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Eliminating the Suffering and Death Due to Cancer

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Striking Results Achieved in Lymph System Imaging Using MRI and Nano-Scale Contrast Agent

Determining whether breast cancer has spread to the lymph nodes may become easier to do as well as easier on the patient, based on the results of important new research presented this week at the American Association for Cancer Research (AACR) annual meeting.

Dr. Hisataka Kobayashi, a staff scientist in the National Cancer Institute's (NCI's) Molecular Imaging Program, reported on the development of a new nano-scale contrast agent for use in magnetic resonance imaging (MRI) that provides clear visualization of drainage from a breast tumor to nearby lymph nodes. Use of this new agent, dubbed G6, in two mouse models of breast cancer also allowed Dr. Kobayashi and colleagues from NCI and Johns Hopkins University to clearly visualize whether there were metastases in sentinel lymph nodes—that is, the first lymph nodes to which metastases are most likely to infiltrate—and axillary nodes. The study was conducted at the Metabolism Branch of the NCI Center for Cancer Research.

The finding could be significant because sentinel node biopsy has shown to be just as effective in determining the extent of any metastasis as the more invasive and potentially more damaging option of removing most of the lymph nodes. [Whether sentinel node biopsy increases overall survival

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Director's Update

Enabling Technologies Will Help Pave Way to 2015

Since the NCI announced its challenge goal to eliminate the suffering and death due to cancer by 2015, I have been asked on numerous occasions, "How are we going to do it?" The answer is as simple as it is complex. The simple answer is that we will harness the tremendous intellectual resources within the cancer community that have been producing the remarkable advances we have made in our understanding of the cancer process, and we will accelerate further progress by integrating a plethora of new enabling technologies.

The complexity of the answer comes in how we orchestrate this process: ensuring that we set up systems and processes which allow us to take full advantage of the tools and resources available to us and that we work together *as a community*, not in silos that foster redundancy and inefficiency and, as a result, hamper progress. I believe the research community is ready for such coordination, as evidenced by the emergence of team science and the enthusiasm of our cancer center directors for the cancer Biomedical Informatics Grid, or caBIG.

But an integrated and synchronized research community still will need

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(Lymph System continued from page 1)
compared to full-armpit node dissection has not been shown. Two NCI-sponsored studies, however, are being conducted to answer that very question.]

"With the knowledge of the exact location and extent of tumor infiltration into the lymphatic system, the surgeon can minimize the incision," Dr. Kobayashi explained. If metastasis appears to be contained within the sentinel node, this not only could improve quality of life but also negate the need for further chemotherapy, he added.

In the study, MRI with the G6 contrast agent was compared with MRI using standard contrast agents in normal, transgenic, and xenograft mouse models. MRI using the G6 agent was able to visualize draining lymphatic vessels and sentinel lymph nodes—something that MRI using standard agents did not achieve. In addition, MRI with G6 was able to easily detect a one-millimeter tumor in three-millimeter lymph nodes, a level of precision 100-fold beyond what is possible using conventional imaging methods with other modalities. Finally, MRI with G6 provided images that could allow for differentiation between lymph ducts and nodes and for detection of lymph nodes completely infiltrated by cancerous cells—neither of which is possible using standard agents or other conventional imaging methods.

MRI with the G6 agent works so well, Dr. Kobayashi explained, precisely because of its nano-size, which, at 9 nanometers, is actually more than 10 times larger in diameter than most standard contrast agents. G6 is small enough to quickly get into the lymphatic ducts but still has sufficient stature to ensure that it doesn't leach from the ducts into the capillary vessels. "This method can tell both the location of true sentinel lymph nodes and the presence or absence of metastatic cancer in those nodes within an hour by a single MRI study," Dr. Kobayashi said. "We validated the performance of this agent on the clinical machinery in the mouse model, and we expect the drug to perform as well in humans." ◆

(Director's Update continued from page 1)
extraordinary tools. Therefore, we must also develop and apply enabling technologies—technologies that not only give us the ability to do things we couldn't do before but that also allow us to conduct research and discover, develop, and deliver new tests and treatments more swiftly and efficiently.

Gatherings like the AACR annual meeting held this week in Orlando provide an important pathway to foster discovery and to educate the cancer community about important advances, including those that take advantage of new technology. The work presented by Dr. Hisataka Kobayashi, discussed in the lead story for this week's *NCI Cancer Bulletin* (see above) is a perfect example. His work takes advantage of two important technological advances, magnetic resonance imaging (MRI) and nanotechnology, that may allow us to better visualize whether there has been metastasis to the lymph nodes in breast cancer patients.

