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Eliminating the Suffering and Death Due to Cancer

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Cancer Stem Cells Found in Pancreatic Tumors

Researchers have detected cancer stem cells in tumors from patients with pancreatic cancer. Experiments in mice suggest that these cancer stem cells may help explain the aggressive growth and spread of pancreatic tumors seen in patients, the researchers report in the February 1 *Cancer Research*.

Cancer stem cells have been identified in blood, brain, and breast cancers, and more recently in ovarian and colon cancers. The new findings provide further support for the stem cell hypothesis, the theory that some tumors contain small populations of self-renewing cells that give rise to all of the cells in the tumor.

Though cancer stem cells make up less than 5 percent of a tumor, they may underlie the cancer and be resistant to conventional treatments.

"The new research adds to the growing evidence that within tumors there is a small subset of cells that drives the tumor and that has stem cell-like characteristics," says lead researcher Dr. Diane M. Simeone of the University of Michigan Medical Center.

A defining characteristic of human

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Director's Update

DCLG's Status Enhanced Under Director's Office Restructuring

One of the most important changes being instituted as part of the restructuring of the NCI Office of the Director is the new direction of the Director's Consumer Liaison Group (DCLG).

DCLG is supported through the Office of Liaison Activities (to be renamed the Office of Advocacy Relations under the reorganization), which will report directly to the NCI director. As a result of that direct reporting relationship, DCLG will now be on par with the institute's other major advisory committees, the National Cancer Advisory Board, the Board of Scientific Advisors, the Board of Scientific Counselors and the Clinical Trials Advisory Committee (CTAC).

Since its inception in 1997 as the first and only all-consumer NCI advisory committee (it was officially chartered as a federal advisory committee the next year), DCLG has provided invaluable guidance and feedback on a broad array of issues to NCI senior leadership.

Indeed, DCLG has been a vital representative of the entire cancer advocacy community at NCI, including, among other things, assisting in

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cancer stem cells is the ability to grow new tumors in mice. As few as 100 pancreatic cancer stem cells could regenerate copies of the original tumor when transplanted into mice, the researchers found. Some tumors rapidly spread to other organs, as often happens in patients.

The aggressive behavior of the cells in mice is consistent with what clinicians have observed in patients with the disease, the researchers say.

Pancreatic cancer is so deadly because it is often diagnosed late and because tumors are notoriously resistant to standard chemotherapy and radiation. The disease is the 4th deadliest cancer in the United States, even though it ranks 11th in incidence.

"Cancer stem cells represent a whole new way of thinking about the disease," says Dr. Simeone. Her team has preliminary evidence that pancreatic cancer stem cells may not be touched by conventional treatment, and they will be testing this in the coming months.

The new findings will influence research on pancreatic cancer almost immediately, predicts Dr. J. Milburn Jessup of NCI's Division of Cancer Treatment and Diagnosis.

"The study shows that it is possible to isolate the pancreatic cancer stem cell in order to investigate its properties, determine its weaknesses, and then develop therapies that target this cell," says Dr. Jessup.

Along with new therapies, new ways of evaluating these therapies may be needed. The current method of measuring tumor size would clearly be inadequate given the likelihood that a tumor would return despite shrinking.

"In the future we might need to measure the burden of cancer stem cells in tumors before and after therapies in order to establish their effectiveness," says Dr. Simeone.

Even though cancer stem cells appear to be relatively resistant to therapy, "these cells may prove to be the Achilles heel of the cancer," notes Dr. Jessup.

To identify potential pancreatic cancer stem cells, Dr. Simeone's team looked for tumor cells with three surface proteins that have been found to characterize breast cancer stem cells—CD44, CD24, and ESA. They are also testing other proteins used as potential markers for cancer stem cells.

Dr. Michael Clarke of Stanford University School of Medicine and Dr. Max Wicha, also at Michigan, led the team that identified the breast cancer stem cells in 2003. Both are co-authors of the new study. ◆

By Edward R. Winstead

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the development of training manuals for advocates participating in the peer-review process, helping elevate survivorship research as a priority in the Bypass Budget, aiding in the formulation and pilot testing of the "NCI Listens and Learns" Web site, and convening the highly successful NCI advocacy summit last summer.

DCLG will continue to provide guidance and feedback on all topics of concern to the advocacy community. However, as part of this change, I am requesting that DCLG pay particular attention to three critical issues that will benefit immensely from a greater consumer perspective: 1) minority recruitment and patient outreach, 2) cancer care delivery, and 3) eliminating cancer health disparities.

