NATIONAL CANCER INSTITUTE

NCI Cancer Bulletin

Eliminating the Suffering and Death Due to Cancer

April 12, 2005
Volume 2 | Number 15

In this issue:

A Publication of the
National Cancer Institute
U.S. DEPARTMENT OF HEALTH
AND HUMAN SERVICES
National Institutes of Health
NIH Publication No. 05-5498

http://www.cancer.gov

NCI and NIH Budget Increases Recommended at Senate Hearing

U.S. Senator Arlen Specter (R-Pa.) asked National Cancer Institute (NCI) Director Dr. Andrew C. von Eschenbach to provide an estimate of how much additional money NCI would need in order to accelerate reaching its goal of eliminating suffering and death from cancer 5 years earlier than the current target date. Sen. Specter posed the question in his role as chairman of the Senate Appropriations Subcommittee on the Departments of Labor, Health and Human Services (HHS), and Education during an April 6 hearing on the National Institutes of Health (NIH) budget for fiscal year 2006. In addition to his role on the subcommittee, Sen. Specter said that his question also came from his perspective as a cancer survivor currently in treatment for Hodgkin's lymphoma.

Sen. Specter was joined by Sen. Tom Harkin (D-Iowa), ranking minority member on the subcommittee, in recommending substantial increases to the Administration's budget request of $28.8 billion for NIH in FY 2006. That request includes $4.8 billion for NCI, a $16.5 million increase over FY 2005. Recently, the two Senators were instrumental in amending the Senate budget resolution to include a $1.5 billion increase for NIH in FY 2006, compared with the $144 million increase in the Administration's request.

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Director's Update

caBIG—Celebrating Successes, Looking Ahead

Today I was privileged to open the annual meeting of the cancer Biomedical Informatics Grid (caBIG), a remarkable initiative that is linking cancer communities with the information and tools they need.

It's hard to believe, but since caBIG's creation, the initiative has already attracted more than 600 individual contributors—including 8 patient advocates—and launched over 24 new products and bioinformatics tools along with multiple datasets. (For a list of caBIG contributors and their first-generation tools, see the program's Web site at http://cabig.nci.nih.gov.)

In the March 15 special issue of the *NCI Cancer Bulletin* about the NCI-designated Cancer Centers, I noted how impressed I've been with the Centers' eagerness to work closely with NCI on caBIG. Most of the Cancer Centers are taking part in the development of a clinical research component of caBIG, which I believe

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"What further progress could be made with the additional $1.5 billion increase provided by the Senate budget resolution?" Sen. Specter asked all of the NIH Institute directors at the hearing. Dr. von Eschenbach responded that the increased funding could significantly accelerate research progress.

The NCI Director also provided Sen. Specter with a summary of the progress being made by NCI-supported scientists in treating various forms of Hodgkin's and non-Hodgkin's lymphomas. He noted the dramatic results recently reported for the targeted drug, iodine-131 tositumomab (Bexxar) for people with late-stage follicular lymphoma (*NCI Cancer Bulletin*, February 8).

"The drug demonstrated a 75 percent complete response rate" with most patients in remission 5 years after treatment, Dr. von Eschenbach explained. "This is remarkable for what has been an incurable, fatal disease." NCI researchers have made tremendous strides during the past few years in understanding the underlying genetic, molecular, and proteomic variations for the different kinds of lymphomas, he added.

At Sen. Harkin's request, Dr. von Eschenbach provided an update on the Human Cancer Genome Project, a collaboration between NCI and the National Human Genome Research Institute. The project's goal is to determine the gene expression profiles of normal, precancerous, and cancer cells, leading eventually to improved detection, diagnosis, and treatment for the patient, he explained. NCI is developing a pilot project to create the infrastructure and demonstrate the feasibility for a broader application. The Human Cancer Genome Project, in combination with the promise of nanotechnology, will enable clinicians to intervene at the earliest stages of cancer development, he said.

Senators Specter and Harkin also expressed concerns about negative fallout from HHS' proposed new conflict-of-interest rules for NIH scientists. Sen. Harkin cautioned, "I'm concerned that the new regulations go too far, especially when it comes to requiring NIH employees to divest stocks that they've had for many years." NIH Director Dr. Elias Zerhouni agreed with the Senators' concerns and has already persuaded HHS to delay implementation of the stock divestiture rule until July 2005.