NCI must lead an effort to develop and embrace the sophisticated technologies that are critical to accelerate our work to reach the 2015 goal. We are committed to working with the entire community in this effort and providing the necessary resources. This commitment is embodied in an important new NCI initiative, the National Advanced Technologies Initiative for Cancer.

This initiative is not about reinventing the wheel. Quite the contrary. It is about a bold vision to coordinate and foster technology-related initiatives and create a coordinated national infrastructure using a "hub" and "nodes" strategy. The hubs will be scientific centers of excellence attached, albeit it virtually, to nodes that are strategically developed to optimize availability and access to key technologies. In recent weeks, readers of the *Bulletin* have learned more about some of the NCI efforts that will play a role in this new initiative, including caBIG and nanotechnology. There are many others, such as integrative systems biology, advanced imaging technologies, and molecular epidemiology.

When you consider the tremendous potential to accelerate the pace of progress by the integration of these tools and resources into a national, coordinated effort to engineer a biomedical technology initiative, I can't help but be filled with optimism that we can achieve the 2015 goal. It is clear to me: If the NCI does what it is supposed to do as a leader in supporting basic, clinical, and population research, as well as guiding the research enterprise and providing important new enabling technologies, and if all of the dedicated researchers, clinicians, advocates, and others in the community continue to do the excellent work that holds so much promise—and we join together to keep things moving forward—how can we possibly fail? ◆

Andrew C. von Eschenbach, M.D.
Director, National Cancer Institute

HHS News

Trans-HHS Cancer Health Disparities Progress Review Group Announces Action Plan

The Trans-HHS Cancer Health Disparities Progress Review Group (PRG) recently announced its 14-point priority action plan for combating the mounting disparities in the delivery of cancer prevention and treatment in the United States. The announcement was made at the March 25 town hall meeting of the Intercultural Cancer Council (ICC). In their report, the PRG panel calls on the Department of Health and Human Services (HHS) to implement overarching planning and coordination actions and to focus research discovery, program development, and service delivery activities on developing and applying evidence-based approaches tested at the community level. Their recommendations call for HHS to establish a Federal Leadership Council to mobilize resources across the federal government, form partnerships for "community-based networks for participatory research," and designate high disparity geographic areas as "Communities Empowered to Eliminate Disparities."

With the help of NCI and its director, Dr. Andrew C. von Eschenbach, working with a Federal Steering Committee comprising representatives from agencies across HHS, this PRG was appointed last summer by HHS Secretary Tommy G. Thompson and includes prominent scientific, medical, public health, and advocacy community members.

"While this progress review group focuses on cancer, it could lead to a process that will help us eliminate not only cancer disparities but all health disparities," Dr. von Eschenbach stated. "These efforts are a critical part of our mission both at NCI and across the department." NCI has regularly used the PRG approach to identify gaps in knowledge about specific cancers and groups of cancers, including lung, breast, prostate, colorectal, and pancreatic cancers, brain tumors, and leukemia, lymphoma, and myeloma.

The ICC also announced a 12-step action plan at their symposium last week that lists the full implementation and funding of the Trans-HHS Cancer Health Disparities PRGs recommendations as its number one priority.

"Clearly, enough information now exists to address this problem head on—through policies that will provide ethnic minorities and the medically underserved with greater access to services and programs that are designed to prevent, detect, and treat cancer at its earliest stages while supporting these individuals through and beyond treatment," said ICC Chair Alexine Clement Jackson. ◆

Funding Opportunities

Understanding and Preventing Brain Tumor Dispersal

PAS-04-079
Application Receipt Dates: June 1, 2004; Oct. 1, 2004; Feb. 1, 2005; June 1, 2005; Oct. 1, 2005; Feb. 1, 2006; June 1, 2006; Oct. 1, 2006; Feb. 1, 2007; June 1, 2007

The goal of this Program Announcement with set-aside funds (PAS) is to promote studies that 1) identify the causes of brain tumor cells dispersal, 2) determine the interactions of migrating tumor cells with normal brain elements, and 3) develop interventions that target invading tumor cells. Interdisciplinary studies that apply new concepts and methodologies from developmental neuroscience, genomics, precursor cell biology, and other related fields to the analysis of tumor spread are particularly encouraged.

