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Eliminating the Suffering and Death Due to Cancer

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New NCI Initiative to Identify Genetic Risks for Breast and Prostate Cancer

NCI has launched an initiative to identify genetic alterations that make people susceptible to prostate and breast cancer, two of the most commonly diagnosed cancers in the United States.

The Cancer Genetic Markers of Susceptibility (CGEMS) program is a 3-year initiative, funded for $14 million, that will conduct scans of the entire human genome (genotyping) to identify common, inherited gene mutations that increase the risks for breast and prostate cancer. The initiative will begin with the scanning of a total of 2,500 samples from men who have been diagnosed with prostate cancer, and men who have not. San Diego-based Illumina, Inc., will conduct the rapid genotyping for the project.

CGEMS
Cancer Genetic Markers of Susceptibility

"The CGEMS initiative represents the largest, comprehensive undertaking to identify the genetic risk factors for two cancers that take the lives of a combined total of more than 70,000 men and women every year," said NCI Deputy Director for Strategic Scientific Initiatives Dr. Anna Barker. *(continued on page 2)*

Director's Update

Tough Choices, Continued Progress

Last week it was announced that the absolute number of annual cancer deaths has fallen for the first time in seven decades. The death rates from cancer have been declining since 1993, but now the actual number of cancer-related mortalities are yielding to our efforts. To my mind, that's momentous news. It proves that our antismoking messages, technologies that allow for earlier detection of disease, and improved treatments are having an impact. It also proves that our expectation of continued progress against cancer is well founded.

This news takes on special importance when considered in the context of our current budgetary situation. At last week's National Cancer Advisory Board (NCAB) meeting, in fact, the president's 2007 budget proposal for NCI was presented, and it sparked a critically important conversation about priorities.

When we announced the 2015 Challenge Goal 4 years ago, there was an expectation of increasing resources. But that expectation has changed. The government's discretionary spending now is increasingly restrained, placing greater focus on our strategic decisions about programs and research to be funded. As Dr. Niederhuber and I reinforced to the NCAB, those decisions are primarily driven by two factors.
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(New NCI Initiative continued from page 1)
"This project promises to provide a needed database to support the development of novel strategies for the early detection and prevention of these diseases."

The most common human genetic variations are called single nucleotide polymorphisms, or SNPs. Previous studies have successfully identified single gene mutations that cause cancer or are linked to other inherited diseases. These studies have provided early insights into potential mechanisms of inherited cancer susceptibility, but these mutations are rare in the general population and directly related to only a small proportion of human cancer. In fact, most human cancer risk appears to be due, at least in part, to mutations that have low penetrance, meaning that they convey a low risk for cancer, but combinations of these mutations increase risk.

One of the main goals of CGEMS is to identify genetic alterations that contribute to cancer risk, particularly the common low-penetrance, low-risk mutations. These alterations are also often referred to as susceptibility or modifier genes, since it is thought that they affect risk by increasing or decreasing a person's susceptibility to the cancer-causing effects of environmental and lifestyle exposures.

What makes CGEMS and other association studies different from candidate gene studies is that these association studies investigate the entire genome, with no assumptions about which alterations cause prostate or breast cancer. In addition, CGEMS has incorporated important follow-up studies in its design. The promising SNPs uncovered in the scan will be analyzed and validated in a series of large population-based studies. Once validated, the SNPs will be further investigated to develop new strategies for prevention, earlier detection, and treatment of these cancers.

CGEMS will be coordinated through NCI's Division of Cancer Epidemiology and Genetics (DCEG), Core Genotyping Facility, and Office of Cancer Genomics. The project will draw upon the expertise of scientists both within and outside NCI, and will use the latest genetic technologies to scan the human genome by analyzing as many as 500,000 or more SNPs in each cancer case or control individual.

NCI will make CGEMS data available to the cancer research community via its cancer Biomedical Informatics Grid at http://cabig.nci.nih.gov/. For more information, go to http://cgems.cancer.gov. ◆

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First and foremost, funding decisions are based on the quality of the science. I cannot emphasize this enough. Whether it relates to R01s, P01s, NCI-designated Cancer Centers, or Specialized Programs of Research Excellence—scientific excellence is the principal consideration in the decision making process.

