHDAY.

Anjali Pawar, a pediatric hematology oncologist at the UC Davis Comprehensive Cancer Center, fondly remembers Fritz Stark's first year of treatment. One memory in particular stands out.

"The peach trees were flowering outside the cancer center and Fritz was waiting outdoors for his infusion therapy and was excitedly doing flips on the grass. The children go with 'what is' and not 'what if.' That's the kind of joy they bring to us providers," said Pawar.

Despite his carefree attitude, Fritz's parents, Anna and Ben Stark, said their son's three-year fight with cancer wasn't easy, even with big brother Payne, two years older, stepping in to help. Now, Fritz is a big brother himself. His baby brother Duke arrived just as Fritz's cancer was going into remission.

The three Stark boys are keeping their family busy these days, but Anna and Ben know how difficult the cancer journey with a child can be and now they want to give back.

MEET THE FLOWERS

Ruth and Paul Flowers are big fans of Fritz. Long-time family friends of the Starks, they've also spent time at the cancer center. Paul Flowers credits Jeanna Welborn, director of the Cytogenetics and Bone Marrow Labs and an expert in blood cancers, with excellent care after he experienced symptoms that luckily turned out to be a false alarm.

"We were extremely impressed with the way we were treated — as patients and family at UC Davis," shared Ruth Flowers. They are ready to give back, too.

"For anyone getting a cancer diagnosis, it is beyond scary, especially when it is a family whose child is diagnosed with cancer," said Flowers. "After Fritz

"MANY PEOPLE GIVE MONEY FOR RESEARCH FOR A CURE. WHAT IS LEFT OUT ARE FUNDS FOR A NON-MEDICAL FACILITATOR TO GUIDE AND ASSIST FAMILIES AT THE TIME THEIR CHILD IS DIAGNOSED WITH CANCER."

— RUTH FLOWERS

was diagnosed, we were in constant contact with the Starks and heard about the challenges navigating their new family routines and employment responsibilities, seeking responses to non-medical questions of concern and, most importantly, handling the insurance hurdles."

Both grateful for the care they received at the UC Davis Comprehensive Cancer Center, the Flowers and the Starks decided to start the *Super Fritz & Friends Fund* to create a new resource specialist position at the cancer center.

"This resource specialist will partner

with our social workers, in addressing the many requirements and needs that these families face, and allow the team to have more time to focus on the psychosocial needs of our patients," said Marcio Malogolowkin, a board-certified pediatric hematologist-oncologist and chief of the Division of Pediatric Hematology-Oncology.

The Starks and the Flowers are thrilled that the position is becoming a reality.

"Fritz undoubtedly received the best medical care from a comprehensive team of doctors, nurses and child life specialists," shared Anna Stark. "The



Paul and Ruth Flowers

RESOURCE SPECIALIST POSITION

Directing key support to help children and their families:

- Identify financial assistance, including gas cards and transportation programs to cover economic needs, especially for underserved members of the community.
- Navigate health insurance challenges.
- Recommend mental health resources for patients and family members to help balance the needs of the entire family and reduce stress.
- Provide checklists and personal guidance once home from the hospital to include house cleaning resources, childcare options and other practical needs.
- Work with schools to address educational loss, provide tutoring resources and ensure that siblings are also not impacted.
- Navigate social services to support families managing a child's cancer care.
- Advise working parents going through employment challenges and assist in arranging family leave.
- Initiate scholarships for childhood cancer survivors.

front desk team and the medical techs were joyful people to be around. We loved the pediatric infusion center, also known as the 'juice caboose,' and can't wait to watch this new family resource position be realized and flourish, too."

Pediatric cancer is hard on families, and the journey is complicated by pressures unrelated to actual medical care.

"Many people give money for research for a cure. What is left out are funds for a non-medical facilitator to guide and assist families at the time their child is diagnosed with cancer," said Flowers. "There needs to be a professional specialist to help the family navigate through their emotional, practical, and financial struggles."

The resource specialist position will strengthen and enhance the support that the UC Davis Comprehensive Cancer Center provides to loved ones and families.

"Watching us go through the experience, Ruth and Paul recognized the non-medical struggles that Ben and I, as parents, were up against following Fritz's diagnosis. It was the most challenging time of our lives," said Anna. "Yet, the Flowers knew what was missing. They got to the heart of it."