This PAS will use the NIH research project grant (R01) and exploratory/developmental grant (R21) award mechanisms.

For more information see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=1960.

Inquiries: Dr. Steven Krosnick, krosnicks@mail.nih.gov ◆

More AACR Meeting News

Look for more research highlights from the 95th annual meeting of the American Association for Cancer Research in next week's *NCI Cancer Bulletin*.

Cancer Research Highlights

Aspirin Protective Against Prostate Cancer, Study Suggests

Daily use of at least one aspirin may reduce the risk of prostate cancer by 15 percent, according to the results of a prospective study released at the American Association for Cancer Research (AACR) annual meeting this week in Orlando, Fla. The results are consistent with findings from a recent meta-analysis of observational studies on aspirin use and prostate cancer, said the study's lead author, Lori Sakoda, an epidemiologist in NCI's Division of Cancer Epidemiology and Genetics.

In the study, Ms. Sakoda and colleagues examined the relationship between use of the nonsteroidal anti-inflammatory drugs (NSAIDs) aspirin and ibuprofen and prostate cancer risk in more than 29,000 men enrolled in the screening arm of the Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial. The PLCO trial—a massive clinical trial with more than 154,000 participants—was launched in 1992 to determine whether certain screening tests can reduce deaths from these four cancers. In addition, PLCO substudies are assessing additional epidemiologic factors that affect the risk of these and other cancers.

This investigation involved men in the trial who had undergone a digital rectal examination and prostate-specific antigen testing between November 1993 and September 2001. At entry into the trial, all men completed a self-administered questionnaire on NSAID use in the previous 12 months; they were then followed for the remainder of the study period. Overall, approximately 31 percent of participants reported daily aspirin use, while only 7.5 percent reported daily ibuprofen use.

In the study cohort, there were 1,338 cases of prostate cancer. Compared with men who took 0 to 3 aspirins per month, the relative risk of prostate cancer was reduced by 14 percent in men who reported taking a single aspirin daily and 21 percent in men who took two or more daily.

Despite the study's findings, "There are not sufficient data to recommend daily use of aspirin solely to prevent prostate cancer," Ms. Sakoda said. "We still lack data on important considerations, such as the optimal dose, duration, and timing of aspirin use."

High Levels of Vitamin E in the Blood Are Linked to a Lower Risk of Prostate Cancer

Men with higher levels of vitamin E in their blood were found to have a lower risk of developing prostate cancer, according to Drs. Stephanie J. Weinstein and Demetrius Albanes, researchers from NCI's Division of Cancer Epidemiology and Genetics, who reported their study results at the annual meeting of the American Association for Cancer Research in Orlando, Fla.

The study involved 300 men between the ages of 50 and 69 who were part of a larger prevention trial examining the effect of beta-carotene and vitamin E on lung and other cancer risk. During recruitment for the the Alpha-Tocopherol, Beta-Carotene Cancer Prevention (ATBC) trial, which took place between 1985 and 1988, serum samples from each of nearly 30,000 Finnish participants, all of whom were smokers, were frozen and stored.

For the current report, the investigators defrosted serum samples from 100 men who developed prostate cancer over the course of the original trial. They then defrosted serum samples from 200 matched control men who did not develop prostate cancer. The scientists measured the two principal forms of vitamin E in the blood, alpha-tocopherol and gamma-tocopherol. Men with the highest serum levels of alpha-tocopherol had a 53 percent reduction in risk and those with the highest levels of gamma-tocopherol had a 39 percent lower risk.

The impetus for the current study grew out of an unexpected finding from the larger trial, in which men who took vitamin E supplements had a 32 percent lower incidence of prostate cancer (JNCI, 1998; 90:440). The investigators wanted to see if the amount of vitamin E in the serum before the men were given vitamin E pills was also related to their chance of getting prostate cancer.

This finding needs to be verified in other studies, Dr. Weinstein said, including other ethnic groups and nonsmokers. The SELECT prevention trial, which is expected to end in 2013, is investigating the effect of selenium and vitamin E supplements on prostate cancer risk and includes minorities and nonsmokers.

Pregnancies Ending in Abortion or Miscarriage Do Not Increase Risk of Developing Breast Cancer, Study Shows

Pregnancies that end in miscarriages or abortions do not increase a woman's risk of developing breast cancer,

according to a study published in the March 27 issue of *The Lancet*. The study, conducted by members of the Collaborative Group on Hormonal Factors in Breast Cancer, analyzed data from 53 prospective and retrospective epidemiological studies performed in 16 countries.