There is a second consideration that goes hand in hand with the scientific excellence of a program or a research proposal, and that is, does the science match our strategic priorities and contribute to our balanced portfolio? The programs and research projects that will help us achieve the 2015 goal must be in step with the scientific avenues identified by NCI leadership, our advisory boards, and the cancer community.

Over the past 15 months, each of NCI's divisions and centers worked to come up with almost 200 possible strategic goals, from which the NCI executive committee eventually agreed on 8 strategic priorities. It's these priorities that comprise the soon-to-be-released 2015 strategic plan, which will be instrumental in guiding our funding choices.

That said, clearly other considerations will influence the process.

There is, for example, a unanimous agreement among NCI leadership and advisory boards that we continue to strongly support young investigators. This is an imperative investment in our intellectual capital pipeline, and will create the generation of researchers who will build upon and refine the molecular oncology movement.

Also, leadership has carefully reviewed our research portfolio in an effort to limit duplication of effort and identify programs that should continue to be grown and nurtured, as well as those that have achieved all they can. Both will allow us to redeploy funds so we can quickly respond to promising opportunities or accelerate existing programs.

We also are committed to leveraging our investments by engaging in collaborations and partnerships with other NIH institutes and federal agencies, as well as with other groups in the public and private sector. The NIH Trans-Institute Angiogenesis Research Program, or TARP, which involves NCI and four other NIH institutes, is an excellent example of how we can leverage the portfolios of multiple NIH institutes to answer important biomedical questions.

The budgetary landscape has changed. We are adapting to these changes and making difficult choices. But I'm confident that the planning we have done will allow us to make the best decisions—those that will ensure we continue on a path of exponential progress and where death from cancer is the exception, not the expectation.

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Spotlight

Helping the Helpers: Aiding Cancer Caregivers

During any given year, an estimated 50 million people provide care for an extended period to a loved one with diseases such as Alzheimer's, Parkinson's, and, increasingly, cancer. In the latter case, researchers have now documented not only the extent of the duties these "informal caregivers" provide, but also the hefty emotional and physical toll it can take on them.

The role of informal caregivers in cancer care has expanded exponentially over the past decade, says Dr. Ann O'Mara, a program director in the NCI Division of Cancer Prevention. Among the chief reasons are: treatments are improving, and people with cancer are living longer; and many cancer treatments now are done in the outpatient setting, leaving problems such as side effects to be addressed at home.

"Caregivers are doing many things that were being done in a hospital 20 years ago," Dr. O'Mara says. "Things like providing wound care, administering medications, monitoring symptoms. So a lot of the responsibilities of formal caregiving have been pushed onto the informal caregiver. But along with that hasn't come the training they need to do the job."

This situation has created serious financial, physical, and emotional issues for patients and caregivers. Even the most well-intentioned, hardest working caregiver may not be in a position to ensure quality treatment. This may be especially true for those who are older and have their own chronic health problems, as well as for very young caregivers who simply are not prepared to take on that kind of responsibility.

On the latter point, for example, a study released last September by the National Alliance for Caregiving found that as many as 1.4 million youths between ages 8 and 18 were providing care to a relative; 400,000 of these were children between 8 and 11.

"We're asking the patient and their family members to be alert to symptoms that could be side effects of treatment; to monitor the frequency, intensity, and even patterns of those symptoms and complications; and to make decisions like whether to go the ER or increase pain medications," says Dr. Barbara Given, head of the Family Care Research Program at Michigan State University.

The emotional and physical strain of caregiving—which for many becomes the equivalent of a full-time job—can lead to problems such as depression, insomnia, and, as seen in one study of older caregivers, an increased mortality risk.

"There is a feeling of being overwhelmed that a lot of informal caregivers face," says Dr. O'Mara. "There is sense of loneliness and isolation."

Numerous studies have documented depression and other psychological problems among caregivers. A study of 200 cancer caregivers published last October in the *Journal of Clinical Oncology*, for instance, found that 13 percent met standard criteria for a psychiatric disorder.

Although NCI and several other NIH institutes are funding studies to aid caregivers in tasks such as symptom management and managing their own health, research into such interventions is still in its infancy. And researchers are just beginning to address how the quality of care provided in the home affects patient outcomes.

