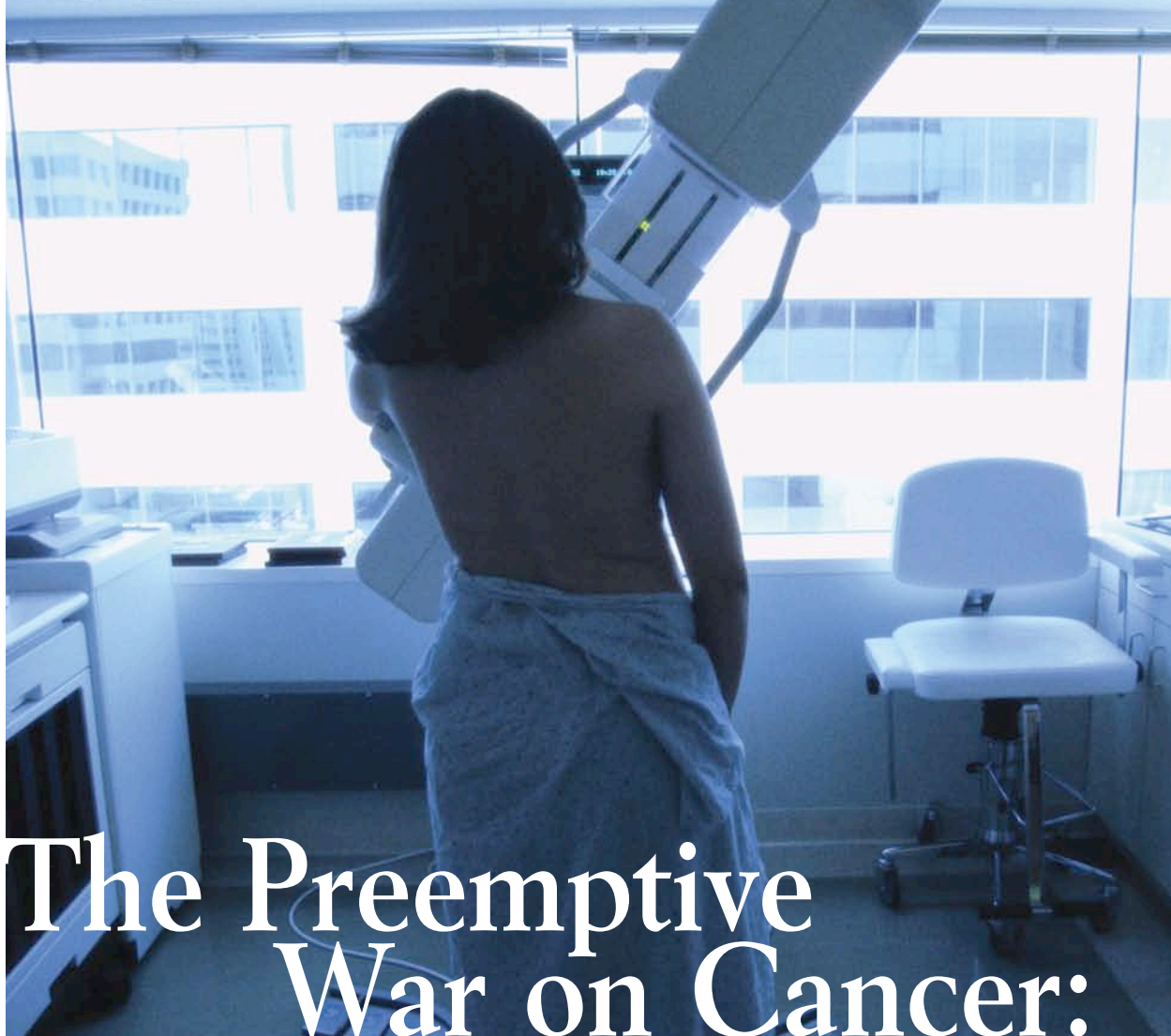


MUCH ATTENTION IS PAID TO THE NEED FOR BREAKTHROUGHS IN CANCER TREATMENT. BUT IN THE FIGHT AGAINST THE SOON-TO-BE-LEADING CAUSE OF U.S. DEATHS, PUBLIC HEALTH IS PLAYING AN EQUALLY CRITICAL ROLE.