Additionally, in oral and written testimony, Dr. Zerhouni and other NIH Institute directors expressed concern over continuing restrictions on embryonic stem cell research. They noted that vital scientific progress against a number of diseases is being delayed and that talented researchers in this field could leave NIH and other federally supported research institutions for less restrictive environments. ◆

(caBIG continued from page 1)
will be a revolutionary tool in accelerating the pace and efficiency of cancer research. We truly couldn't do it without them.

Nearly every facet of NCI's strategic plan for 2015 is predicated on the potential of caBIG. Indeed, caBIG will ultimately become the "World Wide Web of cancer research" and is beginning to link individuals and institutions in ways that will allow them to more rapidly understand the causes of cancer and develop better ways to prevent, detect early, and treat the disease.

caBIG has already become a reality in the cancer research enterprise. Importantly, the first and subsequent generations of caBIG component tools—which range from basic research to personalized molecular medicine and patient decision making—are being developed in an integrated and fully interoperable way, all based on a common language or standard.

In addition, caBIG is providing cancer researchers with easy access to important, previously unavailable, or difficult-to-obtain data, such as the caARRAY data repository tool that allows online submission of microarray data (*NCI Cancer Bulletin*, February 15). This has already generated enormous interest among investigators nationwide who will use it to submit their microarray data for use by their peers in the cancer community. We expect that at least seven additional datasets will be posted on caBIG's Web site by December 2005, and that the number of new datasets posted will increase rapidly each year thereafter.

Another important objective for caBIG is to accelerate the validation of promising new interventions through more rapid and better designed clinical trials. Tools designed to meet the diverse clinical trials management needs of the Cancer Center community will facilitate activities such as adverse events reporting, laboratory data exchange, and regulatory reporting. caBIG is paving the way for comprehensive clinical trials improvement over the longer term through its clinical research data exchange standards so that studies can be designed, conducted, managed, and reported more efficiently.

Cancer patients, particularly those with the most serious cancers, will almost certainly benefit from this expanded clinical trial activity because effective new therapies will likely be brought to the marketplace sooner.

Without question, caBIG's most important accomplishments and contributions still lie in the future. However, the significant accomplishments during the past year are a strong indicator that caBIG truly will revolutionize cancer research and care in the relatively near future. ◆

Dr. Andrew C. von Eschenbach
Director, National Cancer Institute

Spotlight

Targeted Delivery of Chemotherapy Using Antibody-Directed Nanoparticles

With several molecularly targeted drugs now available and many others in development, the days may be numbered for conventional chemotherapy drugs, which were developed primarily for their ability to kill rapidly proliferating cells. However, one research group is well on the way to developing a new way to target the delivery of standard chemotherapy drugs, one that may fully harness their potency while reducing their toxicity.

"These new agents are designed to target tumors for better treatment of cancer," says Dr. John W. Park, who leads the team of researchers from the University of California, San Francisco (UCSF), funded by NCI's Specialized Programs of Research Excellence (SPORE), which developed this technology. "Oncologists have many chemotherapy drugs that are very good at killing cells—we just need a way of directing them specifically to cancer cells in order to cut back on their side effects."

To accomplish this goal, tens of thousands of chemotherapy drug molecules are loaded into synthetic nanoparticles called liposomes, which have a knack for penetrating cells. Researchers then take multiple copies of portions of antibodies that specifically recognize receptors highly expressed by cancer cells and attach them to the liposomes' perimeter. Antibody fragments for this approach include those discovered using phage antibody library technology developed by Dr. James D. Marks, another member of the UCSF Breast SPORE team. The end product is a novel targeted nanoparticle they call an immunoliposome.

"A liposome is a type of nanoparticle that can be created when lipids are mixed with water," explains Dr. Stephen Creekmore, chief of NCI's Biological Resources Branch. Liposomes have a fatty exterior that holds their contents and may help them slip into cells, but they have no inherent ability to target specific cells. "But, by combining these particles with antibodies, the goal is to target chemotherapeutic agents more specifically to tumors," he says.