In the meantime, says Dr. Carolyn Messner, director of Education and Training at CancerCare, a national New York-based nonprofit organization that offers psychosocial, educational, and financial services to cancer patients and their families, there are ways to ease caregivers' burden.

"There is practical help out there," she says. "But often we have to help caregivers ask for help."

Many communities and organizations, she explains, offer services to help with tasks including grocery shopping, meal preparation, personal care, and transportation. CancerCare also provides financial assistance for things like childcare, transportation, and pain medications to patients and families. All 50 states have programs that offer assistance for long-term caregivers.

To ensure they can better understand issues such as managing symptoms, Dr. Messner advises caregivers and patients to be more proactive in communicating with their oncologists and other health care providers.

"Ask for special time to meet with the doctor," she says. "And ask permission to bring a tape recorder so you can

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Cancer Research Highlights

Cetuximab Enhances Radiotherapy for Head and Neck Cancer

Results from a new study in the February 9 *New England Journal of Medicine* (*NEJM*)show that adding cetuximab (Erbitux) to high-intensity radiotherapy for locoregionally advanced head and neck cancer improved overall survival and extended the duration of local control, without exacerbating adverse effects such as mucositis.

Cetuximab controlled disease for nearly 10 months longer, improving progression-free survival by 30 percent over radiation alone. After a follow-up of 54 months, cetuximab patients survived an average of 49 months—nearly 20 months longer than those on radiation alone—which was a 26-percent reduction in mortality. The only cost appeared to be an increase in acneiform rash and infusion reactions; other toxic effects, especially mucositis, were comparable. The multicenter trial enrolled 424 patients in the United States and Europe.

Cetuximab is a monoclonal antibody that binds to and inhibits the epidermal growth factor receptors commonly overexpressed in epithelial cancers, which include most head and neck cancers. Dr. James Bonner, of the University of Alabama at Birmingham, and colleagues say it is "exceptional" to find a survival advantage with a molecular targeting agent.

In an accompanying editorial, Drs. Marshall Posner and Lori Wirth, of the Dana-Farber Cancer Institute and Harvard University, say a survival gain in this type of cancer that doesn't increase toxicity "immediately draws the attention of clinicians." They emphasized the need for more phase III trials, however, pointing out that all studies utilizing the current standard of care, platinum-based chemoradiotherapy, "have shown greater improvement" in patients than the results of this study, which compared radiotherapy, with or without cetuximab.

Omega-6 Fatty Acid Activates Genes Linked to Prostate Cancer Development

Researchers have identified specific intracellular signaling pathways via which a type of omega-6 fatty acid influences the growth rate of prostate tumor cells.

In a study published in the February 1 *Cancer Research*, investigators from the San Francisco Veterans Affairs Medical Center found that, in laboratory tests, the addition of the omega-6 fatty acid arachidonic acid to prostate tumor cells doubled the cells' growth rate compared with cells to which arachidonic acid was not added.

Further testing revealed that arachidonic acid appeared to activate two signaling pathways critical to cancer cell proliferation, PI3-kinase (PI3K) and Akt. This, in turn, fueled activity by the anti-apoptotic gene *NF-κB*. The researchers also found that many other inflammatory genes regulated by *NF-κB* were activated in tumor cells to which arachidonic acid was added, including COX-2, which previous research has implicated in prostate cancer development.

"The changes in gene expression point to a probable PI3K/Akt pathway activation by arachidonic acid, where COX-2 and 11 other *NF-κB* regulated genes are induced by the presence of omega-6 fatty acids," wrote lead author Dr. Millie Hughes-Fulford and colleagues.

Finally, when the researchers treated prostate tumor cells to which arachidonic acid had been added with a COX-2 inhibitor, PI3K activation was decreased. And treatment with an experimental PI3K inhibitor reduced the proliferation of tumor cells caused by arachidonic acid and reduced expression of the genes that arachidonic acid had activated.

Dietary intake of omega-6 acids, found in corn oil, as compared with omega-3 fats, which have been associated with many health benefits, has increased exponentially over the past five decades, the authors noted. Given the study's results, they concluded, "Reduction of omega-6 fatty acids intake and anti-PI3K/Akt inhibitors may be worth considering as future therapeutic approaches to battle prostate cancer."