The Preemptive War on Cancer: Heading Off a Leading Killer Before it Strikes

Within a few years, based on current trends, cancer will

surpass heart disease to become the leading cause of death in the United States. Considerable attention is rightfully paid to the search for improved cancer treatments. But often overlooked is public health's vital role in the cancer fight – past, present, and future.

It's been estimated that more than half of cancers are preventable by taking advantage of what is known about behavioral strategies such as not smoking, limiting sun exposure, and engaging in physical activity and healthy eating. "When you look at the decline in lung cancer deaths among men, that's not because of better treatment; it's because of tobacco control efforts," says Dr. Patricia Ganz, professor in the UCLA schools of public health and medicine and director of the Division of Cancer Prevention and Control Research, based in the School of Public Health.

Ganz, a medical oncologist who has spent her career both treating cancer patients and engaging in pioneering research and advocacy on issues of quality of care and cancer survivorship, believes medicine and public health are equally important combatants in the fight. "But people only know when they *get* a disease, not when it was prevented – which is what public health does," she says.

"When an important scientific discovery is made, it doesn't automatically translate to the population, and it's only when a technology is adopted at the level of entire communities that you can really have an impact on population health."



— Dr. Roshan Bastani

Public health's task in fighting cancer has been made more daunting by its success in other realms. In the United States, the population is growing considerably older, in part because of public health efforts in recent decades that have reduced deaths from communicable diseases and promoted healthier lifestyles. Since age is a leading risk factor for the development of most cancers, it stands to reason that a graying society will see an increased incidence of the disease. Among the challenges in attempting to buck that trend: identifying strategies for prevention and early detection (when the disease is most treatable), promoting their adoption by all communities, and ensuring that the best treatments based on available evidence are provided to all cancer patients. All of these are efforts being led by public health.

Epidemiology – a core public health discipline – is the science that has sounded the first warning bells on the links between smoking and cancer, between environmental toxins and cancers, and, more recently, on the association between obesity, lack of physical activity and the risk for a host of cancers. In the last decade, the field of molecular epidemiology has emerged, studying genetic patterns and gene-environment interactions to further pinpoint cancer risks and prevention strategies. Dr. Zuo-Feng Zhang, professor at the school, and other leaders in the burgeoning field are looking into the genetic predisposition that determines why some smokers get lung cancer and others don't, for example.

Once those risk factors are identified by epidemiologists, and even when basic and clinical researchers have brought a new treatment or early-screening method to fruition, it takes public health efforts to ensure that the advances in knowledge and technology are translated into changes at the community level. That means identifying and helping to overcome barriers to the adoption of cancer-preventing behaviors in specific communities, and it means ensuring that where medical advances are made, those advances are realized by all communities.

"In medicine, people are talking a lot about translational research – from the bench to the bedside to the community," says Dr. Roshan Bastani, professor and associate dean for research at the school, co-director of the SPH Center to Eliminate Health Disparities, and associate director of the Division of Cancer Prevention and Control Research. "Public health is at that critical juncture of bedside-to-community. Ours is not a passive approach, because if we wait for people to walk in the door of the clinic when they're sick, we've lost that opportunity for prevention." Bastani, a social psychologist, has devoted her career to translating evidence-based cancer prevention and control to the community,

particularly focusing on the elimination of cancer-related disparities.

While it's true that on an individual level, it's impossible to be able to say with certainty that public health was responsible for saving a life that would have otherwise been taken by cancer, at the population level it is easy to see the public health impact – and because of the long lag between smoking onset and the development of lung cancer, that impact will be measured in even greater numbers going forward.

When the U.S. surgeon general first warned of the link between tobacco and lung cancer in the 1960s, it wasn't enough to persuade large segments of the population to quit. Public health campaigns at the policy level – including bans on advertising, restrictions on smoking in public spaces, and increased tobacco taxes used to educate people against smoking's harmful effects – have made more of an impact, and the health rewards from recent declines in tobacco usage will be reaped in the years ahead.

"When an important scientific discovery is made, it doesn't automatically translate to the population," Bastani says, "and it's only when a technology is adopted at the level of entire communities that you can really have an impact on population health."

Successfully bringing important cancer discoveries into the community – be they prevention strategies, early screening techniques or treatment advances – is its own science. "It's not as if we can say, 'We now have this screening method, it's good for you,' and then everyone goes out and gets it," Bastani explains. "It takes public health research to determine the most effective and efficient means to bring these advances to different populations, and it takes multi-level strategies – at the policy level, the community level, and even with physicians, since just because they have the information doesn't mean they will use it effectively, or at all."