So far, Dr. Park's team has focused on aiming these immunoliposomes at two receptors: HER2, which is often overexpressed in breast cancer, and EGFR, which is overexpressed in many cancers including lung, colorectal, brain, pancreatic, ovarian, breast, and prostate tumors. Both receptors are involved in cell growth and development, and have been in the crosshairs of other heralded molecularly targeted agents, including trastuzumab (Herceptin), cetuximab (Erbitux), gefitinib (Iressa) and erlotinib (Tarceva). The scientists have succeeded in loading several chemotherapy drugs, including doxorubicin, vinorelbine, epirubicin, topotecan, and irinotecan, into the immunoliposomes.

In studies with cancer cells in culture and tumor models in mice, the immunoliposomes demonstrated a remarkable affinity for cancer cells, with minimal release of their contents into the bloodstream. This precise targeting has generated the results the team had hoped for: increased effectiveness and reduced toxicity compared with conventionally administered chemotherapy.

"In essence, instead of just dumping the chemotherapy drugs into the bloodstream for dissemination, the immunoliposome serves as a protective package with a way to target the delivery of its contents," notes Dr. Creekmore. The team collaborated with NCI's Biological Resources Branch for initial manufacturing of large-scale quantities of immunoliposomes for use in preclinical testing.

"Though it might seem like a straightforward process to conjugate the antibodies onto the liposomes, our biopharmaceutical development program at NCI-Frederick worked with Dr. Park's group to iron out several wrinkles in the manufacturing process to make consistent clinical-grade materials," Dr. Creekmore says. Details of this research have been recently published online in *Biotechnology Progress*. "Once we demonstrated that it could be feasibly done, the approach could be realistically evaluated by commercial companies that were interested in moving forward with the clinical trials."

Dr. Park's team is collaborating with Hermes Biosciences and Johnson & Johnson to manufacture and test their immunoliposomes in clinical trials.

"The toxicology testing of immunoliposomes loaded with doxorubicin is nearing completion. We eagerly anticipate moving this agent ahead through clinical trials," says Dr. Park. "We believe that this approach is flexible and can be used with new nanoparticle-based or liposomal drugs as well as different antibodies."

"Meanwhile, if clinical trials can demonstrate efficacy of the doxorubicin-laden immunoliposomes, we might see them on the market a few years from now," says Dr. Creekmore. ◆

Cancer Research Highlights

HPV Vaccine Reduces Infection, Related Disease

An investigational vaccine directed against 4 types of human papillomavirus (HPV), including the 2 responsible for 70 percent of all cervical cancers (types 16 and 18), reduced their incidence and any HPV-related diseases by 90 percent compared with placebo, researchers reported last week. The findings are the latest in a string of successful studies testing HPV vaccines.

The phase II randomized, double-blind, placebo-controlled study of the quadrivalent HPV vaccine evaluated 552 women from the United States, Europe, and Brazil aged 16 to 23. Participants were randomized to receive the vaccine or a placebo three times over 6 months. They were followed for 2½ years, with a primary endpoint of reduction in the combined incidence of persistent HPV types 6, 11, 16, and 18 infections and related diseases, which included precancerous conditions such as cervical intraepithelial neoplasia (CIN).

"The study was not originally powered to assess vaccine efficacy for the disease endpoints of each HPV type separately," wrote Dr. Luisa Villa and colleagues in the paper, released April 6 as an early online publication by *The Lancet Oncology*. "However, the fact that all three women with external genital lesions and all three with CIN were in the placebo group is encouraging in terms of protection against these endpoints."

Merck, which manufactures the vaccine and funded this study, has already begun a phase III trial of the vaccine, which will test only the lowest of the three doses used in the phase II study. NCI also is leading a phase III HPV vaccine trial in Costa Rica testing a similar vaccine manufactured by GlaxoSmithKline.

Prostate Irradiation Increases Risk of Rectal Cancer

The risk of developing rectal cancer after radiation treatment for prostate cancer is low. But, compared with men whose prostate cancer is treated with surgery alone, those treated with external radiation, with or without surgery, have a nearly two-fold increased risk of rectal cancer 5 or more years after treatment. These study results by Dr. Nancy Baxter of the University of Minnesota Medical School and colleagues appear in the April issue of *Gastroenterology*.