Colonoscopies Drive Higher Rates of Colorectal Cancer Screening

Rates of colorectal cancer screening are rising for both men and women in the United States, and the change is being driven by a sharp increase in the use of colonoscopy, according to a new study. Although rates are improving, less than half of those eligible undergo screening, and the prevalence is higher among men than women, according to findings in the February *Cancer Epidemiological Biomarkers & Prevention*.

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(Highlights continued from page 4)

"The good news is that test use is going up," says lead researcher Dr. Helen Meissner of NCI. "The bad news is that the use of colorectal cancer screening lags behind other types of cancer screening," such as mammography and Pap tests. Statistics on test use came from the National Health Interview Survey for the years 1987, 1998, 2000, and 2003, the most recent periods for which data are available.

The rise in colonoscopy use has been accompanied by a decline in sigmoidoscopy use, while the use of fecal occult blood testing (FOBT) has remained about the same. In other findings, the study supports previous research showing that rates of colorectal cancer screening use are lower for those of Hispanic ethnicity, at a lower education level, lacking health insurance, without a usual source of health care, and who have not talked with a doctor in the past year.

That the recent increase was almost exclusively driven by colonoscopy has implications for public health practice in the United States, the researchers say. Colonoscopy is an expensive, invasive, and relatively time-consuming test that currently must be done by a physician. The promotion of colonoscopy as the "preferred" colorectal screening test may widen socioeconomic disparities, the researchers suggest.

"Technology is changing rapidly," notes Dr. Meissner. "In the next several years, we hope that molecular markers and other less invasive ways of detecting colon cancer early will be validated."

Disruption of Adhesion Molecule Leads to Cancer Cell Death

Focal adhesion kinase (FAK), a protein found at the points where cells join to the extracellular matrix, is overexpressed in several types of cancer. The research team at the University of Florida who first identified the overexpression of FAK in human tumors has now found evidence that vascular endothelial growth factor receptor-3 (VEGFR-3), a signaling protein required for lymphatic vessel growth, binds to FAK in tumor cells, leading to suppression of apoptosis. Blocking the binding of the two proteins can cause cell death. These results were published in the February 1 *Cancer Research*.

The investigators showed both *in vivo* and in breast cancer cell lines that VEGFR-3 binds to the focal adhesion targeting domain within the carboxyl terminus region of FAK, which is involved in apoptotic signaling. They also identified overexpression of both VEGFR-3 and FAK in several breast cancer cell lines.

A short, 12 amino-acid fragment of VEGFR-3 called AV3 was used to disrupt the binding of VEGFR-3 to FAK. Cells that overexpressed FAK and were treated with AV3 showed displacement of FAK from adhesion sites. This led to an increased dose-dependent detachment of cells, a decrease in cell proliferation, and an increase in apoptosis. These effects were not seen in normal breast cells.

The authors state that the results from this study "could be used as a basis for the development of novel molecular therapeutics that target the signaling between FAK and VEGFR-3 and cause apoptosis in breast cancer."

Saw Palmetto Fails to Improve Benign Prostatic Hyperplasia

An extract of the saw palmetto plant was no more effective than a placebo in reducing symptoms associated with benign prostatic hyperplasia (BPH), a randomized clinical trial has found. BPH is caused by an enlarged prostate gland, and millions of older men, particularly in Europe, use over-the-counter saw palmetto products to treat the condition.

The double-blind, randomized trial included 225 men over age 49; half took 160 mg of saw palmetto twice daily, and the others a placebo. After a year, the groups were similar in lower urinary tract symptoms and other objective measures of BPH, the researchers report in the February 9 *NEJM*.

The study, led by Dr. Stephen Bent of the University of California, San Francisco, was funded by NIH and the National Center for Complementary and Alternative Medicine. The negative results contrast with a number of earlier studies suggesting that saw palmetto may improve urinary symptoms caused by BPH.

To explain the discrepancy between the positive and negative findings, the researchers point out that some earlier studies had design flaws. In addition, the patients in the new study may have shared attributes that made them unlikely to respond to saw palmetto. Alternatively, the level of the active ingredient in their extract may have been too low to be effective (the active ingredient, if one exists, is not known).