As an example, Bastani and Ganz often point to one of public health's biggest success stories in the fight against cancer. Cervical cancer was the leading cause of cancer death among women in the United States in the first half of the 20th century, affecting young women in particular. In addition to the many deaths from the disease, there were severe quality of life prices paid by the survivors: Ganz recalls that when she was training to become a physician she would see women in their 30s and 40s who had

Erin Hahn, M.P.H. '06

Among the questions cancer survivors face once they have completed their treatment: Will it have long-term effects? What do I do next? "Most survivors receive excellent cancer care," says Hahn, "but they can have problems accessing appropriate post-treatment care, which can then contribute to poor outcomes." Hahn is program director of the **UCLA-LIVESTRONG** Survivorship Center of Excellence (COE), which is working to fill this gap in care by providing survivorship consultations for patients who have completed active cancer treatment. The focus of the consultation is the creation of a survivorship care plan that summarizes treatment and makes recommendations for managing long-term and late effects. "These care plans will help to ensure that the growing population of survivors, currently estimated to be more than 12 million in the United States, will receive appropriate follow-up care, focusing on disease prevention and health promotion," Hahn explains. The COE is also involved in several survivorship research studies, and has formed community partnerships that will help it to evaluate different models of survivorship care. Hahn, who is particularly interested in coordination of care for cancer survivors, will be entering the doctoral program in the school's Department of Health Services in the fall, enabling her to study these questions more closely.

Denise Woods, M.A.

Last fall, the school's Center to Eliminate Health Disparities received a five-year, CDC-funded Center of Excellence in the Elimination of Disparities (CEED) grant. Woods, a second-year Dr.P.H. student, is participating in the CEED initiative, which addresses disparities in heart disease, stroke and cancer among African Americans, Latinos, and Asians by disseminating organizational-level evidence, practice-based physical activity, and nutrition strategies with a focus on cultural traditions. The focal point will be program activities in two organizational settings in which most people spend a large portion of their days: the workplace and school sites. "To achieve sustainable change at an organization level in at-risk communities, it is imperative to spark advocacy to influence policies and regulations that promote healthier eating and active living," Woods says. "Work done through the CEED will allow rigorous evaluation of the impact of promising strategies on the practices and policies of organizations, the physical activity and nutrition behaviors of individuals, as well as the health status of the participating communities."

undergone radical pelvic surgeries that included removal of the bladder and part of the bowel. The advent in the 1940s of the Pap smear, which detects precancerous lesions and treatable early cancers, barely made a dent until 20-30 years later, when public health efforts to promote its widespread adoption in diverse populations finally took hold. Dr. Lester Breslow, a professor and dean emeritus of the school and former public health director for the State of California, was an early proponent of the dissemination of cervical cytology testing. Today, cervical cancer is uncommon in the United States and relatively few women die from the disease.

Similarly, Bastani notes, a contributor to recent declines in breast cancer mortality is the increased use of mammography to screen for early disease – an advance that has resulted from such public health approaches as the implementation of policies to ensure low-cost or free mammograms for women who can't afford them, community-based education and successful efforts to get more physicians to recommend mammograms to their patients.

Public health has also made a major impact in reducing or eliminating a number of cancer-causing environmental exposures such as radiation and certain toxins in the workplace, as well as secondhand tobacco smoke, Ganz adds. But she points out that most cancers have little to do with environmental toxins. For example, breast cancer is the leading cancer for women in the United States, prostate cancer is the leading cancer for men, and colorectal cancer is third among both sexes. For these, there are no environmental agents known to play a role; instead, the challenge in reducing their incidence is to affect behaviors, such as promoting healthier eating and regular physical activity, as well as screening for early detection.

Colorectal cancer currently represents a major opportunity for public health to make an impact using the paradigm that was successful for cervical cancer. An effective screening technology exists, but colorectal cancer incidence and mortality remain high because it has not been widely adopted.

"We know colon cancer is a disease of aging that arises from small growths in the colon called polyps, that as these growths slowly mature they turn into cancers, and that if we remove these polyps, they don't have a chance to grow into cancers," Ganz says. "If we could get everyone over age 50 to be screened for colon cancer, we could bring it down to levels similar to what we see in cervical cancer. That's our big challenge right now, with only 30-40 percent of

the population over age 50 having been screened."