Researchers analyzed prospective data from 44,000 women with breast cancer. This group of women had participated in studies where they reported their history of abortion or miscarriage before they were diagnosed with breast cancer.

Results were expressed as the "relative risk" of breast cancer, which compares the chances of developing breast cancer in women with, and without, some such record of abortion. A relative risk of 1.0 or less indicates no adverse effect on the subsequent risk of breast cancer. In the prospective studies, the average relative risk of breast cancer was 0.98 for women who had a pregnancy that ended as a miscarriage and 0.93 for women who had a pregnancy that ended as an abortion, indicating no increased risk of breast cancer after miscarriage or abortion.

The retrospective data included information from 39,000 women who were asked about their history of abortions or miscarriages after they were diagnosed with breast cancer. Researchers noted that these studies are potentially less reliable than the prospective studies and can give misleading results. In interviews, Dr. Richard Peto, one of the study authors, said, "Studies can give misleading results if women are asked about previous abortions only after they are diagnosed with breast cancer. This may well be because, on average, women with breast cancer are more likely than other women to disclose any prior induced abortions."

"The totality of the worldwide epidemiological evidence indicates that pregnancies ended by induced abortion do not have adverse effects on women's subsequent risk of developing breast cancer," commented Dr. Valerie Beral, another of the study authors.

Editor's Note: *These results add further weight to the conclusions from NCI's Early Reproductive Events and Breast Cancer Workshop in February 2003. Workshop participants concluded that having an abortion or miscarriage does not increase a woman's subsequent risk of developing breast cancer. A summary of their findings, titled* Summary Report: Early Reproductive Events and Breast Cancer Workshop, *can be found at* http://cancer.gov/cancerinfo/ere-workshop-report.

High-Dose Chemo Plus Autologous Stem Cell Transplantation Boosts Event-Free Survival in Some Patients with Aggressive NHL

The GOELAMS research group has completed a clinical trial demonstrating that a high-dose multidrug chemotherapeutic regimen, when combined with autologous stem-cell support, may prove superior to standard chemotherapy in some adults newly diagnosed with aggressive non-Hodgkin's lymphoma (NHL). A four-drug regimen of cyclophosphamide, doxorubicin, vincristine, and prednisone (CHOP) has long been considered the standard of care for these patients. But several recent clinical trials have shown that a high-dose multidrug regimen known as CEER, which is similar but not identical to CHOP, can have promising results in patients with aggressive lymphoma when followed by autologous stem cell transplantation.

This randomized, controlled clinical trial, described in the March 25th issue of the *New England Journal of Medicine*, is the first to directly compare this newer form of multimodality therapy with CHOP in adult NHL patients with aggressive, disseminated disease. Patients were randomly assigned to two arms, with one receiving CHOP and the second CEER, followed by stem cell transplantation. Each arm was stratified into three subgroups according to whether patients had a low, low-intermediate, or high-intermediate risk of death. The event-free survival rate at five years was found to be significantly higher in the multimodality groups than in the CHOP groups: 55 percent compared with 37 percent, respectively. Among patients with a high-intermediate risk of death, the improvement in event-free five-year survival rates was more striking: 74 percent versus 44 percent, respectively. No improvement in overall survival rates after five years, however, was observed after CEER/transplant treatment. Further, no significant differences in either event-free or overall five-year survival were observed in any patients with a low or low-intermediate risk of death.

This study adds to the growing body of evidence supporting the principle that to be optimally effective, the choice among treatment options should be individually tailored to patients' precise prognostic profiles. The authors urge caution in assessing the significance of this study and discuss several of the study's limitations.

In an accompanying editorial, Dr. T. Andrew Lister concurs with the authors' assessment of the study's limitations. Nonetheless, he acknowledges that the study's findings "constitute a modest advance," concluding that "[i]t is incumbent on us to build on this information . . . so that we can continue to make incremental improvements in care."

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(Cancer Highlights continued from page 5)

Combining Cancer Vaccines with Conventional Therapies

Speaking at a special forum on cancer vaccines at the annual AACR meeting, Dr. Jeffrey Schlom, chief of NCI's Laboratory of Tumor Immunology and Biology (LTIB), discussed preclinical and clinical results from his laboratory's work using cancer vaccines in conjunction with conventional cancer therapies.

