UC Davis achieves the highest honor in oncology

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Dear Reader,

Welcome to this special issue of Synthesis, in which we celebrate our new designation by the National Cancer Institute (NCI) as a “Comprehensive Cancer Center.”

As you will learn in these pages, our new name – the UC Davis Comprehensive Cancer Center – reflects recognition by the NCI of the comprehensive environment in which our patients receive care and for which our donors have shown generous and consistent support.

Ours is an environment permeated by a robust and innovative research enterprise. Giving our patients the best hope for a cure is what drives these research efforts, which extend from the College of Biomedical Engineering and School of Veterinary Medicine in Davis, to the investigator-initiated clinical trials on our Sacramento campus and the scientific research labs at Lawrence Livermore National Laboratory and The Jackson Laboratory.

As you will learn, our comprehensive research and clinical enterprises were developed through the collaboration of an inspired group of innovators beginning 20 years ago. Many of these visionaries are still carrying out and expanding our mission throughout Northern California, and are featured in this issue.

Evidence of the integration of our science and clinical care is depicted in the story about treatment for sarcoma. And in our story about cancer health disparities research and outreach, you will learn about our ever-broadening efforts to make sure all populations benefit from life-saving cancer screenings so that everyone has the best hope for a cure.

As the NCI has certified, we have come a long way since we opened our doors more than 20 years ago. Our commitment is stronger than ever to comprehensively move the science forward to benefit our patients and break barriers to beat cancer.

We hope you enjoy this issue of Synthesis. And we invite you to send your comments, thoughts or suggestions to the editor at Dorsey.Griffith@ucdmc.ucdavis.edu.

RALPH DE VERE WHITE
Director, UC Davis Comprehensive Cancer Center
Associate Dean for Cancer Programs
Distinguished Professor, Department of Urology
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To “comprehensive” and beyond:

When oncologist David Gandara arrived at UC Davis in 1992, the university’s fledgling cancer center was a place brimming with promise but short on proof.

“We were young, we were small, and although we certainly had a lot of talent and potential, we hadn’t really made a mark,” Gandara recalls.

Just 20 years later, UC Davis has surged from semi-obscurity to the big leagues in cancer treatment and research, winning designation in February as a “comprehensive” cancer center by the National Cancer Institute (NCI).

By earning comprehensive status, UC Davis becomes only the 41st cancer center validated by the NCI as providing first-rate cancer care.
combined with a strong research base and wide spectrum of cancer prevention, education and outreach services.

“It’s amazing,” says Gandara, a leading lung cancer specialist. “To come so far so fast and to now be numbered among the most prestigious cancer centers in the country is simply extraordinary.”

While many cancer treatment facilities include the word “comprehensive” in their names, the term as used by the NCI is very specific, conveying a special state of excellence awarded only after a cancer center passes a rigorous review.

“This is not a beauty contest,” explains Ralph de Vere White, the center’s long-time director. “It’s a special seal of approval, and it means our community can count on the fact that we’re good – good in cancer education, cancer care, cancer research, and all other aspects of cancer.

“For patients in the valley, the bottom line is that they do not have to get on a plane and fly somewhere else for world-class cancer treatment.”

There were no secrets or shortcuts underlying UC Davis’ climb to the top. Rather, success was a product of hard work, vision and passion shared by a broad swath of clinicians, researchers and cancer center staff soldiering for two decades toward a common goal.

Convinced that UC Davis had the raw material to break into the upper echelon of cancer centers, this team followed a carefully plotted path, including recruitment of the best and brightest scientists and doctors; construction of a 56,000-square-foot treatment center and state-of-the-art companion research laboratory; diversification of the center’s cancer programs; expansion of its clinical trials; and the formation of fruitful connections with distinctive partners,

Making headlines

“Cancer center joins elite level”
— The Sacramento Bee

“Comprehensive’ status brings name change to cancer center”
— The Davis Enterprise

“New cancer center label boosts UCD”
— Sacramento Business Journal

OPPOSITE PAGE, TOP TO BOTTOM Ralph de Vere White addresses media conference audience; Mayor Kevin Johnson, U.S. Rep. Doris Matsui, UC Davis Health System Vice Chancellor Claire Pomeroy, cancer center director Ralph de Vere White; donors, faculty and staff react to designation announcement; media conference speakers de Vere White, Matsui, Rollie Swingle and Francesca Arnaudo
Building on basics>>

from the schools of veterinary medicine and agriculture to the California Cancer Registry and the Lawrence Livermore National Laboratory.

Also key was inspired leadership at the top, namely, the force of nature who has led the cancer center since his appointment as director in 1996, de Vere White. A urologic oncologist by training, de Vere White remains one of the top genitourinary cancer surgeons in the country, beloved by patients who consistently rate him one of “The Best Doctors in America.”

From the beginning, de Vere White proclaimed that only a collective effort – not just within the center but embracing outside partners as well – could convert UC Davis from a respected cancer treatment center to a multi-faceted research and clinical powerhouse. As he puts it, “You can be the coach, but you can’t be the quarterback, the running back and all the rest of it. So I simply try to put good people together, and we go toward our goal as a team.”

A steady ascent to the top

The first goal was achieved in 2002, when UC Davis earned designation by the NCI, becoming the 61st such cancer center in the country. The NCI, the nation’s top cancer organization, awards designation only to cancer institutions with the demonstrated potential to make major scientific contributions to the war against cancer. Granted after an exhaustive review process, NCI designation brings multiple benefits, from a glow of prestige that aids recruitment to a stable stream of federal research dollars.

Designation was renewed for UC Davis in 2006. But de Vere White and his allies were not content to stop there. All along, they had their eyes on a loftier honor – comprehensive status.

The journey to that next milestone has not been an easy one. Compared to cancer centers in larger metropolitan areas, UC Davis has a smaller population base, which means fewer patients to participate in clinical trials of promising cancer drugs and a tougher climate for fundraising, a component ever more critical for scientists as government research support has dwindled.

But UC Davis also has access to some rare assets. For one thing, it is cocooned within the hold of a powerful mother ship – one of the most accomplished, dynamic university systems in the world, an institution offering untold opportunities for collaboration. In addition, Sacramento is one of the most racially diverse cities in the nation, a territory begging for cancer research related to ethnic disparities.

Why not, de Vere White and others reasoned, develop and strengthen the cancer center through integration of these special components? Wouldn’t a united front spanning multiple disciplines and partners serve as an even more potent weapon against cancer?

“Cancer is a very complicated disease, and it takes commitment from all elements of the university, the health system and beyond to attack it from every angle,” says Karen Kelly, associate director for clinical research. “I think UC Davis really understands that, and I think our record reflects it.”

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Harnessing technology

A good number of the cancer center’s team works within one of its most unique partner components, the Department of Biomedical Engineering, on the main UC Davis campus. Led by physicist Simon Cherry, the Biomedical Technology program is one of the cancer center’s four core pillars, teaming physical scientists and engineers with medical experts to develop tools for cancer detection, treatment and monitoring.

Formerly anchored in work at Lawrence Livermore National Laboratory, the program’s scope has expanded well beyond the national lab in recent years, and now includes more than 30 members. The program has been lauded by peers for being highly innovative and productive, and is considered a unique national resource.

A stroll through the warren of laboratories at biomedical engineering headquarters, which overlooks the Aggies football stadium, illuminates the promise of technology as a weapon against cancer. Off one hallway, Laura Marcu and a team of graduate students are refining a hand-held, fiberoptic probe that helps surgeons distinguish malignant tissue from healthy tissue during surgery to remove brain, head and neck tumors. The probe, which already has been used on patients, uses fluorescent light to obtain a molecular signal analyzed in real time to determine whether tissue is healthy or cancerous. Next step: broader clinical trials to determine parameters for most effective use.

In another laboratory, Katherine Ferrara, founding chair of the Department of Biomedical Engineering, is hunting for ways to target delivery of cancer drugs to tumors in ways that improve efficacy and reduce toxic side effects. One avenue involves encapsulating the drug in nanoparticles and then using ultrasound to help guide delivery of the drug and enhance its release at the target.

“We are developing technologies for use on so many levels,” says Cherry, whose own work focuses on developing new molecular imaging technologies to better identify cancerous cells and help develop and validate new drugs. “The challenge of the next 10 to
20 years is to get these ideas from the lab to the clinic and, ultimately, to commercialization.”