The new human papillomavirus (HPV) vaccine represents another recent medical breakthrough whose potential will be realized only through successful public health efforts. The vaccine, which can prevent infection with the most common types of HPV that cause cervical cancer, is approved for girls and young women between the ages of 9 and 26. But there are barriers to be overcome – psychological, social, cultural and economic. Bastani and her research group are currently collaborating with the Los Angeles County Office of Women's Health on research to understand and reduce such barriers.

Various peer-reviewed analyses in the last quarter-century have indicated that diet and physical activity are related to approximately one-third of the prema-



ture mortality from cancer. With unhealthy eating practices and sedentary lifestyles reaching epidemic proportions in the United States and much of the developed world, "there is increasing consensus that if you want to reduce cancer risk in a population you have to pay attention to obesity," says Dr. William McCarthy, associate professor at the School of Public Health, who has spent much of his career pursuing public health strategies to reduce smoking and promote healthy eating and physical activity.

Obesity is now believed to be a more important influence on cancer risk than the level of specific micronutrients such as antioxidants, notes McCarthy, who has long been interested in educating populations on the benefits of whole-food approaches, including eating more fruits and vegetables, as a way to reduce cancer risk. "At least 20 percent of cancers in the United States could be postponed or totally avoided if we achieved a healthy waistline, and eating more fruits and vegetables is an important strategy to achieve that," McCarthy says.

In efforts to promote healthier lifestyle choices, McCarthy has focused to a large extent on children. In the mid-1980s he testified twice before Congress on the need for more government oversight over cigarette advertising, pointing to ads designed to appeal to adolescents. Since 2000 he has served as the chief evaluator for California's In-School Tobacco Use Prevention Education Program. He was principal investigator of a federal grant that evaluated California's SB 19, a first-of-its-kind state law that established nutrition standards for foods and beverages sold on school campuses in an effort to combat the growing problem of childhood obesity. McCarthy believes SB 19 marked a turning point, and that there is now national recognition of the importance of promoting healthier eating among school children.

McCarthy has also teamed with another UCLA School of Public Health faculty member, Dr. Antronette (Toni) Yancey, on community-based research interventions designed to increase physical activity in target populations. At the heart of several of these efforts are 10-minute, structured exercise or *Instant Recess* breaks. Yancey, co-director with Bastani of the school's Center to Eliminate Health Disparities, has created several culturally targeted DVDs and is teaming with McCarthy to incorporate the 10-minute exercise bouts into daily workplace routines. These movement breaks are one of several "push" or "opt out" strategies, like walking meetings and nearby parking restrictions, designed to make the fit choice the easy choice. "The idea is that exposing people to a small amount of exercise in this captive setting will be a stimulus for lifestyle changes outside of work," McCarthy explains.

In April, Yancey kicked off a multi-year fitness initiative in conjunction with the San Diego Padres baseball organization and The California Endowment. As part of the FriarFit initiative, the Padres have added healthier food options to

"If you want to reduce cancer risk... you have to pay attention to obesity," says Dr. William McCarthy, who says California's law establishing nutrition standards for foods and beverages sold at schools marked a turning point.

Soultana Haftoglou, M.P.H.

Obesity contributes to the development of many cancers, and negatively affects cancer survivorship. Haftoglou, a doctoral student at the school, works with Drs. William McCarthy and Lillian Gelberg on an intervention to reduce cancer risk among Latinos. The project targets low-income, Spanish-speaking Latino patients at the Venice Family Clinic, offering four telephone-based lifestyle counseling sessions over a two-month period. Culturally appropriate material is used and phone sessions are conducted in Spanish. As a lifestyle-change counselor, Haftoglou promotes increased consumption of fruits and vegetables as well as creative ways to become more physically active. She helps the participants set realistic goals, acting both as their coach and cheerleader, in an effort to help them make sustainable lifestyle changes. "We don't just want the program to work, but for participants to adopt and maintain life-long healthy dietary and physical activity habits," she says. To facilitate the lifestyle changes, the participants are given a "gym-in-the-bag," including a pedometer, a folder with dietary guidelines, stretch-bands, and an exercise DVD. The ultimate effectiveness of the intervention will be determined by an experimental test of serum carotenoid levels, which are considered an indicator of fruit and vegetable consumption.

Jennifer Tsui, M.P.H.