In the area of minority recruitment and patient outreach, DCLG will play a critical role in helping NCI improve recruitment to clinical trials, particularly among minority groups, who continue to be underrepresented in these important investigations. DCLG has already taken an important step down this path, with the participation of DCLG member Col. (Ret.) Jim Williams on the newly created CTAC.

For cancer care delivery, DCLG members will be asked to participate in the pilot of the NCI Community Cancer Centers Program (NCCCP), including serving on the advisory committee developed to advise and direct the program and providing ongoing feedback to the director about the community realities of this pilot program. As an important first step, DCLG member Dr. Beverly Laird already is a member of the NCCCP advisory committee.

Finally, on the disparities front, it is imperative that we get consumer advocates' perspectives on the programs and policy approaches NCI has developed to better understand and address this issue. This will include participation on the newly established Integration and Implementation, or I2, team on health disparities.

DCLG members' expertise and experience has been and will continue to be crucial to shaping NCI's science and research agenda. For example, when President Bush visited NIH on January 17, DCLG member Dr. Grace Butler was one of the roundtable participants who told her personal story of cancer. Giving DCLG more direct access to the NCI Director's Office and asking members to offer more focused attention on these three high-priority areas will greatly enhance cancer advocates' role in the NCI decision making process and

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Cancer Research Highlights

Mammography Rates Decline in Women 40 and Older

A recent report in the Centers for Disease Control and Prevention's January 26 *Morbidity and Mortality Weekly Report* found that mammography rates among women 40 and older significantly declined from 2000 to 2005.

The report summarized the findings from the Behavioral Risk Factor Surveillance System, a state-based, randomly dialed telephone survey of the adult population. The survey, conducted from 2000 to 2005, asked adult female respondents whether they had ever had a mammogram. The women who responded yes to the question were then asked the length of time since their last mammogram.

Mammography rates in women aged 40 and over have declined from 76.4 percent in 2000 to 74.6 percent in 2005, a statistically significant decrease. However, the editors noted that these findings are subject to five limitations: 1) the results might overestimate actual breast cancer screening rates, 2) the results might not be representative of all women since the survey was conducted by telephone, 3) the responses are self-reported and not confirmed by medical records review, 4) the survey response rate was low, and 5) the results might not represent the entire U.S. population because the data only included states from the Women's Health Module.

Additionally, the editors commented that the decline in screening from 2000 to 2005 suggests a need for more careful monitoring because mammography screening every 1 to 2 years can significantly reduce breast cancer mortality.

Study Describes How Virus Evades Body's Defenses

A new study describes how a virus that causes T-cell leukemia and lymphoma evades one of the body's natural defense mechanisms. The study found that an enzyme that would normally inhibit viral replication is excluded from virus particles by human T-cell leukemia virus type 1 (HTLV-1). Resistance to the enzyme, called APOBEC3G or hA3G, may contribute to the persistence, dissemination, and potentially lethal nature of the virus.

Dr. David Derse of NCI's HIV Drug Resistance Program in the Center for Cancer Research in Frederick, MD, and his colleagues reported their findings online in the *Proceedings of the National Academy of Sciences* during the week of February 5. HTLV-1 infects 20 million people worldwide and is endemic in southern Japan, the Caribbean, and Africa. Most cases in the U.S. are found in the Southeast. Approximately 1 in 1,500 infected individuals develops HTLV-1-associated leukemia each year, usually decades after the initial infection.

Several human and nonhuman viruses that cause cancer or AIDS are susceptible to hA3G-mediated destruction. Some viruses have adapted ways to avoid this defense mechanism, however. Both HTLV-1 and the AIDS virus (HIV-1) are known to infect T lymphocyte white blood cells, and each has developed a different way of thwarting the antiviral effects of hA3G. When hA3G is incorporated into viral particles, it can start a process that will degrade and deactivate the virus itself.

"Our ultimate goal is to try to find a way to block the HTLV-1 virus from being active in the body," said Dr. Derse. "But, before we can do that, we must have a better understanding of how the virus evades the natural defenses in the cell that should be fighting off infection."

Future studies will investigate how hA3G gets packaged into the virus particle. "The next step will be to look at other viruses in relation to HTLV-1 and examine the mechanisms for evading the body's natural defenses," said Dr. Derse.