The results are based on a retrospective cohort study using Surveillance, Epidemiology, and End Results (SEER) registry data between 1973 and 1994 collected from men with nonmetastatic prostate cancer and no previous history of colorectal cancer. Among those who received radiation, there was a 1.7 hazard ratio of developing rectal cancer, but no increased risk in other areas of the colon that had less exposure to the radiation.

Because the overall rates of rectal cancer in both the surgery and radiation groups were low—5.1 and 10 per 1,000, respectively—the authors note that these findings do not indicate needed changes in prostate cancer treatment. Dr. Baxter noted that more targeted treatment, such as conformal radiation, may lower risk to the rectum. The article recommends that men who have radiation therapy for prostate cancer receive endoscopic evaluation for rectal cancer beginning 5 years after treatment.

Dr. C. Norman Coleman, chief of NCI's Radiation Oncology Branch, noted that a variety of risk factors, and the rates of success, complications, and late effects, should be considered in treatment decisions, and that the lack of information about overall survival in the study is a minor limitation. "Even so, these findings show the importance of a team approach to prostate cancer treatment," he said, noting that primary care clinicians and subspecialists "are all critical in the long-term cancer follow-up to help minimize adverse long-term consequences and improve patients' survival and quality of life."

Clinical Trial Participation Correlates with Age-Related Sarcoma Survival Trends

There is a direct correlation between the minimal improvements seen in 5-year survival rates of patients with soft-tissue sarcomas in certain age groups and poor participation by patients in the same age groups in sarcoma treatment clinical trials, researchers reported last week. In an early online release of a study to be published in *Cancer,* researchers from the University of Texas M.D. Anderson Cancer Center, the Children's Oncology Group, and NCI showed that, during the study period, the smallest improvements in survival for patients with bone and non-Kaposi's soft-tissue sarcomas were seen between 15 and 45 years of age. This correlated directly with the lowest age-related participation rate in NCI-sponsored sarcoma clinical treatment trials.

Further evidence supporting a cause-and-effect relationship can also be found, the authors argue, by study

data showing that the strongest age-related improvement in Kaposi's sarcoma (KS) survival occurred in an older age range, which correlated directly with increases in KS treatment trial participation. "There was a statistically significant, age-dependent correlation between survival improvement and clinical trial participation rates, whether or not the type of sarcoma evaluated had a rate decline in young adults (non-KS soft-tissue sarcomas and bone sarcomas) or a peak (KS)," the study's lead author, Dr. Archie Bleyer, wrote.

The study analyzed data from NCI's SEER program on more than 38,000 young adults diagnosed with sarcoma between 1975 and 1998 and correlated it with data on more than 3,200 sarcoma patients entered into NCI-sponsored clinical trials between 1997 and 2002. "There are no easy solutions to the accrual dilemma," the authors conclude. They noted encouragement, however, by the overall increase seen in cancer treatment trial participation by those over 45 years old and recent progress with increasing accrual in treatment trials for patients with sarcomas.

Erythropoietin Effective For Anemia in Cancer Patients

A common treatment for anemia in cancer patients effectively reduces the need for blood transfusions and enhances hematologic response, according to a new meta-analysis, but the data do not clearly show better survival or fewer adverse events. Erythropoietin is a red blood cell stimulator naturally produced by the kidneys, and human recombinant forms can be manufactured as drugs.

In 27 randomized controlled trials conducted between 1985 and 2001, 3,287 patients with a confirmed malignancy took a form of the drug or served as case controls. The meta-analysis of these trials showed that patients receiving the drug were a third less likely to need a blood transfusion. Among all patients, including those with a low hemoglobin level who did need a transfusion, those taking the drug were more likely to have a hematologic response to treatment.

Though the data suggested, but were inconclusive, that overall survival was improved, two additional large randomized controlled trials including more than 1,200 patients found survival to be worse among patients treated with erythropoietin.

The possible harmful effects are an important question, said Andreas Engert and colleagues in the April 6 *Journal of the National Cancer Institute*, because there is "strong and consistent" evidence that treatment with human recombinant erythropoietins works to reduce the need for blood transfusions and improve response rates to other cancer therapies.