A little help from our best friends
While Cherry’s team uses technology to fight cancer, the School of Veterinary Medicine lends its know-how and its animal patients to the cause through another of UC Davis’ partnerships, its comparative oncology program. Few cancer centers can boast an alliance with a world-renowned veterinary school right in its front yard, and UC Davis is making full use of the connection. Uniting veterinary scientists with oncologists, the program aims to extend the lives of small animals with cancer through treatments and techniques that could benefit human patients, as well.

The UC Davis Veterinary Teaching Hospital sees more than 1,300 animals, primarily dogs, with spontaneous cancers each year, a population that doubles as a resource for human cancer researchers. Compared to mice, dogs make excellent models for human research because of their genetic diversity, exposure to the same environments as people, and because they get some of the same cancers.

Clinical trials of anti-cancer drugs in pets are also less costly than in humans, because charges for everything from blood tests to CT scans are lower in veterinary medicine. A trial that might take five years and millions of dollars with human volunteers can be completed in five months at far less expense with animals.

“Because disease can progress quicker in dogs and because their lifespan is much shorter than ours, it is easy to follow a dog through its life and track the effectiveness of certain cancer drugs,” says Michael

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Kent, an associate professor in the School of Veterinary Medicine. “This whole area of using animal models as a bridge to fight cancer is really game-changing, and I believe it will take us to a new level in cancer research.”

Among the notable work already accomplished is an initial clinical trial Kent conducted with help from Kit Lam, professor and chair of the Department of Biochemistry and Molecular Medicine and an expert in targeted drug therapies for cancer. The trial, involving dogs with lymphoma, used Lam’s nanoparticle technology to deliver the drug paclitaxel, used to treat lung, ovarian and breast cancer in humans.

While the principal goal was to develop a formulation of the drug that dogs could tolerate, the study and planned subsequent trials could yield results beneficial to human patients who need chemotherapy.

**Tackling disparities in cancer outcomes**

In addition to caring for individual patients, NCI-designated cancer centers are charged with improving the health of communities, and in its march toward comprehensive status, UC Davis has embraced that mission with gusto.

Under Moon Chen, a professor of hematology and oncology, the cancer center’s Population Sciences & Health Disparities Program is a national leader in closing gaps in cancer outcomes for different populations. With 24 members from seven departments, the program boasts peer-reviewed grants funding studies on every racial/ethnic group except Hawaiians and Pacific Islanders.

One standout is Chen’s leadership of an NCI-funded national effort to curb cancer among Asian Americans, who are disproportionately affected by the disease. Headquartered at UC Davis, the Asian American Network for Cancer Awareness, Research and Training blends community-based education with training and research. For the last five years, Chen and colleagues at UCLA and UCSF joined forces on a project exploring how best to persuade Asian Americans to undergo testing for hepatitis B, a leading risk factor for liver cancer.

Another innovative outreach program sought to increase the rate of mammography screening for American-Indian and Alaska-native women, who have disproportionately high death rates from breast cancer. Marlene von Friederichs-Fitzwater,
director of the Outreach Research and Education Program, found that cultural beliefs are key barriers to breast cancer screening among native women. She worked with members from eight tribes to develop a DVD using traditional storytelling and talking circles to communicate the importance of mammography.

Results of the “Mothers’ Wisdom Breast Health Program” showed that of 118 women who watched the DVD and said they would get a mammogram, nearly all of them (112) had done so within the following year. The program has since expanded to 25 Northern California tribes.

Meanwhile, family physician Tony Jerant won an NCI grant to investigate low colorectal screening rates among Latinos and African-Americans, who have disproportionately high rates of colon cancer. Moving beyond traditional outreach methods, Jerant developed an interactive program that educates patients in doctors’ waiting rooms, alerting them to the importance of screening. Promising early results led to supplemental funding that expanded the program to four other cities.

Bolstering these and other health disparities work is another of UC Davis’ unique resources – the California Cancer Registry. With 3.4 million cancer cases, representing 95 percent of all cases in the state, the registry provides a wealth of opportunities for collaboration and is the world’s largest, most ethnically diverse registry in a geographically contiguous area.

“We can all congratulate ourselves for the moment, but then we will be expected to deliver. And we will.”

~ Ralph de Vere White
“The registry is truly a treasure,” Chen says. “It provides us with an enormous, tremendously diverse data base that we can use to answer any imaginable question related to cancer.”

Putting patients first
At the heart of all the cancer center’s work, of course, is the health of the patient – specifically, what can be done to make sure more people beat cancer and experience fewer side effects along the way. Toward that end, the testing and development of new drugs through clinical trials is a key priority – and a fourth area of excellence that propelled UC Davis toward comprehensive status.

In 2002, UC Davis received approximately $42 million in federal research funding through a multitude of grants. By 2011, that had grown close to $108 million. In addition, the number of National Institutes of Health research project (R01) grants more than doubled, from 50 to 126.

With such support, coupled with fundraising, UC Davis has developed a robust program of investigator-initiated clinical trials, with 24 such studies under way, testing a wide variety of agents. And that, says Karen Kelly, the cancer center’s Phase 1 clinical director, is only the tip of the iceberg.

“There are thousands of great ideas out there – about promising therapies, tools to prevent cancer, how to help survivors – but all of these require clinical trial testing,” Kelly says. “Now, with comprehensive status, we’ll be in a better position to take these ideas from the laboratory to the bedside, and translate what we do into help for patients.”

That, says de Vere White, is the overriding goal shared throughout the UC Davis Comprehensive Cancer Center – and a challenge that will dominate the center’s agenda for the next five years.

“We are not going to fly under the radar any longer, and we are not going to be looked at as the surprise that did more with less,” says de Vere White. “We can all congratulate ourselves for the moment, but then we will be expected to deliver. And we will.”

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Early leaders paved the way for national prominence

Breaking ground
The first Cancer Center director recalls when housing disparate services together was deemed novel

James Goodnight Jr. knows that every great journey must start with small steps. In the early 1980s, he merely wanted to put together three separate departments — medical oncology, surgical oncology and radiation oncology — that he knew made sense to house in one building.

“At the time, it was a new idea to put medical and surgical services together,” recalls Goodnight, a surgeon who specialized in treating malignant melanoma, breast cancer, pelvic tumors, and bone and soft-tissue cancers. “But cancer care is multidisciplinary in its nature, and it needs to be coordinated.”

At the time, UC Davis patients with cancer had a lot of trekking to do to obtain services, according to Goodnight. Not only were medical and surgical oncology in separate buildings, but patients needed to go to the Sutter Medical Clinic on I Street for radiation therapy, as UC Davis did not have its own services.

After years of planning, ground was broken in 1989 for a centrally located cancer center at the UC Davis Medical Center, and the airy building with a two-story, glass-encased lobby opened in 1991, with Goodnight serving as director.

Thanks to the large referral network across Northern California developed by Frederick Meyers, a hematologist-oncologist who is now executive associate dean for the UC Davis School of Medicine, patients came flooding in, and haven’t stopped since, according to Goodnight.

Soon the departments of gynecological oncology, pediatric hematology-oncology, urology, and head and neck oncology became associated with the fledgling cancer center as well. The center’s Department of Radiation Oncology, initially run by a rotating chair from UCSF, came under the full auspices of UC Davis in 1995.

“We rapidly became a real center for excellent clinical services,” says Goodnight. “At the time, the beautiful building was the shining star of the campus.”

Goodnight recognized that what was needed next to eventually realize National Cancer Institute (NCI) designation was a stronger scientific research arm. In 1995, he passed the directorship to Ralph de Vere White, professor of urology, who was already well respected for his research in prostate and other urological cancers. De Vere White assembled a research team, and NCI Cancer Center designation became a reality in 2002.

Goodnight went on to chair the Department of Surgery for 12 years and is currently associate dean for
Clinical Affairs and the director of the Practice Management Board, for which he designs the structure, responsibilities and physician medical practice goals for UC Davis.

He remembers with fondness the early days of the cancer center, which he established as a broad, multidisciplinary oncology practice serving the needs of Sacramento and the Northern California region.

“I couldn't be more proud that the cancer center has now achieved NCI comprehensive cancer center status,” Goodnight says. “It is a tribute to the hard work of many individuals over the years and the strong support of UC Davis.”