Cancer vaccine targets are typically overexpressed in tumors as opposed to normal tissue, which greatly reduces the risk of autoimmunity—the chance of the body mounting an immune response against normal tissue. The targets, called tumor associated antigens, only trigger a weak immune response or none at all, unless strategies are undertaken to make them more immunogenic. One of the main targets that Dr. Schlom's laboratory has identified is the carcinoembryonic antigen (CEA), which is normally only expressed in the fetal gut and is present in very low levels in the normal adult colon. "CEA is a particularly attractive target," commented Dr. Schlom, "because it is overexpressed in the vast majority of a wide-range of carcinomas including colorectal, pancreatic, and breast."

Dr. Schlom also discussed his work to increase the natural amount of T-cell activation by the cancer vaccines, thereby making them much more effective tumor killers. His group has been looking into varying the type of viral vector used and the fashion in which the vectors are administered. Previously, they identified that the greatest efficacy results from a protocol that involves an initial vaccination using a vaccinia vector followed by subsequent vaccinations using an avipox vector. ◆

Featured Clinical Trial

Trial of Four Schedules of Adjuvant Chemotherapy for Breast Cancer

Name of the Trial

Phase III Randomized Study of Four Schedules of Adjuvant Doxorubicin, Cyclophosphamide, and Paclitaxel in Patients with Node-Positive or High-Risk Node-Negative Breast Cancer (SWOG-S0221). See the protocol summary at http://cancer.gov/clinicaltrials/SWOG-S0221.

Principal Investigators

Dr. G. Thomas Budd and Dr. Halle C. F. Moore from the Southwest Oncology Group

Why Is This Trial Important?

Different chemotherapy drugs may affect tumors in different ways. Combining more than one drug and giving them after surgery may be effective in killing any tumor cells not removed surgically. It is important, however, to determine which combination of drugs—and the schedule for administering them—produces the best results while causing the fewest side effects. For example, some drugs may provide additional benefits, such as helping to block blood flow to tumors (a process called antiangiogenesis), and be more tolerable if administered more frequently but in lower doses.

This trial compares the effectiveness of four different treatment schedules using the drugs doxorubicin, cyclophosphamide, and paclitaxel in treating patients who have undergone surgery for stage I, II, or III breast cancer.

Photo courtesy of the Cleveland Clinic Foundation

Dr. G. Thomas Budd
Principal Investigator

"Preclinical studies have suggested that a 'metronomic' chemotherapy regimen—the administration of moderate doses more frequently—may optimize the antiangiogenic effects of chemotherapies," said Dr. Budd. "Furthermore, this type of regimen may serve as a ready platform upon which to add future antiangiogenic agents as they become available."

Who Can Join This Trial?

This trial seeks to enroll 4,500 women and men aged 18 and older who have high-risk stage I-III invasive breast cancer and have had their tumors surgically removed. See the full list of eligibility criteria for this trial at http://cancer.gov/clinicaltrials/SWOG-S0221.

Where Is This Trial Taking Place?

Multiple study sites in the United States are enrolling patients in the trial. See the list of study sites at http://cancer.gov/clinicaltrials/SWOG-S0221.

Who to Contact

See the list of study contacts at http://cancer.gov/clinicaltrials/SWOG-S0221 or call NCI's Cancer Information Service at 1-800-4-CANCER (1-800-422-6237). The call is toll free and completely confidential. ◆

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

Notes

President's Cancer Panel Urges Increased Services for Native Americans

Native American cancer incidence and mortality rates have been on the rise over the past 30 years, with American Indian and Alaska Native cancer survival rates among the lowest of any U.S. ethnic group. As a result, the President's Cancer Panel has issued a report, *Facing Cancer in Indian Country: The Yakama Nation and Pacific Northwest Tribes*, calling for increased access to cancer screening and treatment for Native Americans, a segment of the population in which cancer appears to occur less frequently but most often is fatal.

"We must not shirk the responsibility of our Government to provide necessary cancer and other health care to the first Americans," remarked former panel chairman Dr. Harold P. Freeman. Unfortunately, as the report notes, "For many American Indians and Alaska Natives in the Pacific Northwest region of our Nation, lack of cancer screening and treatment—or dangerously delayed care—is the norm, not the exception." Identified barriers to cancer care for Native Americans include inadequate health services funding, gaps in the health care infrastructure, cultural issues, information and training needs, and geographic obstacles.