Brain Region Involved in Smoking Addiction Identified

Despite modern interventions, cigarette smoking remains difficult to quit, and relapse after an attempt at smoking cessation is common, in large part due to the many regions of the brain that play a role in addictive behavior. A new study from the University of Iowa published in the January 26 *Science* has identified a region of the brain—the insula—that may play an important role in the conscious urge to smoke and provide a potential target for new antismoking therapies.

Researchers compared 19 smokers who had experienced brain damage that included the insula with 50 smokers who had damage to other parts of the brain. They specifically assessed disruptions of smoking addi-

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tion—cessation of smoking within 1 day of experiencing brain damage, a loss of the urge to smoke, ease in quitting, and lack of relapse to smoking.

Patients with damage to either the left or the right insula were significantly more likely to experience disruption of smoking addiction than those with damage to other regions. Twelve of the 13 patients who quit smoking after damage to the insula reported a disruption of smoking addiction, compared with only 4 of the 19 patients who quit smoking after damage to other regions of the brain. Damage to regions other than the insula was not significantly associated with disruption of smoking addiction.

The experience of their patients "suggests that the insula plays a role in the feeling that smoking is a bodily need," explained the authors. "Our findings suggest that therapies that modulate the function of the insula will be useful in helping smokers quit."

Radiation Fails to Add Benefit in Localized Lymphoma

Following chemotherapy for localized aggressive lymphoma, many clinicians have used radiotherapy targeted at the area near the tumor on the principle that better local control of disease will yield better outcomes. However, a European trial reported early online this week in the *Journal of Clinical Oncology* has shown that the addition of radiotherapy does not improve either event-free or overall survival.

The study included 576 patients who were randomly assigned to receive either CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone) chemotherapy alone or CHOP and localized radiotherapy. Event-free and overall survival did not differ between the two groups of patients. Writing for the Groupe d'Etude des Lymphomes de l'Adulte (GELA), lead author Dr. Christophe Bonnet at the Centre Hospitalier Universitaire in Liege, Belgium, said that GELA has decided "to abandon radiotherapy as first-line treatment of localized aggressive lymphoma."

The GELA trial, known as GELA LNH 93-4, is the fourth randomized trial to compare chemotherapy alone with chemotherapy followed by radiation therapy in patients with stage I–II aggressive lymphoma. Overall, these trials have failed to support a role for radiotherapy in patients with localized aggressive disease.

In an accompanying editorial, however, Drs. Andrea Ng and Peter Mauch from the Dana-Farber Cancer Institute point out that CHOP chemotherapy in combination with the monoclonal antibody rituximab is the current standard of care for this disease. They state further that the most informative trial to clarify the role of radiation therapy in localized aggressive lymphoma will be one that compares CHOP plus rituximab followed by radiation therapy or no additional treatment.

IP Chemo Diminishes Well-Being in Ovarian Cancer Patients

A recent randomized phase III trial comparing intravenous (IV) plus intraperitoneal (IP) chemotherapy with IV chemotherapy alone in women with stage III epithelial ovarian cancer found that IP treatment significantly lengthened progression-free and overall survival. The researchers from the Gynecologic Oncology Group (GOG) also assessed the health-related quality of life (HRQOL) of participants during the trial.

Study results appearing in the February 1 *Journal of Clinical Oncology* indicate that women in the IP arm of the trial experienced more adverse side effects for a longer period of time than the women in the IV arm.

GOG researchers randomly assigned 429 patients to either the IV or IP chemotherapy treatment group between March 1998 and January 2001. Among this group, 415 were eligible to participate in the patient-reported HRQOL assessment. Researchers evaluated physical and functional well-being, ovarian cancer symptoms, neurotoxicity (Ntx), and abdominal discomfort (AD) at four time points: before random assignment, before chemotherapy cycle 4, 3 to 6 weeks after treatment, and 12 months after treatment.

While all women in the study reported negative side effects from treatment, women in the IP treatment group reported significantly worse physical and functional well-being before chemotherapy cycle 4 and 3 to 6 weeks after treatment. Women in this group also reported significantly worse AD before cycle 4 and significantly worse Ntx 3 to 6 weeks and 12 months after treatment. However, only the Ntx symptoms remained significantly greater for IP patients 12 months after treatment.

The study's authors wrote, "This HRQOL cluster, as well as patient-reported outcomes of Ntx and AD, should be targeted in future trials not only to evaluate treatment arm differences, but also to measure a patient's responsiveness to new supportive care strategies or surgical techniques aimed at making IP therapy more tolerable." ◆

Special Report

Cancer Control Opportunities in the Developing World

On February 4, World Cancer Day, the Institute of Medicine (IOM) of the National Academies released a new report, "Cancer Control Opportunities in Low- and Middle-Income Countries." The report states that the causes of and outcomes for cancer in developing countries are different from conditions within more affluent, developed countries, and notes that a "one-size-fits-all" solution for cancer control in the developing world is impractical. Instead, IOM recommends a number of unique, resource-appropriate strategies to control and combat cancer.