The study was well designed, adequately powered, and avoided the pitfalls of previous studies by treating participants for a year, optimizing the consistency of the herbal product, and measuring the adequacy of blinding, an accompanying editorial notes. The authors raise the possibility, however, that a different preparation or dose of saw palmetto might have been effective. ◆

Funding Opportunities

Tumor Microenvironment Network (TMEN)

Announcement Number: RFA-CA-06-014
Letter of Intent Receipt Date: April 10, 2006.
Application Receipt Date: May 10, 2006.

This funding opportunity will use the U54 award mechanism. For more information, see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=3332. Inquiries: Dr. Suresh Mohla—mohlas@mail.nih.gov

Clinical Proteomic Technology Assessment for Cancer

Announcement Number: RFA-CA-07-012
Letter of Intent Receipt Date: March 21, 2006.
Application Receipt Date: April 21, 2006

This funding opportunity will use the U24 award mechanism. For more information, see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=3342. A public discussion of this RFA and the Clinical Proteomic Technology Initiative is scheduled for February 27. Participants can attend or view the meeting via webcast at http://videocast.nih.gov. Inquiries: Dr. Adam Clark—clarkad@mail.nih.gov ◆

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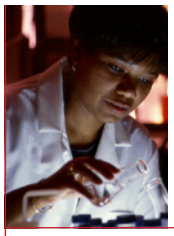
The data now confirm we are on the course to eliminating the suffering and death due to cancer, a course we must—and will—continue. ◆

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



Featured Clinical Trial

Chemotherapy for Recurrent Gliomas

Name of the Trial
Phase I Study of Enzastaurin in Patients with Recurrent Gliomas (NCI-05-C-0136). See the protocol summary at http://cancer.gov/clinicaltrials/NCI-05-C-0136.

Principal Investigator
Dr. Howard A. Fine, Neuro-Oncology Branch, NCI Center for Cancer Research

Dr. Howard A. Fine

Why This Trial Is Important
Gliomas are the most common type of primary brain tumor diagnosed in adults. Although they may be treated with surgery, radiation therapy, and chemotherapy, gliomas often come back (recur). The prognosis for patients with recurrent gliomas is very poor.

In this clinical trial, researchers are testing a new drug called enzastaurin in patients whose glioma has recurred after previous radiotherapy and chemotherapy. Enzastaurin is an angiogenesis inhibitor, meaning it prevents tumors from developing the new blood vessels they need for growth. In addition, enzastaurin has been shown to have direct effects on tumor cells, inhibiting their proliferation and stimulating apoptosis (cell death). Researchers hope to determine how much enzastaurin patients can receive before developing side effects severe enough to interrupt treatment.

"In a previous trial of enzastaurin for high-grade, recurrent gliomas, we observed very dramatic tumor responses, including some complete responses," Dr. Fine said. "In addition, the drug has been very well tolerated by patients.

"Our research indicates that enzastaurin becomes more toxic to gliomas cells with higher dose, so we are conducting this trial to see how much enzastaurin patients can tolerate. We hope to set a dose that will maximize the cytotoxic potential of enzastaurin while maintaining a favorable toxicity profile in preparation for a large, multinational phase III clinical trial."

Who Can Join This Trial
Researchers will recruit approximately 42 patients aged 18 or over with a confirmed diagnosis of malignant glioma that has recurred despite previous radiation treatment with or without prior chemotherapy and that is progressing. See the list of eligibility criteria at http://cancer.gov/clinicaltrials/NCI-05-C-0136.

Study Site and Contact Information
The study is taking place at the NIH Clinical Center in Bethesda, Md. For more information about this trial, call a Neuro-Oncology Branch Patient Care Coordinator at 301-402-6298 or the NCI Clinical Studies Support Center toll free at 1-888-NCI-1937. This call is completely confidential. ◆

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

Notes

Young Receives 2006 National Public Service Award

Dr. Howard Young, Head, Cellular and Molecular Immunology Section, Laboratory of Experimental Immunology, has been selected as one of five recipients of the 2006 National Public Service Award for outstanding contributions in public service within and outside of the work environment; the highest standards of excellence, dedication, and accomplishment over a sustained period of time; and creative and highly skilled career management at all levels of public service. Dr. Young will receive his award at the American Society for Public Administration National Conference in Denver in April.