No Link Found Between Diet and Pancreatic Cancer

The first study to examine dietary patterns and pancreatic cancer risk shows no significant link between the two. The findings of Dr. Dominique Michaud of the Harvard School of Public Health and colleagues appear in the April 6 *Journal of the National Cancer Institute*.

Pancreatic cancer is the fourth-leading cause of cancer mortality in this country, but only a few environmental risk factors for the disease have been identified. These include cigarette smoking, diabetes, and obesity. To determine if a link exists between cancer risk and individual dietary components, the researchers analyzed data from two prospective cohort studies, the Health Professional Follow-Up Study and the Nurses' Health Study. Both studies collected demographic and diet information through self-reported participant questionnaires; information on pancreatic cancer was obtained from death records and pathology reports.

The researchers classified participants' diets into two categories: prudent—characterized by vegetables, legumes, fruit, whole grains, fish, and poultry—and western—characterized by red and processed meats, refined grains, French fries, high-fat dairy products, sweets and desserts, and high-sugar drinks. Those who followed the prudent diet had healthier lifestyles overall, but even after controlling for cigarette smoking, exercise, and history of diabetes, there was no link between either diet category and the risk of pancreatic cancer. The authors state that "a different dietary model may be required to understand the underlying mechanism that ties diabetes to pancreatic cancer risk. Alternatively, dietary patterns earlier in life, which we are not able to capture in these cohorts, may be a more relevant exposure."

Blood Disorders Share Genetic Mutation

Researchers have identified a genetic mutation shared by three blood disorders. It occurs in a gene called JAK2 and may permanently activate an enzyme—a tyrosine kinase—involved in the proliferation of blood cells. The defect was found in patients with polycythemia vera (PV), essential thrombocythemia (ET), and myeloid metaplasia with myelofibrosis (MMM).

Two research teams working independently made the discovery. Dr. Tony Green of Cambridge Institute for Medical Research, and colleagues found the JAK2 mutation in 71 of 73 PV patients, 29 of 51 ET patients, and 8 of 16 patients with MMM, according to results published March 19 in *The Lancet*.

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(Highlights continued from page 5)
A team led by Dr. Gary Gilliland of Brigham and Women's Hospital in Boston found the JAK2 mutation in 74 percent of PV patients, 32 percent of ET patients, and 35 percent of MMM patients, according to a study published online March 24 in *Cancer Cell*. The study included 347 patients.

"At this point all we know is that the mutation is common in people with these diseases," said Dr. Stephanie Lee of Brigham and Women's Hospital. "There is evidence that the mutation can cause some of the biologic findings, but we can't say yet that it's the cause of the diseases."

A third study, published early online on March 24 in *Nature,* found the JAK2 mutation in more than 80 percent of patients with PV. The three blood diseases, which affect about 100,000 people in the United States annually, are known as myeloproliferative disorders. ◆

New Publications Available

NCI has updated two booklets in its award-winning *What You Need To Know About Cancer* series. Last week, *What You Need To Know About Multiple Myeloma* and *What You Need To Know About Cancer of the Cervix* became available on NCI's Web site at http://www.cancer.gov/publications. Printed copies can be ordered online or by calling 1-800-4-CANCER. ◆

Featured Clinical Trial

Depsipeptide Trial for T-Cell Lymphoma

Name of the Trial
Phase II Study of FR901228 (Depsipeptide) in Patients with Cutaneous T-Cell Lymphoma, Relapsed Peripheral T-Cell Lymphoma, or Other Mature T-Cell Lymphoma (NCI-01-C-0049). See the protocol summary at http://cancer.gov/clinicaltrials/NCI-01-C-0049. This trial was previously featured in the Jan. 13, 2004, issue of the *NCI Cancer Bulletin*.

Dr. Susan E. Bates and Dr. Richard Piekarz Principal Investigators

Principal Investigators
Dr. Susan E. Bates and Dr. Richard Piekarz, NCI Center for Cancer Research (CCR).

Why Is This Trial Important?
Principal investigators for this phase II trial are seeking 50 patients with cutaneous T-cell lymphoma to form a new study population, or cohort.