It is through this realization and the shared experience of fighting cancer that the *Super Fritz & Friends Fund* was born. The goal is to raise \$250,000 initially to fund the resource specialist position for the first two years.

OTHER CHILDHOOD CANCER FAMILIES SUPPORT THE IDEA

Michelle and Jason Hurst agree the resource specialist position is needed. Their daughter, Taylor, was only 5 when she was diagnosed with high-risk T-cell acute lymphocytic leukemia, an aggressive and unique form of Leukemia. Taylor and Fritz met while receiving treatment at the UC Davis cancer center. Taylor is now 10, is in remission, and has been out of treatment for over two years.

"To have the community step up and fund this position is amazing. To have this community support is priceless," expressed Taylor's mom, Michelle Hurst. "When we hurt, we all hurt. When we win, we all win."



SUPER FRITZ SPENDS TIME WITH HUGGIE, THE UC DAVIS FACILITY DOG WHO SUPPORTS KIDS WITH CANCER.

The UC Davis cancer center is grateful for the generosity of Paul and Ruth Flowers and others who have already donated to the *Super Fritz & Friends Fund*. If you would like to donate, please make checks payable to UC Davis Foundation, *Super Fritz & Friends Fund*, and send to 4900 Broadway, Suite 1150, Sacramento, CA 95820, or go online to give.ucdavis.edu/CCAD/324631.

WE ARE CURING KIDS OF CANCER

The UC Davis Comprehensive Cancer Center is the only center in the region with a pediatric oncology program.

“We’re working to bring leading-edge therapies to our young patients, making sure that the national trials through the Children’s Oncology Group, as well as other trials, are open to our patients,” said Marcio Malogolowkin, a board-certified pediatric hematologist-oncologist and chief of the Division of Pediatric Hematology-Oncology.

According to the ACS, about 11,000 children in the United States under the age of 15 were diagnosed with cancer in 2020. Childhood cancer rates have been gradually rising for the past few decades. Because of major treatment advances in recent decades, 84% of children with cancer now survive five years or more.

Pediatric cancer represents less than 1% of all cancer in the U.S., and only 4% of the billions of dollars the U.S. government spends annually on cancer research is directed toward treating childhood cancer. The challenge is that frequently, pediatric cancer programs compete for the same funding sources.

“Working with other investigators, we are developing novel therapies to address the challenges of pediatric cancer,” shared Malogolowkin. “For example, Dr. Reuben Antony, a neuro-oncologist, is partnering with our pediatric genomic medicine colleagues in studying therapies to treat plexiform neurofibromas, a problem seen in more than a third of patients with neurofibromatosis, which causes significant disfigurement and morbidity for these pediatric patients.”

The pediatric oncology program at UC Davis is unique in that it is embedded in the cancer center. Oncologists work with inpatient care teams at the UC Davis Children’s Hospital to care for our children with cancer. Everything is designed with the specific needs of the pediatric patient in mind.

“When you save a child, you’re saving 50–60 years of a productive life,” said Malogolowkin.



OTHER RESOURCES FOR ADOLESCENTS AND YOUNG ADULT PATIENTS WITH CANCER

The UC Davis Comprehensive Cancer Center is one of only a few hospitals to offer a robust program for adolescent and young adult cancer patients, ages 15 to 39. The Adolescent and Young Adult Oncology Program was developed to acknowledge and meet head-on the unique needs of patients in this group.

The mission is to provide high-quality, evidence-based, coordinated care that promotes the physical, psychological and emotional health of adolescents and young adults with cancer during and after therapy. The program empowers patients by sharing the resources and knowledge needed to live an independent and fulfilling life.

Cancer care in the era of COVID-19

Clinicians at the UC Davis Comprehensive Cancer Center and other facilities within UC Davis Health are on a mission to get patients the care they need in spite of COVID-19. It is critical that patients keep on schedule with annual check-ups and cancer screenings such as mammograms, Pap smears and colonoscopies. Appointments with their health care providers should not be delayed if there are concerns about such tests or a change in the patient's health. And, if any treatment is required, it is imperative for treatment to begin without delay. The cancer center is fully staffed, just as it was pre-pandemic, and precautions are being taken to ensure patient safety.



Colorectal cancer survivor Teri Rivera cautions against delaying cancer screenings. Learn more about her personal journey on page 6.