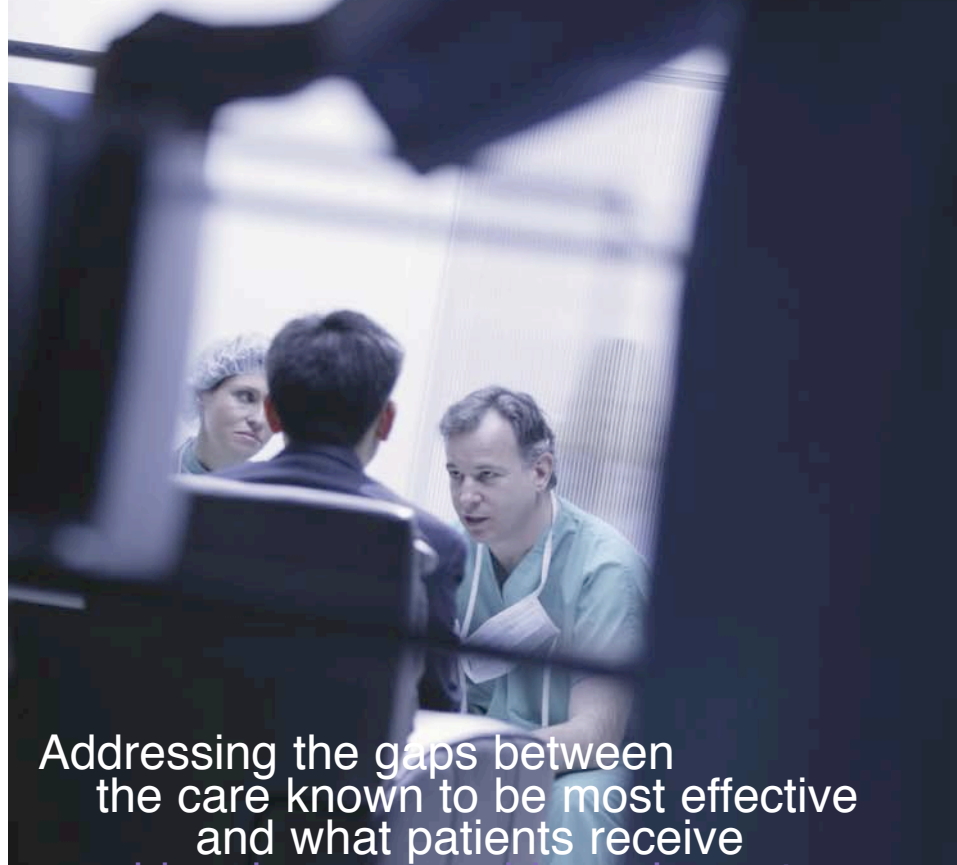
Tsui, a first-year doctoral student at the school, works with Dr. Roshan Bastani and her team on a project to develop an HPV vaccine program for low-income women who call the Los Angeles County Office of Women's Health Information Hotline. "Education and awareness about cervical cancer and the HPV vaccine are especially important for women served through the hotline because many are from communities with low rates of cervical cancer screening, barriers to health care services, and limited access to accurate health information," Tsui explains. The work gives Tsui an opportunity to combine her research interests in underserved populations and chronic disease prevention among underserved populations with her previous experience in cancer screening disparities and HPV vaccine introduction. "The HPV vaccine is a unique area to focus on within cancer control because of the multiple social, political, and financial aspects that come into play when addressing the delivery of this new health product," says Tsui, who hopes to pursue a career in health disparities research focused on policy and system-level change to improve the access to health services and quality of health care for underserved populations.

Alison K. Herrmann, M.S.

Herrmann, a first-year doctoral student, serves as project director of the UCLA Korean Healthy Life Project, a Division of Cancer Prevention and Control Research study focused on increasing hepatitis B screening among Korean Americans. Capitalizing on the fact that a majority of Koreans attend church on a regular basis, the randomized trial, headed by Dr. Roshan Bastani, is held at churches both inside and outside of Los Angeles' Koreatown. Herrmann and others on the project team have met regularly with members of the Los Angeles Korean American community to gain a comprehensive understanding of the types of health messages that would be most salient. The feedback obtained was used to develop pilot materials, which were then revised after a series of focus groups. Thus far, nearly 200 eligible church members have participated in a small-group discussion session in association with the project. After two additional years in the field, Herrmann looks forward to the opportunity of sharing the results of this work and hopes to provide an evidence-based tool for use in the prevention of hepatitis B and liver cancer. "Working in this capacity is providing me with the opportunity to take concepts directly from the classroom to the field," she says.