The report, sponsored by NCI's Office of International Affairs (OIA) and the American Cancer Society, was developed to address the fact that cancer already represents a significant disease burden in low- and middle-income countries. The report focuses on the opportunities in these countries to improve cancer prevention, surveillance, treatment, and palliative care.

"It's very clear that cancer will become an increasingly heavy burden on low- and middle-income countries," noted Dr. Joe Harford, OIA director. "Now is the time to begin in earnest to prepare and to address what can be done in these venues."

One example of the distinct differences in the causes of cancer, IOM notes, is that 26 percent of cancers in developing nations can be attributed to infectious agents such as *Helicobacter pylori*, hepatitis B and C viruses, and human papillomaviruses (HPV), compared with only about 8 percent in the developed world. Developing countries also have low cure rates and high death rates from cancer, due largely to the advanced stage of disease at diagnosis typical in countries with poor health care infrastructures.

The report discusses issues related to the feasibility of implementing cancer control interventions when resources are limited. For example, an approach that is effective in the United States or Europe may not work in low- and middle-income countries. The report states that priorities for cancer control, and the accompanying cost-benefit analyses, need to be developed in the context of each nation. IOM points to the Breast Health Global Initiative, which is also supported by NCI, as a paradigm for developing resource-level-appropriate guidelines for the overall management of other major cancers.

The IOM report contains several recommendations. First among these is that every developing nation create a cancer control plan. It also recommends that each country sign, ratify, and implement the Framework Convention on Tobacco Control of the World Health Organization. In the area of infectious causes of cancer, the report recommends the continued assistance of the GAVI Alliance and others in incorporating vaccination for hepatitis B virus into childhood immunization programs. Developing countries are also urged to plan for the introduction of vaccination against HPV to reduce the incidence of cervical cancer.

Given the usually late stage of diagnosis and initiation of treatment for cancer in low- and middle-income countries, IOM stresses the need for enhanced palliative care. The report urges governments to work with national organizations to identify and remove barriers that affect the availability of medications for pain relief and management of other symptoms of advanced cancer.

Cancer surveillance and monitoring are important in gauging the magnitude of the burdens of different cancers and in assessing the efficacy of cancer-control and other interventions. The IOM authors recommend that risk-factor surveillance be initiated, with collection of cause-specific mortality data a priority.

"The IOM report clearly sets forth the issues and makes specific recommendations," commented Dr. Harford. "It should be required reading for all who are interested in the global fight against cancer." ◆

FDA Update

FDA Outlines Steps for Improving Safety Reviews, Monitoring

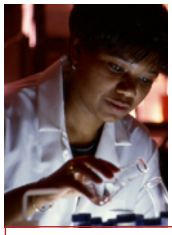
The Food and Drug Administration (FDA) last week released a report outlining steps the agency is taking or plans to take to improve its safety programs.

The changes, said FDA Commissioner Dr. Andrew von Eschenbach, are intended to allow the agency to "keep pace with the rapid evolution of science, technology, and the health care system."

The report includes a series of initiatives that already are under way, as well as new initiatives developed in response to some of the recommendations in a report released last September by the Institute of Medicine (IOM), *The Future of Drug Safety: Promoting and Protecting the Health of the Public*.

Implementing some of the steps outlined in the report, FDA explained in a statement, will depend on whether the agency receives additional funding from the Prescription Drug User Fee Act, which is up for congressional reauthorization. Under this program, drug and biologic manufacturers pay so-called user fees that are used to help support FDA's review and postmarket safety activities.

Among the changes that have already been initiated is the addition of signal detection and tracking tools to FDA's Adverse Event Reporting System database, or AERS. The new tools, FDA said, will allow staff who review AERS reports to more efficiently and effectively identify and track safety signals. ◆



Featured Clinical Trial

Combining Targeted Therapies for Metastatic Colorectal Cancer

Name of the Trial
Phase II Study of Sorafenib and Cetuximab in Patients with Epidermal Growth Factor Receptor-Expressing Metastatic Colorectal Cancer (NCI-06-C-0164). See the protocol summary at http://cancer.gov/clinicaltrials/NCI-06-C-0164.

