



UCD's Cancer Center



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A new setting has brought together researchers from a wide variety of disciplines and organizations, and an expansion promises even more collaboration.

SINCE OPENING IN 1991, our cancer center has seen some 3,000 new patients annually, generating some 24,000 visits each year. Real progress has been made and much of the challenge in cancer care is taking full advantage of the knowledge we have.

For example, UC Davis researchers recently published a study showing that careful recognition of symptoms could have led to earlier diagnosis of ovarian cancer in about 30 percent of women whose cases of the cancer were reported to the California Cancer Registry.

Our designation by the National Cancer Institute is provided to slightly more than one cancer center out of 100. Thanks to a cancer center grant, we support some 180 funded cancer researchers, physicians and scientists at UC Davis, and the Lawrence Livermore National Laboratory; we work with another 100 UCD faculty engaged in cancer problems.

Our newer initiatives involve people who are not patients and we hope will never be our patients. We know the risk of cancer can be reduced in the Central Valley through educational interventions; in cancer, knowledge matters. We are particularly concerned with underserved communities where cancer burdens are greater. We would like to work even more closely with primary care physicians who are "sentinel nodes" in the discovery of possible cancers and are a critical defense against cancer risk.

The UC Davis Cancer Center began as an *idea* that the discontinuity in care - created by disparate access to therapeutic modalities - could be resolved with a spectrum of specialties (particularly medical oncology, radiation oncology, and surgical oncology) and patients together in a single building. At the time, surgical interventions, the most ubiquitous form of cancer care, were done by the Department of Surgery, while internal medicine patients received chemotherapy, or were sent out to the "ROC" (Radiological Associates) for beam therapy.

From a business perspective, a medical center of course prefers to offer all the services a patient needs. More important, there needs to be a high level of collaboration between individuals treating the same patient. A *collocation* of oncologists would by itself justify the capital costs of a cancer center building. Once constructed, however, it became possible to expand our vision to the intensification of research and, more recently, to multi-faceted community outreach and education efforts.

Initially, we had a small clinical trials program at the center; this was significantly augmented, over time, by the commitment of community oncologists in some 18 hospitals to collaborate in accruing patients to experimental therapies. The commitment of a physician to clinical trials is infectious, and inspires others. Today, we are the nation's top "accruer" to the Southwest Oncology Group, an NCI-sponsored cooperative group that

disseminates large-scale Phase III studies.

As has been widely reported, however, the national record in production of new anti-cancer agents is fairly dismal. To change this, two things are needed. First, basic scientists need to understand aspects of carcinogenesis and tumorigenesis. Second, basic science discoveries need to be *translated* into novel therapies and evaluated through early phase clinical trials.

For years, cancer scientists (as distinguished from clinicians) were concentrated on the Davis campus; opportunities for interaction between scientists and clinicians were very limited. Developing a strong cancer research presence at the medical center changed that. The research environment has stimulated an increasing number of physicians to design their own Phase I and Phase II clinical trials; at last count, we had 41 investigator-initiated trials, a development that NCI considers crucial to the advance of cancer care.

By anchoring cancer leadership in Sacramento (the director and three of five associate directors are within five minute walks of one another), it has been possible to reach out geographically, first to scientists and physicians, and then to the community. A solid "home base" or cancer care and research at the Medical Center provides the organizational nidus for a more diverse cancer research community.

Interestingly, the centralized developments in Sacramento kindled an ability to reach out to a much larger body of scientists in Davis who make unique contributions to the center.

Fewer than half our funded cancer investigators are in the School of Medicine; researchers are often from the School of Veterinary Science, our College of Biological Sciences (which trains more doctoral candidates in biology than any other university in the United States), the College of Engineering, Lawrence Livermore National Laboratory, the College of Agricultural and Environmental Sciences, the Primate Center, and the College of Letters and Science.

For example, we have developed a new clinical trials program involving spontaneous cancers in dogs, which are genetically very close to humans. More than a dozen engineers are working on new forms of molecular imaging, drug synthesis using plants as factories, and drug delivery systems. Remarkable work on chromosome 18 at LLNL, an important source of oncogenes implicated in many cancers, has been the basis of translational studies at UC Davis because we offer a bridge between lab scientists and the clinic.

In 2000, we held a collaborative conference with some 75 scientists from the Lawrence Livermore National Laboratory, the nation's oldest, independently managed federal research laboratory, and an equal number of physicians and scientists from UC Davis. Although the Lab's primary mission remains national defense, it has a 30-year commitment to health care technology and a strong commitment to life sciences. Out of the conference grew a Memorandum of Understanding formally establishing collaborative relationships in cancer research. Thirty-five scientists at the Lab are cancer center members, and some 50 research collaborations are ongoing.

Because multidisciplinary and diverse science is key to cancer research, we have developed a very specific type of research organization. Nearly all our members belong to one or more of six scientific programs: molecular oncology, cancer biology in animals, therapeutics, cancer etiology, prevention, and control, prostate cancer, and biomedical technology. Program members receive scientific services from 10 Shared Resources in animal imaging, optical biology, mouse biology, gene expression, a specimen repository, proteomics, combinatorial chemistry, biostatistics and bioinformatics, clinical trials, and molecular pharmacology and pharmacokinetics.

Over the next four years, we plan to expand the cancer center to about twice its current size, adding 46,000 assignable square feet. This will allow pediatric oncology to collocate with adult oncology so investigators can begin exploring the continuity between cancers of the young and the old. There are opportunities for clinical trials spanning generations;

although many children are in age-bracketed clinical trials, many adult protocols could be suited to the younger patient.

In the past several years, we have increased outreach and education in the region. As is often observed, the best way to "cure" cancer is to prevent the disease in the first place.

There are promising immunological approaches to cancer. A big success is hepatitis B immunization to reduce the risk of liver cancer, although disease migration to hepatitis C infection undercuts this gain. The coming vaccine against HPV should go far in reducing the incidence of cervical cancer. Nonetheless, such behavioral changes as smoking cessation and avoidance, exercise, and a healthy diet remain very important.

We are particularly interested in underserved communities where cancer prevention, knowledge, screening, diagnosis, and treatment continue to lag. The diversity of the Sacramento region is a challenge and an opportunity. We plan to work with minority high school students to increase interest in cancer-related careers both as physicians and as scientists.

We recently signed a Memorandum of Understanding with California State University, Sacramento, aimed at mobilizing their students for community outreach and their faculty for community-oriented cancer research; in the fall, we will jointly undertake a major public education effort in ovarian cancer.

We have studied the use of mass media to educate the public about the importance and benefits of clinical trial participation. We work regularly with the American Cancer Society's local chapter. An important ally to these efforts is California's Cancer Control Program and the California Cancer Registry, both regarded as the best developed and most effective state-level programs of their kind in the nation.

We have also placed increasing emphasis on clinical outreach. We have two satellite cancer centers in Merced and Yuba City in collaboration with Mercy and Fremont-Rideout, respectively, and have signed a letter of intent for another satellite center with the Tri-Valley group in Livermore and Pleasanton.

Until every cancer is no more threatening than a chronic disease, however, we must continue to make progress and assure our patients and our community that we are overcoming cancer's challenges as rapidly as possible.

We invite anyone interested in learning more about our cancer center to pay a visit. Every practitioner of medicine is part of the war against cancer, and we would like to get to know you better if we haven't already worked together, and hope that you feel the same way. Find out more at <http://cancer.ucdmc.ucdavis.edu> or write to us at the email address below.

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