Jammie Hopkins, M.S.

Hopkins, a first-year doctoral student interested in chronic disease prevention in multi-cultural populations, works on research led by Dr. Antronette (Toni) Yancey that promotes physical activity and healthy nutrition to reduce cancer risk. "Instead of focusing on individuals, our research targets socially enriched organizational units such as worksites, churches, and schools in an attempt to influence 'captive audiences' of individuals who are most likely to be sedentary and have poor nutrition habits," he explains. The goal of the current project, WORKING (Working Out Regular Keeps Individuals Nurtured and Going), is to explore and test culturally salient strategies geared toward modifying organizational culture to include regular physical activity and healthy nutrition within the organization's normal conduct of business. By securing administrative buy-in from leaders within the organizations; providing training, resources, and technical support to work-site "champions"; and stimulating mechanisms of social support and norm change, the researchers hope to encourage individuals within these organizations to develop innovative, sustainable wellness policies and practices. "If physical activity and healthy nutrition options are made easily accessible and 'normal' in environments where individuals work and socially convene, people will be more likely to adopt these positive behaviors and spread the word to their families and communities," Hopkins says.



Addressing the gaps between the care known to be most effective and what patients receive could make an even bigger impact than better treatments, says Dr. Patricia Ganz.

concession stands. Ten-minute *Instant Recess* fitness breaks are being held in the parking lot prior to Sunday Family Day home games, with fans taken through fitness moves by a CD featuring star Padres players Trevor Hoffman and Adrian Gonzalez and Hall of Fame outfielder Dave Winfield. These CDs will also be used in San Diego public schools, which are working with FriarFit on a comprehensive physical activity program, including visits from current and former Padres players, tools and resources for teachers, and participation incentives for children.

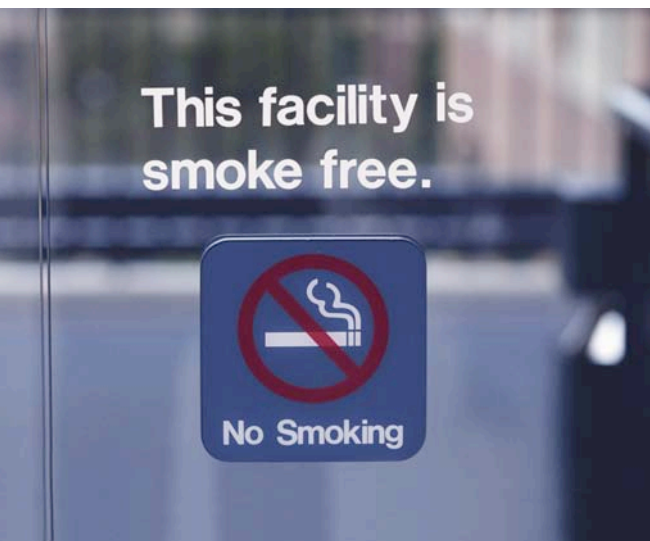
The link between diet and cancer risk has been established for some time, but more recently a growing body of evidence strongly suggests that physical activity confers benefits when it comes to preventing many cancers, including cancers of the breast, colon, endometrium, lung and kidney, Yancey says, adding that the benefit appears to be independent of that coming from the weight loss. Physical activity also contributes an indirect protective influence by assisting in weight management.

Efforts to fight cancer by promoting healthy behaviors, whether related to tobacco use, diet and exercise, or screening, are particularly important in ethnic minority and other low-income populations, given the disparities that exist. "There are a lot of factors related to the social environment that can make it difficult for people in these communities to follow behaviors that they might know at an individual level are healthier," says Dr. Beth Glenn, an assistant professor at the school. These populations are likely to have less access to cancer screening services, safe places to exercise, and grocery stores with fresh produce, she notes. Financial and cultural barriers also contribute to the disparities.

Glenn works with Bastani on research aiming to find ways to close these gaps. Bastani leads a current study that collaborates with churches in Los Angeles-area Korean neighborhoods to test an educational intervention designed to increase screening and vaccination for hepatitis B. Koreans have among the highest rates of hepatitis B infection, which can lead to liver cancer when

untreated. A second major project aims to increase informed decision-making about prostate cancer screening among Latino men.