Principal Investigator
Dr. Shivaani Kummar, NCI Center for Cancer Research

Dr. Shivaani Kummar

Why This Trial Is Important
Many types of cancer show increased activity or increased amounts of a protein called epidermal growth factor receptor (EGFR). EGFR stimulates cell growth and multiplication in response to other proteins called epidermal growth factors. Cetuximab (Erbitux) is a monoclonal antibody that binds to and blocks EGFR activity.

In this trial, researchers are combining cetuximab with another targeted drug called sorafenib (Nexavar) to treat patients with metastatic colorectal cancer whose tumors show EGFR activity. Sorafenib blocks the activity of two other proteins called vascular endothelial growth factor receptor (VEGFR) and Raf kinase. VEGFR stimulates the growth of blood vessels to tumors (a process called angiogenesis), and Raf kinase is a key molecule in relaying signals from growth factor receptors to the interior of the cell, where the signals are converted into changes in gene activity that lead to cell growth and multiplication.

"The majority of patients with metastatic colorectal cancer have tumors expressing EGFR," said Dr. Kummar. "Cetuximab is approved by the FDA to treat EGFR-expressing metastatic colorectal cancer, but unfortunately it produces significant tumor shrinkage in only about 10 percent of patients when used as a single agent. With this trial, we hope to see an improved response rate by augmenting the activity of cetuximab with an additional drug that blocks other processes important for tumor growth and cell proliferation."

Who Can Join This Trial
Researchers seek to enroll 53 patients aged 18 or over with metastatic colorectal cancer that tests positive for EGFR. See the list of eligibility criteria at http://cancer.gov/clinicaltrials/NCI-06-C-0164.

Study Site and Contact Information
This study is taking place at the NIH Clinical Center in Bethesda, MD. For more information, call the NCI Clinical Trials Referral Office at 1-888-NCI-1937. The call is toll free and confidential. ◆

An archive of "Featured Clinical Trial" columns is available at http://cancer.gov/clinicaltrials/ft-all-featured-trials.

Notes

President's Cancer Panel Examines Tobacco

The President's Cancer Panel will hold the final meeting for the 2006–2007 series, "Promoting Healthy Lifestyles to Reduce the Risk of Cancer," on February 12 in Jackson, MS. Panel members will hear expert testimony about the effects of tobacco and environmental tobacco smoke on cancer risk, as well as testimony about community programs and policies related to tobacco prevention, control, and cessation.

Meetings of the President's Cancer Panel are free, open to the public, and require no registration. For more information on these meetings, visit http://pcp.cancer.gov or contact Karen Parker at 301-451-9462 or klparker@mail.nih.gov.

NCAB Meeting Held

The National Cancer Advisory Board (NCAB) held its first meeting of 2007 on February 6 on the NIH campus in Bethesda, MD. NCI Director Dr. John E. Niederhuber updated the Board on the NCI budget, the restructuring of the Office of the NCI Director, and the NIH Reauthorization Act. The archived videocast of the meeting can be viewed at http://videocast.nih.gov/. ◆

CCR Grand Rounds

February 13: Dr. Merrill J. Egorin, Professor of Medicine and Pharmacology, University of Pittsburgh Cancer Institute. "The Relevance of Old-Fashioned Clinical Pharmacology to Modern Anticancer Chemotherapy."

February 20: Dr. André Nussenzweig, Senior Investigator, Experimental Immunology Branch; Head, Molecular Recombination Section, Center for Cancer Research, NCI. "Role of the DNA Damage Response in Maintaining Genome Stability."

CCR Grand Rounds are held 8:30 to 9:30 a.m. at the NIH campus in Bethesda, MD, in the Clinical Center's Lipsett Amphitheater. ◆

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ensure that NCI is as responsive to advocates' needs as possible.

The role of advocates in maintaining and accelerating our scientific progress has never been greater or more necessary. I would like to thank Mr. Doug Ulman, a three-time cancer survivor, for his leadership of DCLG, and to all the members for their tireless efforts and dedication to advancing the science of cancer care. ◆

Dr. John E. Niederhuber
Director, National Cancer Institute

NCI Listens and Learns

NCI's Office of Liaison Activities (OLA) was established in 1996 to help strengthen NCI's communications and relationships with organizations that work with consumer advocates. NCI would like to know how OLA can continue to reach out to and collaborate with the advocacy community and members of the public.