“We’re working to prevent post-pandemic deaths that could have been avoided — people with cancer, heart disease or other serious conditions who were afraid to come in for treatment due to COVID-19,” said Richard Bold, physician-in-chief of the UC Davis Comprehensive Cancer Center. “Cancer doesn’t wait, and we’re worried that people with otherwise treatable disease will delay care as the pandemic persists.”

UC Davis Health restricts the number of visitors, screens patients and employees for infection daily, mandates masks, maintains social distancing, and provides ample sanitizer and hand washing facilities, and most staff have been vaccinated. Going to a UC Davis medical facility for care is probably safer than a trip to the grocery store.

“Outside your home, it’s one of the safest places you can be, and delaying medically necessary care can have life-

threatening consequences,” said Bold.

Fear isn’t the only concern that keeps some patients from getting the care they need. Because of the economic downturn associated with COVID-19, many people have lost their jobs and, as a result, their employer-sponsored health insurance. They may be faced with high premiums or out-of-pocket costs. UC Davis Health wants to make sure that financial challenges don’t prevent people from getting the care they need.

“We have developed programs to help people access affordable insurance if they are uninsured or assist them with changing insurance to get more appropriate coverage,” said Bold. “We don’t want cost to be a barrier to getting care.”


Embracing telemedicine

Even before COVID-19, patients sometimes faced difficulty that prevented

them from seeking care, such as living in remote areas without transportation. UC Davis Health was already on track to solve that problem through telemedicine, or virtual doctor visits, and the coronavirus crisis has accelerated technology advancements.

“Some of the lessons we’re learning from COVID are changing how we deliver health care now and into the future,” said Bold. “Telemedicine is a really good example.”

While some procedures still need to be performed in person, telemedicine offers patients a way to connect with their physicians, review X-rays or lab results, discuss treatment options or conduct follow-up visits from the comfort of home. As many as 20% of cancer center visits are now conducted via telemedicine, which can be convenient for parents caring for children at home or people who cannot take time off work.



“We’re working to prevent post-pandemic deaths that could have been avoided — people with cancer, heart disease or other serious conditions who were afraid to come in for treatment due to COVID-19. Cancer doesn’t wait, and we’re worried that people with otherwise treatable disease will delay care as the pandemic persists.”

— DR. RICHARD BOLD
PHYSICIAN-IN-CHIEF,
UC DAVIS COMPREHENSIVE
CANCER CENTER



Reaching vulnerable populations during COVID-19

What impact is COVID-19 having on cancer prevention, control and survival? The UC Davis Comprehensive Cancer Center is collaborating with 17 other cancer centers to study the situation, thanks to funding from the National Cancer Institute.

The UC Davis cancer center's grant is focused on diverse communities.

"We are the only center being funded to study six sets of vulnerable populations, a total of 1,000 people: African Americans, Chinese, Hmong, Latinos, Native Americans, Vietnamese and rural residents to determine the impact COVID-19 is having on cancer-related behaviors," said co-director of the study, Moon S. Chen, Jr., associate director for Community Outreach and Engagement.

The study is the first of its kind and will allow the outreach and engagement team and clinicians to better tailor how they communicate and partner with these vulnerable populations to enhance trust and better serve them.

The research team's premise is that one size does not fit all. In some instances, the researchers are making contact by phone or virtual conversations. For others, online surveys and even in-person contact is helpful. For instance, Native Americans living in rural communities often come to community health centers to pick up their medications, providing an opportunity for direct outreach.

To improve outreach and engagement of African Americans, the study team is conducting focus groups to better understand how to enhance video visits for cancer care.

"We recognize that, in terms of our approach to each of these vulnerable groups, what may work in one population may not work in others," said Associate Professor David Cooke, who heads General Thoracic Surgery and is co-directing the study. "We're attempting to meet people where they live. If they're comfortable with telemedicine, we will use telemedicine. If they prefer in-person contact, we will do that."

Not deterred by COVID-19

When Grace Parker's breast cancer returned, and she needed surgery, she refused to be deterred by COVID-19.

"It was my fourth cancer recurrence," said Parker. "I knew I couldn't wait because cancer doesn't take a break during a pandemic. I said, 'Heck, yeah!' when my doctor scheduled me for surgery in April."

Parker was reassured by the COVID-19 safety precautions in place, and was relieved when she learned that her tumor was removed successfully. Subsequent scans showed that the cancer had not spread, and she continues to come in for follow-up care.