**Turning swords into treatments**

**Lawrence Livermore National Laboratory and UC Davis Comprehensive Cancer Center collaborations advance cancer research**

Jim Felton and Dennis Matthews well remember when a group of UC Davis leaders visited Lawrence Livermore National Laboratory (LLNL) about 15 years ago. De Vere White and a group of department chairs from the UC Davis School of Medicine went on an exploratory mission to see if collaboration between UC Davis and the “weapons lab” would be possible.

At that time, Matthews, a physicist who led LLNL’s medical technology program, and Felton, leader of the lab’s molecular and structural biology division, both oversaw highly innovative, technologically sophisticated research and developed projects conducted by some of the brightest bioengineers in the country.

“We had extremely advanced technological capability, but no patients or physicians,” Felton recalls. “Without all those components, you really can’t take research to the level of clinical application.”

Meanwhile, UC Davis had patients, doctors and scientists, but not many of the advanced technological tools needed to attain the highest level of research. Few facilities outside of national security laboratories like LLNL did. Both sides at that meeting realized that collaboration offered the potential to achieve much more than either institution could on its own.

“Lawrence Livermore and UC Davis scientists already knew each other from professional meetings, but we couldn’t collaborate until we crafted this alliance,” remembers Matthews. “This was truly a win-win arrangement.”

A unique research partnership was formed – the largest of its kind in the country – and was a deciding factor in the cancer center earning designation by the National Cancer Institute in 2002.

**A high-tech approach to drug development**

Felton simultaneously became the deputy associate director for biology and biotechnology at LLNL, as well as the associate director for cancer control at the UC Davis Cancer Center. In those roles, he worked to promote research between scientists at the two institutions, aiming defense technologies against a disease that is one of the nation’s biggest enemies.

Some particularly fruitful collaborative efforts made use of LLNL’s...
accelerator mass spectrometer (AMS), a large complex machine consisting of a particle accelerator and high-powered magnets available to few cancer researchers worldwide. More commonly used for radiocarbon dating, AMS is so powerful that it can detect the effects of a drug or other chemical down to a dose of only a few hundred molecules.

A new drug development concept — known as human microdosing — evolved from this work, which has since become extremely important to the pharmaceutical industry. The AMS can analyze cellular responses to candidate drugs using much lower doses than are used in conventional research. This provides important information for preclinical drug trials and allows for testing many more candidate drugs at a lower cost, without producing side effects on human volunteers.

**Aiming weapons at cancer cells**

Although still affiliated with LLNL, Matthews became the associate director for biomedical technology for the integrated program at UC Davis Cancer Center. One of his missions was to make technology available to the cancer center — both through collaborations with LLNL and by bringing appropriate technology to the campus itself.

Matthews and his colleagues received National Science Foundation funding for the Center for Biophotonics Science and Technology (CBST) at UC Davis in 2002, and Matthews has served as its director and the grant’s principal investigator since then. The center is focused on using light technologies to improve human health, and has conducted many research collaborations in pediatric and adult oncology.

One of the most exciting team efforts has been the development of a compact proton accelerator for radiation therapy, which could be particularly helpful for pediatric cancers as well as for adult cancers (like prostate cancer) that involve targets close to other critical structures. High-energy proton beams can be focused more accurately than standard X-rays to precisely target cancer cells, leaving more of the surrounding healthy tissue unharmed.

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But because of the immense size and high cost of a standard proton accelerator, such therapy is only currently available in about 30 centers around the world.

“A standard proton accelerator needs a football stadium-sized facility to house it and is exorbitantly expensive,” says Matthews. “Our charge was to make the cost and size practical for hospitals.”

Researchers from LLNL and the cancer center worked together with industry, and the first prototype was recently unveiled. The machine, expected to come to market soon for about $20 million, can fit into a standard radiation therapy vault.
Recalling the old days leading researchers at LLNL, Matthews laughs. “We steered clear of cancer research – it was too hard!” he says. “Now look where we are, thanks to collaboration with the clinicians and cancer researchers at the UC Davis Comprehensive Cancer Center.”

Felton agrees. “Bringing Lawrence Livermore National Lab and the cancer center together was a natural fit, and has resulted in extremely fruitful and exciting work,” he says. “Obtaining designation now as a comprehensive cancer center is a well-deserved recognition, and a large part of it is because of its far-reaching capabilities in cancer research.”

Working together to achieve excellence

Hsing-Jien Kung and Kathryn Radke see collaboration as key to success of cancer center research

Kathryn Radke, professor emeritus in the UC Davis Department of Animal Science, remembers wondering how she could get access to a flow cytometer for a graduate student. It was the mid-1990s, and a flow cytometer – used for sorting and quantifying microscopic particles such as cells and chromosomes – was not a basic bench-top machine.

Radke’s search coincided with a dream of cancer center director de Vere White’s to establish “shared resources” so that researchers from all over campus could access equipment too expensive to purchase or maintain individually. De Vere White asked Radke to co-chair the effort.

“The idea of a shared resource was a political hot potato because some investigators were already invested in equipment,” remembered Radke. “It had to be done without running over anyone’s toes, and since I was outside the medical and veterinary schools, I was viewed as a neutral party.”

With the help of Paul Luciw, professor of pathology and laboratory medicine, who wrote a shared instrumentation grant for a state-of-the-art cell flow cytometer, the first shared resource at UC Davis was born.

De Vere White gave Radke, known for her research on cancer-causing viruses, another assignment: join the search committee for someone to lead the cancer center’s expansion of basic science research.

Radke sought Hsing-Jien Kung, the founding director of basic science at the cancer center at Case Western Reserve University, who had a stellar research reputation.

“Kathryn and Paul convinced me that UC Davis had all the components to become an NCI-designated center,” remembers Kung, now deputy director of UC Davis Comprehensive Cancer Center as well as distinguished professor of biochemistry and molecular medicine.

“It was clear that there was visionary leadership backed by full support from the university.”

Kung arrived in 1998, when only five or six labs were dedicated to cancer research at the Sacramento campus. His initial goal was to establish a cancer research unit at the cancer center that would act as a nucleus to attract other researchers throughout the campus and beyond.

He set a goal of five years for achieving NCI designation as a cancer center. First, he recruited outstanding researchers like Hongwu Chen, Kermit Carraway, Colleen Sweeney and others. Productive research programs were established focused on basic science, clinical translation, epidemiology and bioengineering. Subsequent NCI review panel rankings of the basic science program consistently ranged

“Collaborations are an incredible strength of UC Davis and have allowed the cancer center to flourish. Access to diverse expertise and resources from the vet school, medical school, Primate Center, and the university’s colleges of biological sciences, agriculture and engineering creates an enormously rich environment.”

~ Kathryn Radke
from outstanding to excellent, according to Kung, and NCI designation was achieved two years ahead of schedule.

The cancer center currently has nearly 50 affiliated labs at the Sacramento campus working on cancer research. Kung also coordinates more cancer research groups at the UC Davis main campus in Davis and the Lawrence Livermore National Laboratory in Livermore.

Kung himself has made significant contributions to understanding the role of cancer-causing oncogenes and growth factors and has earned a reputation as one of the most brilliant scientists at work on cancer. His research is especially important to understanding the development of prostate cancer.

Kung has used his leadership to emphasize “translational research” at the cancer center, encouraging a rapid progression from basic scientific discovery to real-world applications. UC Davis investigators have been on the forefront of discoveries and instrumental in developing novel drugs and their applications for leukemia, lymphoma, breast, brain and ovarian cancers.

UC Davis Comprehensive Cancer Center shared resources, for which Radke paved the way with a single flow cytometry machine nearly 15 years ago, has also grown exponentially, providing member scientists with resources and expertise necessary to conduct leading-edge science. Researchers now have support in nine key areas: animal imaging, biorepository, biostatistics, clinical and molecular pharmacology, clinical trials support unit, genomics, mouse biology, flow cytometry and combinatorial chemistry.

“Collaborations are an incredible strength of UC Davis and have allowed the cancer center to flourish,” says Radke. “Access to diverse expertise and resources from the vet school, medical school, Primate Center, and the university’s colleges of biological sciences, agriculture and engineering creates an enormously rich environment.”