OLA currently hosts teleconferences, coordinates meetings with advocacy organization leaders, distributes an e-mail newsletter and hot topic e-mail updates, provides staff support for the Director's Consumer Liaison Group, and coordinates the involvement of individual advocates in NCI activities through the CARRA program.

In what other ways could NCI continue to communicate with advocates and members of the public?

Keeping in mind NCI's research-focused mission, how can NCI, through OLA, work with advocates in the areas of cancer care delivery, health care disparities, and patient outreach?

To register and post comments on the Listens and Learns Web site, go to http://ncilistens.cancer.gov. ◆

70 YEARS OF EXCELLENCE IN CANCER RESEARCH

If Memory Serves…

The first advisory group involved with NCI's leadership was the National Advisory Cancer Council, which included Dr. James Ewing of Memorial Hospital in New York, Dr. C.C. Little of the American Society for the Control of Cancer, Dr. Francis Carter Wood of Columbia University, Dr. Ludvig Hektoen of the Institute of Medicine in Chicago, Dr. Arthur Compton of the University of Chicago, and Dr. James B. Conant of Harvard University. Dr. Thomas Parran, then the U.S. Surgeon General, was a member ex officio and the council's first chairman. ◆

For more information about the birth of NCI, go to http://www.cancer.gov/aboutnci/ncia.

Community Update

NCI Cosponsors Global Health Training Program

Cancer mortality is falling in the United States, but many developing nations are experiencing an increase in cancer deaths as they adopt more "Western lifestyles," which increase the risk of many chronic diseases.

To enhance the cadre of professionals equipped to address pressing global health issues, last October the Fogarty International Center (FIC) at NIH announced 10 new grants for Framework programs. NCI participated in the program announcement to support curriculum development and training on preventing and controlling the global burden of tobacco.

"This program is an important opportunity for NCI to influence the careers of future researchers and practitioners," said Dr. Cathy Backinger, acting chief of NCI's Tobacco Control Research Branch in the Division of Cancer Control and Population Sciences.

Framework grants support global health research training by coordinating faculty and staff across disciplines and institutions to provide students with a diverse and comprehensive approach to understanding critical research issues. For example, when studying how to design and implement more effective tobacco package warning messages, students might hear the perspectives of faculty involved in communications, law, psychology, public policy, and other disciplines.

Dr. Flora Katz, director of the Framework Program at FIC, calls the concept "gluing." "Team science is an emerging concept, even at NIH," she says, "but talking across disciplines is the only way that some global health problems will be solved."

Among the 10 grants funded under the program in October 2006 is the University of Southern California's (USC) Pacific Rim Global Health Framework, led by Dr. Andy Johnson, director of the USC Institute for Health Promotion and Disease Prevention Research.

Dr. Johnson's program brings together faculty from 12 of USC's 17 schools, as well as nearby Claremont Graduate University and institutions in China, India, Sri Lanka, Bangladesh, and Thailand. The program builds on USC's Transdisciplinary Tobacco Use Research Center grant to address health promotion in developing Pacific Rim nations, amid rapid cultural, social and environmental change, arising from economic and social transition. While its initial focus is on tobacco, the program will eventually include obesity, HIV prevention, and environmental health.

In April 2007, the USC Framework partners in Asia and the United States will come to USC for a week-long meeting to discuss global health curriculum development for all the participating institutions, and hold a symposium to present trends and emerging health issues in their home countries. "Students at USC and throughout the Asia-Pacific region are very interested and motivated to study and work in global health," says Dr. Johnson.

Most of the 26 Framework grants distributed by FIC in 2005 and 2006—up to $125,000 per year—have gone to academic institutions in the United States, which often matched these funds. Seven are smaller 2-year planning grants of $25,000 per year to foreign institutions. FIC anticipates soliciting the next round of Framework applications later this year. ◆

Featured Meetings and Events

A calendar of scientific meetings and events sponsored by the National Institutes of Health is available at http://calendar.nih.gov/app/MCalWelcome.aspx ◆

The *NCI Cancer Bulletin* is produced by the National Cancer Institute (NCI). NCI, which was established in 1937, leads the national effort to eliminate the suffering and death due to cancer. Through basic, clinical, and population-based biomedical research and training, NCI conducts and supports research that will lead to a future in which we can identify the environmental and genetic causes of cancer, prevent cancer before it starts, identify cancers that do develop at the earliest stage, eliminate cancers through innovative treatment interventions, and biologically control those cancers that we cannot eliminate so they become manageable, chronic diseases.

For more information on cancer, call 1-800-4-CANCER or visit http://www.cancer.gov.

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