Dr. Marjorie Kagawa-Singer, professor at the school, notes that disparities abound in cancer. African American women have a lower incidence of breast cancer than non-Hispanic whites but die at a rate that is approximately 30 percent higher. New immigrants in the United States start with cancer rates that are lower than those of American-born descendants from their native countries, but with time their rates rise to mirror those of their host communities. Cancer rates are rising almost universally among Asian-Americans and Latinos. Kagawa-Singer is principal investigator of the Los Angeles site of the national Asian American Network for Cancer Awareness Research and Training (AANCART), a National Cancer Institute initiative to decrease cancer disparities affecting Asian-Americans, who have the lowest rates of screening for preventable cancers of any ethnic group.



Kagawa-Singer also heads a program aiming to address the problem of disparities by increasing the pipeline of minorities in her field. The Minority Training Program in Cancer Control Research, a joint program of the UCLA School of Public Health and UC San Francisco Comprehensive Cancer Center with funding from the National Cancer Institute, seeks to increase ethnic diversity in cancer control research by encouraging master's-level minority students and master's-trained professionals to pursue a doctoral degree and a career in research. "Despite all of the attention to cancer disparities over the last 15-20 years, we aren't making much headway in reducing them, and in many areas they are actually growing," Kagawa-Singer says. "Researchers who come from the communities they're studying are more likely to successfully

address these issues by asking different questions and getting information to the communities more effectively." Since it was first funded in 1999, the program has graduated 319 students, 72 of whom have gone on to doctoral programs.

When she began her career as an oncologist in the 1970s, Ganz's focus was on treating individual patients. Today, she spends more of her time looking at the big picture.

A pioneer in the assessment of quality of life for cancer patients at a time when few were placing a high priority on the physical and psychosocial effects of cancer treatment, Ganz has devoted much of her time in the last several years to work in the policy arena on issues related to the quality of cancer care. She co-chairs the Cancer Quality Alliance, a group of stakeholders that includes representatives from government, professional societies, patient advocacy groups, certifying and accrediting organizations, the insurance industry, foundations, and others interested in improving quality of cancer care. The group's forthcoming publication *Blueprint for Quality Cancer Care* is designed to paint a picture of what constitutes high-quality treatment by presenting a series of case studies. Through the alliance and the American Society of Clinical Oncology, Ganz has also embarked on establishing performance measurements for cancer care as the first step toward a system of accrediting oncology practices.

"For cancer, unlike for many other diseases, we have many randomized controlled trials that tell us what the best treatment is, and we have guidelines that have been developed," Ganz says. "But the implementation of these is less than satisfactory. The performance measurements that we're developing are focused on making sure patients get the right treatment."

While much attention is paid to the need for better cancer treatments, Ganz believes that addressing the sizable gaps that exist between the care known to be most effective and what many patients are actually receiving has the potential to make an even bigger public health impact.

Similarly, Yancey argues that achieving success in promoting cancer-preventing behaviors should be high on the priority list in the cancer fight.

"Even when it's successfully treated, cancer represents a huge disruption to an individual's life – physically, emotionally, and financially," she says. "If we can help someone not get cancer, that's much better than coming up with any particular treatment."

Cynthia M. Mojica, M.P.H. '95, Ph.D. '06

It is well documented that cancer incidence and mortality rates in the United States vary by race and ethnicity, with ethnic minority populations suffering from a higher burden of cancer than non-Latino whites. "Although we understand that ethnic minorities face barriers to early detection, diagnostic follow-up, and treatment, we have yet to adequately address the myriad factors – such as lifestyle, environmental risk, and health policies – that contribute to health disparities in cancer outcomes," says Mojica, a postdoctoral scholar in the Division of Cancer Prevention and Control Research, based in the school. Mojica has been involved in a number of research projects aimed at eliminating these disparities. Currently, she is managing a study to reduce health disparities in cardiovascular disease, cancer, and other diseases related to obesity among African Americans, Latinos, and Asian/Pacific Islanders by disseminating evidence-based practices and policies that incorporate physical activity and healthier food options into organizations throughout Los Angeles County and parts of Orange County. "We need to continue studying differences by racial/ethnic group and to develop and test interventions and policies that eliminate health disparities in cancer outcomes," Mojica says. "Our growing ethnic minority populations deserve to live healthy, productive lives."