Marlene Blake has a similar story. With several masses discovered in both breasts, she could not wait and her surgery was scheduled for March, just as the first wave of the pandemic was underway.

"Whether there's coronavirus or not, I wanted to fight cancer with the best possible approach," Blake said. "Was I fearful of having surgery during a pandemic? Of course, but there was no reason to panic. It was a reasonable decision to move forward."

Like Parker, Marlene Blake was reassured by the precautions she witnessed. The staff members, who answered all of her questions and explained everything they were doing to keep her safe, particularly impressed her. Her successful surgery and follow-up care mean she can move on with her life without worrying about cancer.



Marlene Blake and Richard Bold

We have a lot to learn from dogs fighting cancer

When it comes to dog years, cancer can have a big impact. Dogs 10 years and older have a 50% chance of dying from cancer, and human oncologists are studying the disease in canines in the hopes of benefiting both animals and humans.

Thanks to its unique partnership with the country's top-ranked UC Davis School of Veterinary Medicine, the UC Davis Comprehensive Cancer Center is one of the few institutions to study what the National Cancer Institute (NCI) calls comparative oncology.

Now, UC Davis has received the first NCI grant in the country to fund a comparative oncology training program, which was launched on August 1, 2020.

The Ruth L. Kirschstein Institutional National Research Service Award T32 training grant supports institutions developing or enhancing research career development opportunities for pre- and post-doctoral research fellows. In this first-of-its-kind federal grant, more than \$2 million has been awarded to UC Davis for a five-year program to train the next generation of comparative oncology researchers.

UC Davis receives first-ever federal comparative oncology training grant



Curing cancer in people and pets will take collaboration

When the family dog gets cancer, it can feel as devastating as when any loved one is battling the disease. Giving these companion animals the benefit of leading-edge research and therapeutics—including clinical trials — not only helps pets live longer, but also supports the development of new therapies for both dogs and humans.

UC Davis program directors Xinbin Chen, Michael Kent and Robert Canter sought the training program grant and say tackling complex cancers across animal and human species presents a rare opportunity for both veterinarians and physicians to play a crucial role in basic and translational research. The goal is to recruit and retain these clinician-scientists to help address a national need for more comparative oncology researchers.

Recruiting diverse training candidates is a major focus

The program will leverage diversity and inclusion recruitment programs

at UC Davis as it seeks to draw candidates from underrepresented student populations.

“Oncologists who treat humans and oncologists who treat companion animals have a lot to learn from each other, especially when they come from diverse backgrounds,” said Chen, who teaches at both the veterinary school and the medical school. “We desperately need more research in this area because we think we can solve some of the toughest hurdles facing cancer researchers if we join forces.”

Kent, who specializes in veterinary oncology and directs the UC Davis Center for Companion Animal Health, says cancer found in dogs is very similar to cancer found in humans.

“Dogs have coevolved with humans,” said Kent. “That means they have been exposed to the same environment as humans, including some of the same carcinogens.”



With intact immune systems similar to those of people, dogs can benefit from many of the same cancer treatment breakthroughs as humans, including immunotherapies that work by helping the immune system recognize and attack cancer cells.

“Treating canines with cancer as well as humans facing the devastating disease allows us to take a more holistic approach as we compare immunological responses and the success of various therapies. And, dogs deserve to benefit from cancer trials at UC Davis, too,” said Canter, who is a surgical oncologist at the UC Davis Comprehensive Cancer Center.

Canter said comparative oncology represents the best of both medical worlds and is crucial to advancing the understanding of tumor biology, speeding development of therapies, and giving hope to patients — whether they are people or pets.



Hunting for a reprieve from cancer

As a bird dog, Josie is one of the best. The 9-year-old chocolate lab goes everywhere with her owner and is a popular guest at the Cordelia Duck Club, tucked away in the Suisun Marsh.

She is very social, extremely good at her sport and would really be missed if she weren't around.

In June, her devoted owner noticed she was bleeding slightly around her chin. An exam revealed a small growth on the roof of her mouth. Like oral melanoma in humans, Josie's cancer was aggressive by the time it was discovered.

Josie was given only two to four months to live.

Fortunately for Josie, UC Davis human oncologist Robert Canter and veterinary oncologist Michael Kent had just launched a clinical immunotherapy trial to keep cancers in canines from metastasizing or spreading.