"Because of the promising responses we've seen in this study, we've opened a new cohort specifically for patients with cutaneous T-cell lymphoma who have had two or fewer prior chemotherapy regimens," said Dr. Piekarz.

With this trial, researchers are seeking to determine whether FR901228 (depsipeptide), a histone deacetylase inhibitor, can help bring about remission in patients with T-cell lymphoma.

"This trial is very exciting because it involves a new class of anticancer drugs that can change the way cells grow," said Dr. Bates. "Whereas many chemotherapy drugs work by causing damage to cells, histone deacetylase inhibitors turn on genes that inhibit cell growth and eventually cause the cancer cells to die."

"We are continuing to see a steady response rate of about 50 percent for patients with cutaneous T-cell lymphoma," Dr. Piekarz said.

Who Can Join This Trial?
Researchers seek to enroll an additional 50 patients aged 18 and over who have cutaneous T-cell lymphoma. Additionally, the trial remains open to patients with peripheral T-cell lymphoma. See the full list of eligibility criteria for this trial at http://cancer.gov/clinicaltrials/NCI-01-C-0049.

Where Is This Trial Taking Place?
Multiple study sites are enrolling patients in this trial. See the list of study sites at http://cancer.gov/clinicaltrials/NCI-01-C-0049.

Contact Information
See the list of study contacts at http://cancer.gov/clinicaltrials/NCI-01-C-0049 or call the NCI's Clinical Studies Support Center (CSSC) at 1-888-NCI-1937 (1-888-624-1937). 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

Viner Named Head of Gastrointestinal Cancers Group

Dr. Jaye Viner was recently appointed chief of the Gastrointestinal and Other Cancers Research Group in NCI's Division of Cancer Prevention. Dr. Viner has served in this group since 1998, leading its efforts to prove the value of promising technologies for the prevention of skin, liver, and hematolymphoid cancers.

Dr. Viner joined NCI in 1995, working in the Laboratory of Molecular Biology in the Division of Basic Sciences. She completed her internal medicine internship and residency at the University of Maryland Medical System in Baltimore after earning her medical degree from the University of Virginia. She received her master's degree in public health from the Johns Hopkins Bloomberg School of Public Health. Dr. Viner is a Commander in the U.S. Public Health Service and currently attends in the NCI-Navy Medical Oncology Clinic. She serves as an associate editor for *Cancer Epidemiology, Biomarkers & Prevention*, and frequently reviews manuscripts for cancer research and medical journals.

Linehan Receives Barringer Medal

On April 8 at the annual meeting of the American Association of Genitourinary Surgeons (AAGUS) in Laguna Niguel, Calif., Dr. W. Marston Linehan, chief of the Urologic Oncology Branch in NCI's CCR, received the Barringer Medal, a distinguished honor that is awarded to an AAGUS member every 1 to 2 years. Dr. Linehan is the 26th recipient of the award, which was established in 1954 to honor young and promising association members. According to Dr. David McCullough, AAGUS past president, Dr. Linehan was selected for the award because of his "superb" research into the molecular genetics analysis of urologic malignancies and his commitment to involving urologists in both medical and surgical kidney cancer treatments.

Dr. W. Marston Linehan

Coltman Steps Down as SWOG Chair; Baker Assumes Leadership

On April 8, Dr. Charles A. Coltman, Jr., stepped down as chair of the Southwest Oncology Group (SWOG), a position he held for 24 years. Dr. Laurence H. Baker of the University of Michigan will succeed him as chair. Dr. Baker has been associate chair since May 1981.

Under Dr. Coltman's leadership, SWOG made numerous contributions to clinical cancer research, including outreach to urologic oncologists resulting in increased patient enrollment in genitourinary trials, launch of the Prostate Cancer Prevention Trial and the Selenium and Vitamin E Cancer Prevention Trial, and FDA approval of nine new cancer therapies piloted by SWOG.

Dr. Coltman is professor of medicine at the University of Texas Health Science Center at San Antonio and president emeritus of the Cancer Therapy & Research Center there. In 1978, he co-founded the San Antonio Breast Cancer Symposium, which has since become the world's largest symposium on breast cancer, attracting more than 6,500 participants from more than 80 countries. Dr. Coltman will continue to play a major role in SWOG as associate chair for cancer control and prevention.