Kung agrees. He feels that the UC Davis Comprehensive Cancer Center has a relatively small operating budget compared with very large institutions, but others recognize that UC Davis “has always done more with less.”

“We know how to work together, and that is one of the secrets to our success,” says Kung, proudly. “We have a dream team.”

Taking the long view

David Gandara sees Comprehensive Cancer Center designation – and successes in cancer therapy – as steps in a journey

David R. Gandara came to the cancer center in 1992 as the associate director of clinical research and played an important role in helping UC Davis attain National Cancer Institute (NCI) designation as a comprehensive cancer center. But
reaching the highest designation possible from the NCI is not, according to Gandara, the final goal.

Gandara, who currently serves as senior advisor to the director of the UC Davis Comprehensive Cancer Center and director of thoracic oncology, thinks in terms of steps of steady improvement: when the center received NCI designation as a cancer center in 2002, it joined the ranks of 61 in the nation; now as a comprehensive cancer center, it is one of 41. Gandara already is looking to the next milestone: he has recently received an N01 grant from the National Institutes of Health to develop new cancer treatments, one of only seven funded.

“UC Davis is on the pathway to becoming one of the elite cancer centers in the nation,” says Gandara. “This is quite an accomplishment for a center of our relatively small size.”

Gandara attributes the UC Davis Comprehensive Cancer Center’s strength to the quality of its collaborations. Not only is there exceptional teamwork within the university, but external partnerships put it in a position available otherwise only to the largest medical centers. In addition to the productive association with the LLNL, Gandara singles out the more recent affiliation with The Jackson Laboratory, which opened a site in Sacramento at the old McClellan Air Force Base in 2009.

The Jackson Laboratory, an NCI-designated cancer center for research, specializes in developing strains of genetically defined mice for use in preventing and treating human cancers. Gandara has worked closely with the lab to advance development of preclinical models to optimize cancer drug development and speed the transition to personalized cancer therapy.

As a specialist in lung cancer, Gandara is constantly confronted with an often-fatal disease that frequently responds in unpredictable ways to available and experimental therapies. He leads a program in which patients’ tumors are transplanted into The Jackson Laboratory immunodeficient mice, which then develop each patient’s unique cancer. When the cancer grows in the mouse, it can then be transferred to other mice, so that a whole population of mice can subsequently be tested with different drug therapies to determine the optimum treatment against the patient’s specific cancer.

“We obviously can’t test 10 alternative promising therapies in a single patient, but we can in 10 mice,” says Gandara. “We are very hopeful that this technique will help hasten the development of personalized medicine.”

Gandara, who is regarded as one of the world’s thought leaders in lung cancer research, has big dreams—he foresees a day when a patient will give her pharmacist a genetic profile of her cancer and get a specific drug to target it.

But he is also a systematic investigator. He knows that curing one patient in a new way is just a step toward the goal of finding better ways to battle the disease. Likewise, he is not ready to rest on the laurels of the new NCI designation.

“It is important to view achieving comprehensive cancer center status as a milestone in a long journey. There is still much work to be done.”

~ David Gandara
An exciting ride

Two nurses look back on two decades at the cancer center

Teri Lown likens her 21 years of working as a nurse at the cancer center to flying through the air while clinging to the side of a speeding bus.

“Keeping up with all the changes has been exhilarating!” she says.

“It has been a wild ride.”

Lown, clinical resource nurse, and Linda Moe, nursing manager, have been with the cancer center since it opened in 1991. They both recall those first days of unpacking boxes of supplies and setting up the clinic from scratch in the sparkling new building.

“We had to figure out how to run a clinic as we went,” recalls Moe.

“It really was an exciting time.”

The cancer center at the time had only three medical and surgical oncologists in addition to director James Goodnight, Jr., and a handful of registered nurses.

“Jim had the vision to bring different specialties together in one place – it was a new concept,” Lown remembers.

Many dramatic changes have taken place since, particularly the surge in patient growth as more specialties, such as gynecology and pediatric oncology, became affiliated with the burgeoning center.

Moe and Lown recall how registered nurses at first organized everything for patients such as making appointments, ensuring financial coverage, arranging for home support, and of course, providing nursing care.

With increased volume and complexity, staffing changed. Office assistants were hired for clinic administration. Medical assistants were brought in to help with routine nursing tasks, and physician assistants were added to perform initial medical assessments. A whole staff was hired to handle patient insurance. When access to experimental treatments expanded, additional staff dedicated to coordinating clinical trials joined the center.

Moe and Lown say that the most important quality connecting everyone over the years is the sense of mutual respect and teamwork that pervades the cancer center.

“The doctors trust us and recognize the important role of nursing in cancer care,” Lown says. “They give us the autonomy to make decisions in our realm, and that is incredibly rewarding.”

Along with expansion came increased efficiencies. Getting the radiation oncology department housed in the same building was a tremendous step forward, according to Lown. In the early days, she remembers, it took five days for a patient to get a medical scan whereas now patients just take the elevator downstairs after their medical oncology appointment.

Another change was the health system-wide switch to electronic health records (EHR). “EHR revolutionized patient care,” says Lown. “We used to have to run around to find X-rays and...”
The doctors trust us and recognize the important role of nursing in cancer care. They give us the autonomy to make decisions in our realm, and that is incredibly rewarding.”

~ Teri Lown

Everyone has watched the clinic outgrow all expectations and become the product of its own success,” according to Moe. They are now counting down to the cancer center expansion, opening in September, when they will again unpack boxes in anticipation of new beginnings.

Steering patients to promising new treatment

Corinne Turrell has a long history of helping patients gain access to clinical trials

Corinne Turrell may be the only employee at UC Davis outside of the transportation department with “navigator” in her job title. As clinical trials navigator for the UC Davis Comprehensive Cancer Center, she steers patients toward the most promising new treatments available for their cancer.

“We want to give our patients the best opportunities for a cure,” says Turrell. “Many times access is available only in the context of a clinical trial.”

Turrell started working for UC Davis in 1984 when the clinical trials program was in the Division of Hematology and Oncology. She remembers filling out consent forms on a typewriter and handwriting schedules into a notebook.

“I could do everything to administer the program then – enrollment, budget, patient management, ordering supplies and follow-up,” recalls Turrell with a laugh at how times have changed.

As other departments became involved in clinical trials and the cancer center joined many research groups such as the California Cancer Lown and Moe agree that the biggest change they have seen over the years has been the “light-speed” increase in knowledge in the cancer field.
Consortium and the Southwest Oncology Group, the program mushroomed.

Not only are there many more trials ongoing at any one time – about 80 to 100 for adults alone – but according to Turrell, they have become exponentially more complex. Scientific protocols are much more elaborate, and obtaining insurance authorization can be labor-intensive. The clinical trials administrative staff now numbers more than 30, with separate departments dedicated to regulatory matters, business and clinical data management.

Turrell now specializes in matching patients for trials. She screens all new cancer center patients for eligibility, and fields patient and referring physician queries. She is always looking for ways to let patients know about clinical trial opportunities, and helped set up a dynamic and highly informative website that allows patients to easily search for an appropriate clinical trial and offers support to those seeking new treatment options.

Turrell reflected on her years with the clinical trials program and watching it grow into an integral part of the center’s new National Cancer Institute designation.

“Getting comprehensive cancer center designation is a culmination of years and years of effort,” she says. “A big part of it is the clinical trials program, which gives our patients access to top expertise and cutting-edge treatments close to home.”

**Refining treatment**

Rick Harse reflects on changes in radiation oncology

Perhaps in no area of cancer care are the changes over the last decades as striking as in radiation oncology. Rick Harse, chief radiation therapist at UC Davis Comprehensive Cancer Center, has had a career spanning more than 30 years and remembers treating patients without the help of computers.

“Now we are completely dependent on computers and couldn’t work without them,” says Harse, as he walks around the ground floor of the UC Davis Comprehensive Cancer Center, which looks a bit like a science-fiction movie set with its giant doughnut-shaped machines used for delivering therapeutic radiation.

Harse gives a nod to a room full of dosimetrists as they calculate the radiation dosages for patient treatments. In another room, a team of doctors and therapists confer at a computer tomography (CT) simulator, which allows planning for precise 3-D tumor targeting for each patient.