Josie entered the clinical trial and was infused with NK, or natural killer cells, that came from a healthy dog. The NK cells attack tumor cells and prevent them from creating new tumors.

It is too early to tell if the immunotherapy will work for Josie but, six months later, she is back duck hunting.

Josie is doing what she loves, and her family knows they've done all they can for a dog who puts a smile on everyone's faces — especially during visits to the duck club.

2279 45th Street
Sacramento, CA 95817-2230

Address service requested

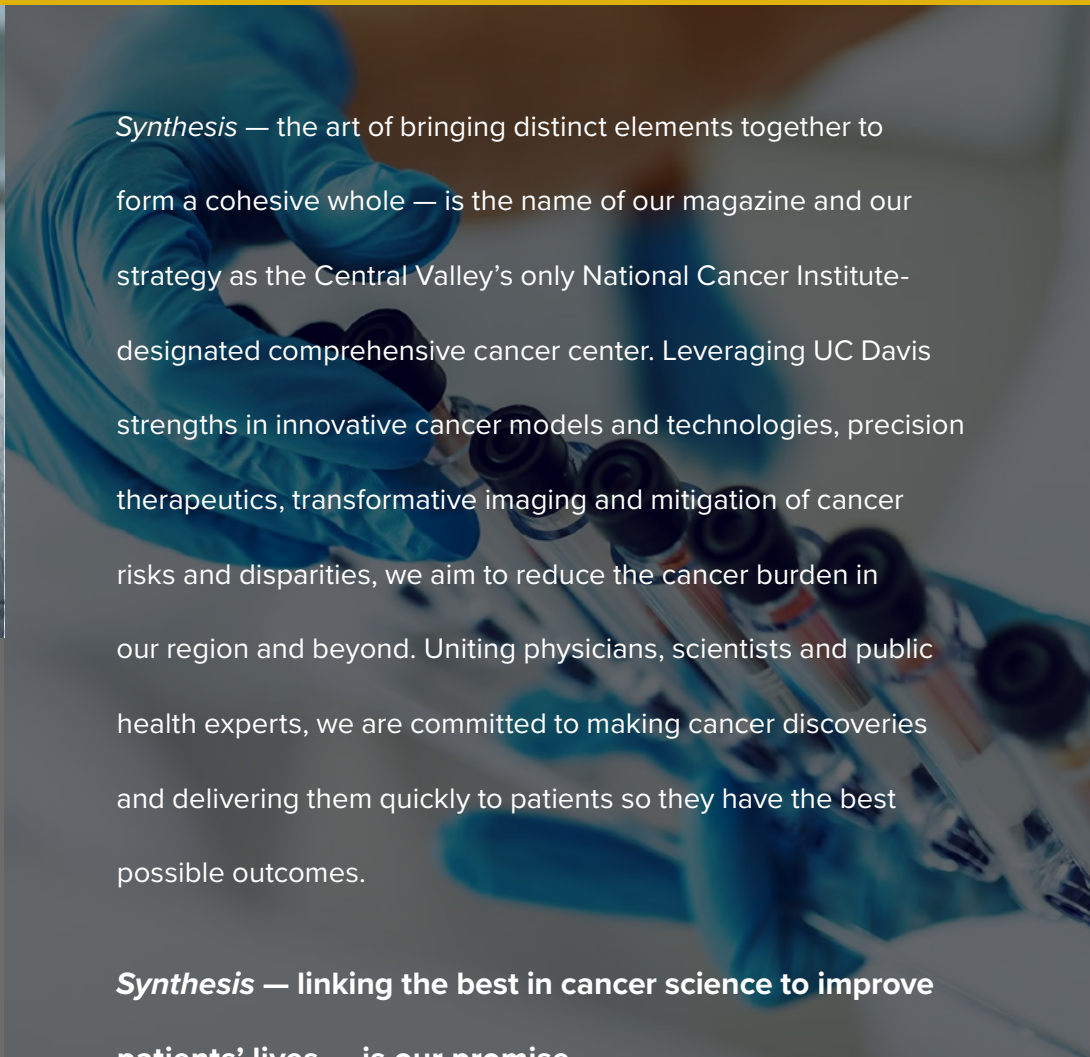
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We have **better cancer treatments** today because **people like you participated in a clinical trial.**

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



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.