The panel also offered recommendations to address these barriers, such as increased funding for the Indian Health Service, better coordination among the HHS agencies that pay for or deliver health care to Native Americans, "patient navigator" programs to help Native American cancer patients access cancer treatment and supportive services, improved efforts to gather data on the cancer burden for all Native Americans, and research into the possible relationship between radioactive and chemical contaminants and cancer—a particular concern to the tribes in the area of the Hanford nuclear site in southeastern Washington state and the surrounding Columbia River Basin.

BIO President Discusses Partnership Between Industry and NCI

On March 19, NCI Director Dr. Andrew C. von Eschenbach welcomed Carl B. Feldbaum, president of the Biotechnology Industry Organization (BIO), as a guest speaker in the Director's Seminar Series. Mr. Feldbaum, a cancer survivor, began his lecture, "Biotechnology and NCI: Partners in Bringing Patients the Next Generation of Cancer Therapy," by sharing the significance of biotechnology in his own early, presymptomatic diagnosis and recovery from prostate cancer. Noting the relatively short history of the biotech industry, Mr. Feldbaum reviewed the progress that has been made just in the last year with the approval of new cancer drugs, including Plenaxis, Velcade, Avastin, and Erbitux, as well as numerous therapies for other health conditions. He also discussed the structure of the biotech industry, emphasizing how the issues of regulation, market-based pricing, and cooperation with NCI—particularly through Cooperative Research and Development Agreements—can affect the ability of small companies to survive in the marketplace. "The research that is performed at NCI acts as a litmus test" for biotech companies that cannot afford risky research ventures, he explained. Collaboration between the two is key, he said, "For one is not nearly as powerful without the other."

Scientists Highlight Insights from Chemical Approaches to Biology and Genomics

On March 15-16, as part of the Molecular Libraries component of the NIH Roadmap, the National Human Genome Research Institute and the National Institute of General Medical Sciences hosted a symposium, entitled "Chemistry and Biology: Partners in Decoding the Genome," in Bethesda, Md.

In his opening address, NIH Director Dr. Elias Zerhouni underscored the importance of having new ways to teach chemistry and apply it to biological problems. He delivered a quote by Nobel Laureate in Chemistry Dr. John Fenn: "The way we teach chemistry today is not designed to ignite the young mind, but to cremate it." Participants in the symposium shared a common vision of bringing chemistry and genomics together in innovative ways to make fundamentally new discoveries in biology and medicine.

Topics of special interest to the cancer research community included the work of Dr. Carolyn Bertozzi of Berkeley in targeting sugars and proteins on tumor cells for *in vivo* imaging, Dr. Steven Fesik of Abbott Laboratories on development of small molecule drugs as inhibitors of tumor growth and metastasis, and Dr. Baldomero Olivera of the University of Utah in developing a natural product inhibitor that could be used as a painkiller for cancer patients and those with chronic pain. The full agenda and Web cast of the symposium is available at http://genome.gov/11008534. ◆

Featured Meetings

This is a list of selected scientific meetings sponsored by NCI and other organizations. For locations and times and a more complete list of scientific meetings, including NCI's weekly seminars and presentations open to the public, see the NCI Calendar of Scientific Meetings at http://calendar.cancer.gov.

NCI Advisory Committee Upcoming Meetings

Date	Advisory Committee
Jun 1-3	National Cancer Advisory Board
Jun 24-25	NCI Board of Scientific Advisors

Selected Upcoming Meetings of Interest

Date	Meeting	NCI Speakers
Mar 27-31	95th Annual Meeting of the American Association for Cancer Research	Please refer to NCI at AACR, http://cancer.gov/aacr2004
Mar 27-31	Annual Meeting of the Academy of Molecular Imaging	Dr. Andrew C. von Eschenbach, Director
April 18-20	3rd EORTC-NCI International Meeting on Cancer Molecular Markers From Discovery to Clinical Practice	Please refer to the NCI Calendar of Scientific Meetings at http://calendar.cancer.gov

NCI Exhibits

NCI Exhibits are presented at various professional and society meetings. Further information about the NCI Exhibits program can be found at http://exhibits.cancer.gov.

This *NCI Cancer Bulletin* is produced by the National Cancer Institute (NCI). NCI, which was established in 1937, leads a national effort to eliminate the suffering and death due to cancer. Through basic and clinical biomedical research and training, NCI conducts and supports research that will lead to a future in which we can 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://cancer.gov.

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