Harse and senior radiation therapists Marie Bowers and Jesse Hahn started at the cancer center when the building opened in 1991 and the radiation oncology department was under the auspices of UCSF. Four years later, the UC Davis Department of Radiation Oncology took over, and less than a decade after that, the facility had outgrown itself, and a 7,000-square-foot expansion began to make room for its third linear accelerator. Harse, involved in planning the expansion, shakes his head and chuckles in disbelief as he remembers how construction came to a screeching halt when human bones were discovered at the site. The workers had found a long-lost indigent cemetery used by the old Sacramento County Hospital around the mid-1800s. The 28 gravesites were carefully documented, exhumed and turned over to St. Mary’s Cemetery for reinterment, and construction resumed.

Over the years, Harse has seen patient volume increase by two-thirds, and an increasingly sophisticated armamentarium of cancer-fighting technologies, including an Elekta Leksell PERFEXION Gamma Knife System, which allows doctors to focus beams of radiation at a specific site in the brain to stop tumor growth. The noninvasive, extremely precise “bloodless knife” is used on an outpatient basis and is the first in the Sacramento area.

According to Harse, all the tools – from the 22-ton gamma knife to tiny brachytherapy seeds placed inside the body to deliver treatment to a highly localized area – are designed to maximize damage to a tumor while minimizing harm to surrounding organs and tissues.

“We have gotten better and better over the decades at specifically targeting cancer cells,” says Harse. “The UC Davis Medical Center has been extremely supportive in helping us keep up with the newest technology, making us the most advanced resource for radiation therapy in Northern California outside of San Francisco.”

**Caring for a network of patients**

Kay Harse promotes access to UC Davis Comprehensive Cancer Center expertise

While most nurses at the UC Davis Comprehensive Cancer Center care for the patients they see every day in Sacramento, Kay Harse worries about patients she doesn’t know and who live far away. And she would rather not see them in Sacramento.

As manager of the UC Davis Cancer Care Network, her mission is to ensure that, as much as possible, patients...
“The UC Davis Medical Center has been extremely supportive in helping us keep up with the newest technology, making us the most advanced resource for radiation therapy in Northern California outside of San Francisco.”

~ Rick Harse

receive care from their own doctors and hospitals close to home.

“The Cancer Care Network provides support to hospital-based community cancer centers so that patients can stay with their families and support system,” says Harse, who serves as the network’s chief administrative officer. “Our goal is to help patients have everything they need for excellent cancer care in their own communities.”

The UC Davis Cancer Care Network is a unique partnership between the UC Davis Comprehensive Cancer Center and community cancer centers in Marysville, Merced, Rocklin, Pleasanton and Truckee. Introduced in 2000, it is the first specialty-care network for UC Davis and is believed to be one of the first devoted to cancer care for a public institution.

The UC Davis program emphasizes collaboration, and member centers offer teams of medical and radiation oncologists, nutritionists, counselors and other support staff who work together to address as many of their patients’ needs as possible.

According to Harse, collaboration is enhanced by telemedicine capabilities. Using state-of-the-art broadband technology, specialists from member cancer centers meet with UC Davis specialists in videoconferences called “virtual tumor boards” to develop patient treatment plans. The tumor boards also provide opportunities for physicians to assess the needs and opportunities for additional resources, such as novel therapies available through clinical trials, or referrals to UC Davis for specialty care.

“The network provides physicians in areas remote from large urban centers access to specialists and researchers who are on the frontlines of developing new diagnostic techniques and novel treatments,” says Harse. “The Cancer Care Network and expanding our hospital partnerships support our role as the leading tertiary care provider in the region.”

Harse started her career with UC Davis Health System in 1989 as an administrative nurse at the infusion center, when there were only seven beds available for adult and pediatric patients. When the cancer center opened she managed the clinic, watching infusion visits grow from 5,000 to 23,000 annually.

“I’ve watched the cancer center grow from the start, with the excellent leadership of Dr. Goodnight and Dr. de Vere White,” Harse says. “It has been phenomenal – I don’t ever want to work anywhere else.”
Most cancer patients today face improved treatment options, especially those diagnosed with common malignancies such as breast or prostate cancer. But it’s far more difficult for a patient with a relatively rare cancer such as sarcoma, which develops in muscle, bone, connective tissue or even in fat cells. Sarcomas are aggressive, and metastasize in about half of the 10,000 documented cases every year.

Jerrilee Griego was unlucky, and then very lucky. In September 2010, the retired businesswoman came to her primary care physician with a large lump on her thigh. Her doctor referred her to UC Davis. Here, physicians with different expertise work together to develop a coordinated therapy strategy. The specialist team meets with the patient to discuss options before deciding on the best treatment. Cancer center scientists also lead research to develop new therapies, such as drugs that enlist the immune system to attack cancer. And physician-scientists offer patients clinical trials of the most advanced and promising therapies.

Griego first met with UC Davis sarcoma specialist Robert Tamurian, who told her about a new clinical trial directed by his colleague Robert Canter, an assistant professor of surgical oncology. In addition to the conventional approach of radiation and surgery, Canter was testing the benefits of adding an anti-tumor drug called sorafenib, which had already proven effective against liver and kidney cancers.

By that time, Canter had good reason to believe the strategy could improve outcomes for patients with sarcomas that had not metastasized. Very early trial results indicated that the pre-surgery combination of radiation and sorafenib could greatly increase the rates of necrosis, or tumor death, compared to standard treatments. Griego, who lives in Diamond Springs near Placerville, agreed to participate.

“I would not have been in the clinical trial if I hadn’t gone to UC Davis,” she says. “I knew they had the best cancer center in the area, and I was really pleased my doctor referred me here right away.”

Canter says that the best strategy for treating sarcomas is a tight coordination between surgeons, radiation oncologists, medical oncologists, and sometimes vascular surgeons and other specialists. “Having all team members in one center is a great benefit. It may sound self-promoting, but our collaborations are seamless,” he says.

As with any treatment decision, risks and benefits must be weighed. Most patients receive radiation treatment before surgery. But if a patient has diabetes or other conditions that can compromise healing, the team may decide to start with surgery, Canter says. On the other hand, a surgery-first strategy can increase the risk of mobility problems later. When specialists work in silos, collaborative approaches to determine...
the best course of treatment are less likely, and complicated cases can suddenly get more complicated.

Canter works just a few floors up from radiation oncologist Arta Monir Monjazeb at the cancer center, an assistant professor in radiation oncology.

“I come down to look at scans, and we discuss how we should map out the radiation,” Canter says. “If he’s worried about an area of the tumor, we discuss if I’ll be able to take care of it with surgery. We’ve had a lot of very complex cases, and we’ve been able to offer what can’t be found in lots of places.

“Without our close interactions and meeting together to discuss our patients, much of what we have been able to achieve for our patients just wouldn’t be possible. This type of collaboration for a disease like sarcoma is not common.”

Sarcomas usually develop in the arms or legs, Monjazeb explains. Using the collaborative approach, long-term local disease control can be achieved in more than 90 percent of patients. But for sarcomas that have spread to other parts of the body, treatment is limited to a regimen of chemotherapy, which has a poor success rate.

Because her sarcoma had not metastasized, Jerrilee Griego did well. Radiation and the clinical trial drug sorafenib killed about 95 percent of the grapefruit-sized tumor. Canter removed the large mass, and a year later, Griego is cancer-free. Since the tumor was so large, surgery cost her some muscle in her leg, but she’s back to enjoying her children and grandkids in Sacramento, and the short trips she and her husband like to take.

“I hope I’m home-free now,” she says. “I knew the doctors were all working together, and since I was in a clinical trial, they were watching things closely.”

Canter says that patients in clinical trials benefit in many ways. Their progress is monitored very closely, and outcomes are improved by 10 to 20 percent, even in early-stage clinical trials.

Richard Bold, chief of surgical oncology, sees the interactions between Canter and Monjazeb as a microcosm of how the cancer center’s comprehensive approach helps patients. “The transition from one type of treatment to another – say from radiation to surgery – can significantly affect a patient’s outcome. And it’s the pre-planning that makes it work, so you don’t have to change direction midstream. The likely outcomes are so much better if someone isn’t blindsided. This ability to work closely together has become a key part of our culture.”

Monjazeb recently was awarded coveted support from the National Cancer Institute as a “K12 scholar,” with funding for innovative research on a new approach to boost the immune system’s ability to attack the tumor and improve outcomes for sarcoma patients whose tumors have spread.