AACI Meets with Hill Staff

On April 5, the Association of American Cancer Institutes (AACI) and the Friends of Cancer Research advocacy group met with Congressional staff members for a lunchtime presentation titled, "Our Nation's Cancer Centers: Advancing Research, Patient Care, and Economic Infrastructure in Your State." Approximately 100 people attended the meeting, which was held in partnership with the House Cancer Caucus and the Senate Cancer Coalition. After introductions by Dr. Harold Moses, director emeritus of the Vanderbilt-Ingram Cancer Center and president of AACI, Dr. Karen Antman, deputy director of translational and clinical sciences at NCI, moderated a panel of speakers that included Dr. Moses as well as Dr. Edward J. Benz, Jr., president and CEO of the Dana-Farber Cancer Institute; Dr. Judith Gasson, director of UCLA's Jonsson Comprehensive Cancer Center; Jim Miller, a patient advocate at UCSF Comprehensive Cancer Center; and Dr. Robert C. Young, president of Fox Chase Cancer Center. Following an hour of moderated discussion on scientific, educational, and economic contributions of cancer centers, the panel answered audience questions about the most recent advances against cancer and new research that remains to be embarked upon; the effect of recent NIH conflict-of-interest measures on cancer centers; and the absence of cancer centers in certain regions of the United States. For more information about this event, go to http://www.aaci-cancer.org/news.asp?navid=3&pid=3. ◆

A Conversation with Dr. Ken Buetow

Dr. Ken Buetow is program director of NCI's Center for Bioinformatics.

What have been the important accomplishments of caBIG during its first year?

So far, 50 NCI-designated Cancer Centers and dozens of other organizations in the public, nonprofit, and private sectors are contributing to the caBIG development effort. This team has begun producing discrete caBIG component tools, which are being developed in an integrated and fully interoperable way—all based on a common language or standard. In creating these tools, caBIG's developers are breaking important new ground to address critical issues related to data sharing, including privacy and security of patient information and intellectual property.

What bioinformatic tools have been created so far and how are they intended to be used?

caBIG is delivering cancer and biomedical research products now—including software tools, databases, prototypes, infrastructure, standards, white papers, and development models. In its first year, caBIG launched more than 75 individual projects including the first iteration of the caBIG Compatibility Guidelines and end-to-end solutions like caARRAY and GenePattern (that provide microarray tools at both ends of the process), or Cytoscape and caWorkbench (that provide analysis capabilities for molecular pathways). Many other products are coming online, including clinical trials solutions, tissue bank and pathology tools, and integrative cancer research applications and datasets.

What are some of the datasets and databases made available by caBIG?

One example is the Gene Expression Data Portal (GEDP), an ongoing effort to provide database support and access to microarray data, which also includes evaluating and developing microarray analysis tools and industry standards. Similarly, the cancer Model Organisms Database (caMOD) allows researchers to submit and retrieve animal models of cancer. caMOD interfaces with caIMAGE, the cancer image repository containing human and mouse pathological images.

How can organizations and individuals become involved in caBIG?

Ultimately, the evolution of the caBIG network should be accompanied by the growth of a self-sustaining caBIG community. caBIG started with NCI-designated Cancer Centers and is now reaching out to NCI's SPOREs, which promote interdisciplinary research among the basic and clinical sciences, and NCI's Clinical Trials Cooperative Group Program, which involves researchers, cancer centers, and community physicians, and other NCI programs. caBIG is also exploring ways to engage the broader cancer community. Discussions about potential partnerships between caBIG and other NIH components, other federal agencies, and international initiatives are also taking place. All of these groups share a common commitment to the importance of open and shared biomedical informatics tools, standards, infrastructure, and data. Interested individuals should go to the caBIG Web site (http://cabig.nci.nih.gov) for the latest updates on new tools, meetings, and other program information. ◆

Featured Meetings and Events

A comprehensive calendar of cancer-related scientific meetings and events sponsored by NCI and other scientific organizations is available at http://calendar.cancer.gov/ ◆

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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