Monjazeb is hopeful that his research, in collaboration with UC Davis cancer immunotherapy expert William J. Murphy, will lead to clinical trials to try to boost success of sarcoma treatment.

“I genuinely believe that in 10 years we will be able to cure many advanced cancers that are now seen as essentially incurable,” says Monjazeb.

Richard Valicenti, chair of radiation oncology at UC Davis, says the interaction in the academic setting spurs new treatment development. “We’re committed to this team approach,” he says. “Patients have a chance to be treated in a manner that really may be the way of the future.”
Kathryn Rees credits the UC Davis Comprehensive Cancer Center, not just with saving her own life, but with extending and making comfortable the lives of her parents when they battled cancer simultaneously in 2000.

That’s part of the reason she and her husband, Leland Rees, are major donors to the UC Davis Comprehensive Cancer Center expansion, where a room will be named for Kathryn Rees’ parents. The other is they believe that some of the finest cancer research and cancer care in the nation is going on at UC Davis.

“It really has emerged as a regional and national center of health-care excellence,” Kathryn Rees says.

Rees knows well the challenges of cancer, but also appreciates its unexpected gifts. For one thing, her parents’ love for each other deepened during their illnesses.

“(My parents) would sit on the sofa – not a hair or an eyebrow between them – cooing together like two lovebirds in their twenties.” Her mother, Pauline (Polly) Templeman, had esophageal cancer, and her father, Robert “Bob” Templeman, had bladder cancer and a metastatic cancer of the ureter.

Cancer center director and urologist Ralph de Vere White discovered the ureter tumor after other physicians failed to find it. His discovery provided her father 13 additional years.

“I was led to believe he would have been lucky to have had six months,” says Rees.

She also credits oncologist Frederick Meyers, now executive associate dean of the School of Medicine, who pioneered “simultaneous care,” which combines medical treatment, clinical trials and palliative care. Bob Templeman received chemotherapy through a clinical trial, along with comfort care during his final months.

It was one of her father’s nurses who recognized her mother’s troubling symptoms, which led to her esophageal cancer diagnosis. Polly Templeman, too, received palliative care until her death at home, just six weeks within that of her husband of 55 years.

Five years later, Rees credited the cancer center with saving her own life. In 2005, a trip to the UC Davis Medical Center emergency department, resulted
in the discovery of a malignant kidney tumor, and led to surgery. “Because it was caught early, the tumor had not put legs down through the membrane of the kidney – it was still sitting on top,” says Rees. She required no radiation or chemotherapy after the surgery.

A lobbyist with a strong health-care background, Rees has served on UC Davis Health System’s Leadership Council for many years and in many capacities, including as a past chair. She is excited about the cancer center’s expansion for its healing atmosphere, inclusion of pediatric services and its broadened opportunities for cancer research.

“When my parents were ill, the cancer center at that time seemed to have already outgrown its space and was bursting at the seams,” she says. “The expansion not only will foster leading-edge care, but create a hope-producing environment that uplifts the spirit.”

Another passion of the Reeses is the social media space YourSphere.com, a professionally monitored site that allows young people to safely interact online. The site offers “spheres” that support kids’ interests and aspirations, more than 400 games, avatars, scholarships and even philanthropy, while helping young people learn to engage in civil online discourse.

Leland Rees is the company’s chairman and CEO, and Kathryn Rees is helping him and company president Mary Kay Hoal develop “spheres” for pediatric and young adult cancer patients, where they can safely communicate and navigate a catastrophic illness. The site will support treatment compliance, mentorship and resources for the entire family affected by a loved one diagnosed with cancer. With Hoal, the Reeses, are working with cancer center faculty and advisory groups to launch the site.

“This site will allow youth to interact and support one another as they make this journey and also be part of the larger site interaction, where other kids don’t even know they are kids with cancer,” Rees says.

Rees says she and her husband’s work on behalf of UC Davis Comprehensive Cancer Center and cancer patients is a cause that’s easy to believe in. “It’s a nationally preeminent institution that truly enriches the fabric of our community,” she says.

“The expansion not only will foster leading-edge care, but creates a hope-producing environment that uplifts the spirit.”

~ Kathryn Rees
The Solanki family, of Elk Grove, want to spread the message about ovarian cancer, a disease long known as the “silent killer.” They have lost their matriarch, 43-year-old Jagrati (Jags) Solanki, to ovarian cancer last year. Now, the Solankis have vowed to educate others about the quiet symptoms of the disease. In addition to launching an informative website about ovarian cancer – www.knowyourbody.info – the family has generously donated to the UC Davis Comprehensive Cancer Center, saying they believe the research going on there will save lives. They also donated to show their gratitude to UC Davis for the care Jags received there during her illness.

“UC Davis is renowned for its world-class care,” says Solanki family patriarch Udaysi. “We want to help other families avoid the same heartache we suffered.”
its work,” says Rohit Ranchhod, brother-in-law to Jags, who cited the work of Gary S. Leiserowitz, professor and chief of gynecologic oncology at the UC Davis Comprehensive Cancer Center. Ranchhod specifically commended Leiserowitz’ research in early detection of ovarian cancer using lipid tumor markers.

“The research benefits all cancers,” Ranchhod adds.

Jags was known as a compassionate fire-brand of a woman, a baker-extraordinaire who specialized in lemmingtons, a lemon cake coated in chocolate and coconut. Jags chaperoned her sons’ high school dances, where she was beloved by their classmates. Son Viraaj is now 20, and Heeral is 18.

“She was very tiny, but fierce,” says Heeral, adding that when Jags volunteered at her sons’ schools, classmates would run up to her in the hallways to hug her.

Jags was a giver in many ways. She volunteered with her family each year in the Relay for Life in Elk Grove to help raise money for the American Cancer Society’s fight against cancer – well before her fight against the disease became personal.

In October 2010, the bloating, indigestion and abdominal pain Jags had experienced for weeks became more acute. Her husband, Udaysi, insisted that she see a gynecologist. Several tests and a surgery later, the family was given the devastating news that Jags had stage 3C ovarian cancer. Jags endured chemotherapy and other treatments, but her cancer was too advanced. She died Feb. 19, 2011, with more than 20 friends and family in the hospital waiting room saying prayers for her.

In retrospect, Udaysi says the symptoms of the cancer were there, but the family was not familiar with ovarian cancer and its signs.

“We have a family filled with doctors and nurses, and if we didn’t know, how will anyone else?” Udaysi asks. Leiserowitz taught them that contrary to popular belief, ovarian cancer does have detectable symptoms – the bloating, pelvic pain and feelings of fullness.

“His message is – ‘It’s not silent. It whispers. Listen to those whispers,’” says Udaysi.

The Solankis want to get the word out. Their public awareness campaign started at the last Relay for Life at Elk Grove High School. Dozens of supporters of the family participated, and family members lined the relay area with posters about ovarian cancer to educate people about its symptoms.

But the Solankis wanted to do more. They organized a fundraiser gala and golf tournament last September to raise money for the Jags Solanki Memorial Fund for Ovarian Cancer, a non-profit organization they have established.

“Our goal was – if we break even, at least we got our message out,” says Ranchhod. The family shattered their goal, raising enough money to donate $35,001 to the UC Davis Comprehensive Cancer Center.

“In our culture, when we donate money, we never end the donation in a zero,” explains Udaysi Solanki. “The $1 shows it shall continue.”

The golf tournament and gala will be an annual event for the Solankis. This year’s Golf & Gala event is Sept. 2. Event information can be found at www.knowyourbody.info.

“We want no family to go through what we went through,” says Ranchhod. Lemmingtons were not served at the fundraiser, and there is a simple explanation as to why.

Explains Heeral Solanki: “No one knows how to make them as well.”

Dozens of supporters of the family participated, and family members lined the relay area with posters about ovarian cancer to educate people about its symptoms.
The Sacramento region is one of the most diverse in the country, and the UC Davis Comprehensive Cancer Center makes sure that its education, prevention and outreach efforts reflect that distinction.

Through these collaborations, AANCART is able to reach approximately one-third of all Asian Americans.

It also understands that while death rates have dropped for many types of cancer, thanks to earlier detection and regular screening, many groups suffer disproportionate cancer burdens and correspondingly higher death rates.

That’s why the cancer center’s physicians and researchers are working to encourage American Indian women to get mammograms, Asian Americans to get vaccinated against hepatitis B, and Latinos and African Americans to get colorectal screening. And it’s the motivation for an invigorated campaign to educate health care providers about the importance of enrolling underrepresented groups in cancer clinical trials.

These and other efforts helped UC Davis earn the coveted “comprehensive cancer center” designation from the National Cancer Institute earlier this year.

“National Cancer Institute-designated comprehensive cancer centers are distinguished from other NCI cancer centers by their excellence in outreach to the community and education of health professionals,” explains UC Davis professor Moon Chen, associate director for cancer control at the UC Davis Comprehensive Cancer Center.

Chen serves as the principal investigator for the Asian American Network for Cancer Awareness, Research and Training (AANCART), which is the only NCI-designated National Center for Reducing Asian American Cancer Health Disparities. This designation makes the UC Davis Comprehensive Cancer Center the national scientific research capital for addressing cancer control for Asian Americans.

The national center is a consortium that includes the Chinese Community Health Resource Center in San Francisco, Hmong Women’s Heritage Association in Sacramento, as well as researchers from UCLA,
biospecimen blood drives, which has resulted in more than 200 Asian American participants contributing over 500 specimens.”

Another initiative encourages the Chinese, Hmong, Filipino and Korean communities to participate in clinical trials, which are vital to the testing of new procedures and development of new cancer therapies. Trials help researchers evaluate the effectiveness and safety of medications or medical devices by monitoring their effects on large groups of people.

“While racial/ethnic minorities make up nearly half of the U.S.
population – and already constitute the majority in such states as California, Texas and Hawaii – relatively few participate in clinical trials,” says Chen. “Only 3 percent of adults are enrolled in clinical trials, and only 10 percent of those are minorities.”

Chen also leads the UC Davis Comprehensive Cancer Center’s participation in Enhancing Minority Participation in Clinical Trials. EMPaCT, as it’s known, is a consortium of five National Cancer Institute-designated cancer centers and National Institutes of Health disparities research program sites, including UC Davis, seeking to increase representation of multiple minority groups in cancer trials.

Karen Kelly, associate director for clinical research at the UC Davis Comprehensive Cancer Center, cites an example from her own experience about the importance of these efforts.

“The first lung cancer therapy drug was an epidermal growth factor receptor (EGFR) inhibitor called gefitinib,” she recalls. Kelly’s research group evaluated the drug in the United States, while a second group in Asia did the same. “We found that Asians in particular had a greater response to the drug because, as it turned out, they had an EGFR mutation,” she says. “If we hadn’t had Asians in the trial, we might not have made this discovery.”

Today, Kelly oversees more than 150 clinical trials across all cancer types at the center, with an emphasis on increasing participation, known as accruals, from all parts of the community. “Cancer doesn’t discriminate,” says Kelly. “The behavior of tumors and reactions to therapies can vary in different patient populations. Understanding these differences is incredibly valuable.”

Among the centers’ other programs is an NCI-funded interactive multimedia software program designed to educate African-American and Latino patients about colon cancer risk and to boost colon cancer screening rates.

**Outreach>>**

“National Cancer Institute-designated comprehensive cancer centers are distinguished from other NCI cancer centers by their excellence in outreach to the community and education of health professionals.”

~ Moon Chen
cancer screening rates. The research project, now under way in clinics in New York, Texas and Colorado, in addition to UC Davis, allows patients to view the educational program while waiting for their doctors during regular primary care visits.

Marlene von Friederichs-Fitzwater, director of the center’s Outreach Research and Education Program, oversees projects involving adolescent cancer survivors, American Indian women, and the lesbian and gay communities.

Diagnosed with cervical cancer as a young adult, von Friederichs-Fitzwater has a special affinity for 15- to 39-year-old cancer patients, most of whom don’t feel that they have much in common with other patients in either pediatric or adult clinic waiting rooms, hospital floors or cancer support groups. She’s working on a variety of projects – often involving social media and high tech – designed for both outreach and accrual.

The Mothers’ Wisdom Breast Health Program, funded by a three-year grant from the California Breast Cancer Research Program, is designed to increase mammography screening in American Indian women. This group is the least likely to survive longer than five years after diagnosis, to have their breast cancer diagnosed at the earliest stage, or to have had a recent mammogram.

“California has the largest population of Indians of any state and more than 109 different tribes,” says von Friederichs-Fitzwater, an assistant professor in the UC Davis Department of Internal Medicine. “It’s a challenge to develop culturally appropriate protocols to increase mammography screenings and save lives.”

She also points out that lesbians and gay men experience higher rates of some types of cancer. “Yet this group remains very understudied and underserved. We’re beginning to look at the reasons why there are these disparities and why the lesbian, gay, bisexual, transgender (LGBT) community isn’t getting good health care.”

Late last year, she launched a UC Davis Comprehensive Cancer Center/Sacramento State University Partnership initiative to form an LGBT Cancer Advisory Task Force. Its goal is to plan research and educational interventions to address LGBT cancer health disparities and ultimately increase LGBT clinical trial accruals.

“The center’s new designation is a tremendous honor and a great recognition of work done, but it’s also a call for yet more work to be done,” she says. “We’ve come a long way, but we still have a long way to go.”

“Cancer doesn’t discriminate. The behavior of tumors and reactions to therapies can vary in different patient populations. Understanding these differences is incredibly valuable.”

~ Karen Kelly
Tip of the iceberg:

Two hidden stories of cancer research

By Joel Kugelmass, Senior Analyst
UC Davis Comprehensive Cancer Center

“Tip of the iceberg” is an apt metaphor for the sinking of the Titanic, in that what one can readily see is often dramatically smaller than what is actually there.

The metaphor also might apply to the impressive UC Davis Comprehensive Cancer Center research described in Synthesis. Exciting research gets reported, but it’s difficult to convey the challenges creating the framework essential for results, a process that can require dozens of people working for a decade or more.

Indeed, an important reason for the center’s earning the National Cancer Institute’s “comprehensive” designation is that cancer research leaders have promoted transformation of the technology and research environment over the past dozen years. This environment is itself a character in the cancer center’s story.

Ralph de Vere White, our center director, illustrates this in the development of cancer studies using accelerator mass spectrometer (AMS). This basketball court-sized technology can detect unimaginably small changes in a cell’s biology. By analogy, it can find a jigger of whisky in a tanker’s worth of oil, or chemically speaking, one atom among 25,000.

Twelve years ago, when the cancer center was establishing its relationship with Lawrence Livermore National Laboratory, Dr. de Vere White began discussing with Ken Turteltaub, director of the lab’s AMS facility, how it might be used to investigate cancer, and he helped the laboratory leadership petition for AMS funding from the National Institutes of Health.

Two years later, Dr. Turteltaub collaborated on an AMS project with Michael DeGregorio, a UC Davis professor in the Department of Internal Medicine, who develops new breast cancer drugs. AMS studies have since blossomed with the recruitment to UC Davis of investigators Chong-Xian Pan, in 2005, and Paul Henderson, in 2008.

AMS research has uncovered unknown processes in breast cancer, and helped in the evaluation of prostate cancer’s spread to bone long before it is clinically obvious. A new direction in personalized medicine is being tested in a study in which very small amounts of drugs are injected to determine whether a particular patient with bladder cancer will respond. The study is accruing UC Davis cancer patients.

The story of Julie Sutcliffe, a breast cancer survivor and UC Davis professor of biomedical engineering, demonstrates how devoted leadership can, over time, create whole new environments for cancer research. Dr. Sutcliffe has obtained more than $1.8 million in technology grants for positron emission tomography (PET) research. For the past five years, she has energized discussions between the School of Engineering and the School of Medicine to develop a biomedical cyclotron and radiopharmaceutical facility at the medical center.

This year, UC Davis Health System and a subsidiary of Siemens Medical Solutions (PETNET Solutions) signed an agreement to build state-of-the-art research labs along with manufacturing capacity for standard PET agents for medical center imaging. By next year, graduate students, post-doctoral fellows and faculty will have an amazing suite of technologies to create new ways to see cancer at the molecular level.

And that’s just the tip of the iceberg.

By next year, graduate students, post-doctoral fellows and faculty will have an amazing suite of technologies to create new ways to see cancer at the molecular level.
Radiation oncology department wins accreditation

The UC Davis Department of Radiation Oncology has received a three-year accreditation from the American College of Radiology-American Society for Radiation Oncology Practice Accreditation Program (ACR-ASTRO). ACR-ASTRO provides impartial peer review, recognizes quality radiation oncology practices and makes recommendations for improvement in practice and patient outcomes. The organization includes a cadre of radiation oncology professionals including radiologists, radiation oncologists, medical physicists, interventional radiologists and nuclear medicine physicians, who are dedicated to ensuring the specialty improves patient care quality and provides practice benchmarks.

PBS Newshour highlights cancer center innovation

The acclaimed national news program PBS Newshour highlighted UC Davis Comprehensive Cancer Center on PBS stations in January.

In the segment, the second in a two-day series, Newshour health correspondent Betty Ann Bowser focused on two research programs that illustrate how UC Davis Comprehensive Cancer Center is breaking barriers to beat cancer: the comparative oncology program, in which cancer treatment for dogs is providing new insights for human cancer therapies; and a program in which patients’ tumors are removed, then grown in mice to help determine the best drug treatment to use against a patient’s specific cancer.

The segment was part of an in-depth look at the “War on Cancer,” 40 years after it was declared by President Richard Nixon. The news crew spent two days at UC Davis in December.

“We are proud that such a fine national news organization like PBS Newshour chose UC Davis Comprehensive Cancer Center to illustrate the important innovations in cancer diagnosis and treatment developed since the War on Cancer was declared,” said Ralph de Vere White, cancer center director and renowned urologist. “It was a wonderful opportunity to showcase how people in our local community can now access leading-edge treatments provided by a center that has been designated by the National Cancer Institute (NCI).”

De Vere White and David Gandara, a lung cancer specialist and special advisor for experimental therapeutics at the cancer center, were both interviewed for the PBS story, as well as Jane Coyne, a lung cancer patient of Gandara’s.

Coyne’s tumor has been engrafted in a mouse that is housed at The Jackson Laboratory (JAX—West), a UC Davis cancer center research partner that is also designated by the NCI. Filming also took place at the UC Davis School of Veterinary Medicine’s Center for Companion Animal Health.

In addition to the television segments, the Newshour ran several website features, including one in which de Vere White suggests a different metaphor for the ‘War on Cancer.’

continued next page

News from the UC Davis Cancer Care Network

Grand opening set for Tahoe Forest

The new Tahoe Forest Cancer Center, a service of Tahoe Forest Health System, will hold a Community Grand Opening and tour on Saturday, July 21, 2012, from noon until 4 p.m. The new cancer center includes medical and radiation oncology, PET CT, breast prosthesis and wig salon, family resource center, infusion center, virtual tumor board conference room, and radiation center featuring the Varian True Beam.


WeCARE! Fremont-Rideout Cancer Center new peer navigator program

Fremont-Rideout Cancer Center has launched a WeCARE! Community-Based Cancer Peer Navigator program, which matches newly diagnosed cancer patients with trained cancer survivors who guide patients through their journey. The cancer center has trained 14 peer navigators since January, and five patients now have navigators. The WeCARE! program is available to any newly diagnosed cancer patient. Contact Lorna Yatman, RN, nurse navigator at (530) 749-4400, ext. 1603.

Fremont-Rideout Cancer Center Expansion Progressing

Cooperative weather has kept the cancer center expansion construction on schedule at the Fremont-Rideout hospital campus. A hospital spokeswoman said the project is expected to be completed in early fall.

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“I think we should look at this like a wildfire,” de Vere White told the Newshour. “The first thing you do in a wildfire is contain it… We need to increase our efforts to make sure we’re maintaining that containment and at the same time try to learn more about the fire so we can put it out.”

Cancer center team raises record amount for pediatric research

The UC Davis Comprehensive Cancer Center team raised nearly $24,000 for pediatric cancer research during this year’s St. Baldrick’s head-shaving event, far surpassing its original goal of $5,000, and setting a new bar for the team’s efforts next year.

The event at de Vere’s Irish Pub in downtown Sacramento was sponsored by the Keaton Raphael Memorial, a Roseville-based pediatric cancer philanthropy named for Keaton Raphael, a former UC Davis patient who died in 1998 after losing his battle with neuroblastoma. The organization also sponsored events at de Vere’s Pub in Davis and at the Roseville Galleria. Together, the three events brought in more than $294,000.

Forty percent of the funds raised in Sacramento will benefit pediatric cancer research in the region; the remaining proceeds go to the St. Baldrick’s Foundation, a national organization that funds pediatric cancer research throughout the country.

The 13-member cancer center team raised a total of $23,304, ranking second among 24 teams at de Vere’s raising money. The team’s top individual fundraiser was Leslie Garcia, with $6,000, followed by Nicole Ekedahl with $5,034 and Jasdeep Rai, who raised $2,670. All three women work in the cancer center’s Clinical Trials Support Unit. Garcia and Ekedahl had their heads shaved during a Kings game against the Los Angeles Clippers to promote St. Baldrick’s Day activities in advance of the de Vere’s event.

Among the other cancer center team participants were Anthony Riles, Benjamin Yeun, Cam Wharton, Ravinder Rai, Gaber Saleh, Brett Chromy, Tom Everman, Will and Evan MacIntosh and Paul Knoepfler. Knoepfler, a stem cell researcher with the health system, was a recipient of a $100,000 St. Baldrick’s Foundation grant for cancer stem cell research last year.

UC Davis Comprehensive Cancer Center pediatric researcher wins Hartwell award

Noriko Satake, assistant professor in the Department of Pediatrics and a researcher with the UC Davis Comprehensive Cancer Center, was awarded a prestigious Individual Biomedical Research Award from the Hartwell Foundation. The grant of $100,000 per year for three years will support Satake’s work to develop a new method to treat childhood leukemia, a disease accounting for about one-third of all childhood cancers.

The Hartwell Foundation provides financial support to 12 scientists and engineers from nine institutions around the U.S. each year. Satake is one of two UC Davis researchers to win a 2011 Hartwell award. Satake’s research combines siRNA (a type of molecule that interferes with gene expression) with leukemia-specific ligands (molecules that recognize and bind to proteins on leukemia cells), which are then loaded onto a nanoparticle that can carry siRNA directly into leukemia cells. Her multidisciplinary team includes Kit Lam, professor and chair in the Department of Biochemistry and Molecular Medicine, who developed the novel methods to deliver drugs directly to tumors.

“I have no doubt that the proposed research project and the outstanding multidisciplinary team that Dr. Satake has brought together will enable her to make significant advances in the development of new targeted therapies for childhood acute lymphoblastic leukemia,” said Jan Nolta, professor and director of the UC Davis Stem Cell Program and Institute for Regenerative Cures. “Her drive to develop new treatments for the pediatric cancer patients she sees in the clinic is unequalled. This is truly novel, cutting-edge research.”

Satake explained that while great gains have been made in curing pediatric cancers, there are still some lethal forms of the disease that resist treatment. “Even when we cure the cancer, many of those patients are known to have significant long-term side effects or late effects from radiation and chemotherapy that can cause heart failure, osteoporosis, learning disabilities and even secondary cancer,” she said. “Unfortunately those are irreversible. The new targeted therapy to be developed will not only be more effective in treating cancers but also have fewer side effects to normal cells than current therapies.”

Satake also is using the same scientific approach to develop drugs to target neuroblastoma, the third most common pediatric cancer, for which she received a $100,000 grant in 2011 from the Keaton Raphael Memorial.
Synthesis – the art of bringing together distinct elements in a way that makes them whole – is a particularly relevant name for the magazine of UC Davis Comprehensive Cancer Center, which is distinct in its commitment to team science. Our research program unites clinical physicians, laboratory scientists, population specialists and public-health experts from throughout UC Davis and Lawrence Livermore National Laboratory with the goals of making cancer discoveries and delivering these advances to patients as quickly as possible. We are also dedicated to sharing our expertise throughout the region, eliminating cancer disparities and ensuring all Californians have access to high-quality cancer care. Synthesis – linking the best in cancer science toward the united goal of improving lives – is the name of our magazine, and our promise as your National Cancer Institute-designated comprehensive cancer center.