FDA Draft Guidance on Patient-Reported Outcomes Is Available

The FDA has released its draft guidance on patient-reported outcome (PRO) measures for use by industry as effectiveness endpoints in clinical trials and support of product claims. The guidance is currently open for comments, and NCI encourages anyone who has specific recommendations to submit comments by April 4. The Mayo Clinic is sponsoring a conference Feb. 23–25 in Chantilly, Va., to review and provide input on the draft guidance. Both the draft guidance and the February conference will help inform the proceedings of an NCI-sponsored conference to take place Sept. 20–21 in Rockville, Md. The NCI conference, "Patient-Reported Outcomes Assessment in Cancer Trials: Evaluating and Enhancing the Payoff to Decision Making," will examine how PRO measurement in cancer trials can yield valuable information for decisions about cancer care, third-party reimbursement, and drug approval. Further, the NCI conference will serve as a platform for informing the NCI Clinical Trials Working Group implementation process. For information, contact Dr. Bryce Reeve at reeveb@mail.nih.gov or 301-594-6574.

CAM Scientist Tests Lung Cancer Herb

At the second in its monthly series, NCI's Office of Cancer Complementary and Alternative Medicine (OCCAM) Director Dr. Jeffrey White welcomed Dr. Stephen Lam from the University of British Columbia to Bethesda, Md., last week, where he described his recent work on a promising new CAM drug treatment.

Chemoprevention, in this case, targets an important population that is growing in number worldwide: former smokers with precursor neoplastic lesions that have an array of gene changes and that might be treated effectively if detected early. Lung cancer entails gene changes on all 23 chromosome pairs, which demands "a multitargeted, multifunction approach to developing an effective agent, such as from a natural herbal product," says Dr. Lam.

At a 1996 chemoprevention conference in China, Dr. Lam learned of a drug already approved by the Chinese FDA, known in the West as Anti-Cancer and Preventive Herbal Agent (ACAPHA). ACAPHA actually contains 6 herbal agents, which in turn have about 10 potentially active chemical compounds. He has begun phase II-b studies on ACAPHA, following a physiologically based pharmacokinetic model designed for more rapid screening of potential agents. "With natural products, you really need to hone in on what they're doing in humans and on their safety," he said. ◆

(Spotlight continued from page 3)

record what is said because these are very critical discussions."

The burden for outreach, however, shouldn't all be on the caregiver and patient, stresses Dr. Michael Rabow of the University of California, San Francisco. In January 2004, Dr. Rabow and colleagues published a paper in the *Journal of the American Medical Association* that recommended actions clinicians and their staffs can take to support caregivers, particularly in end-of-life situations.

Although oncologists and other clinicians treating cancer patients have real limitations on how much time they can spend with caregivers, Dr. Rabow says little interventions by clinicians can do a lot for caregivers' well-being and their caregiving work.

"We have some data to say that when clinicians spend just a few minutes listening to the concerns of the family caregiver, just being an empathetic listener, it decreases their risk of depression," he notes.

He also suggests that clinicians take every opportunity to support family caregivers' work and address the common feeling that they aren't doing enough or doing well enough.

"Turn to the family caregiver and say, 'I think you are very committed, and I can tell from seeing your mother or your husband that you've done an amazing job as a caregiver,'" he says. "In many cases, the caregiver will start crying, because often they live entirely in a world dedicated to that sick person." ◆

By Carmen Phillips

NCI has produced three new booklets on caregiving: www.cancer.gov/cancertopics/coping. ◆

Community Update

NIH Announces Program to Foster the Independence of New Investigators

NIH Director Dr. Elias Zerhouni recently announced the NIH Pathway to Independence Award program, featuring a new opportunity for promising postdoctoral scientists to receive both mentored and independent research support from the same award.

"Encouraging independent inquiry by promising new investigators is a major goal for NIH," Dr. Zerhouni said. "We must invest in the future of our new scientists today if we expect to meet the nation's health challenges of tomorrow. New investigators who successfully cross the bridge from research dependence to research independence bring fresh ideas and innovative perspectives to the research enterprise, which are critical to sustaining our ability to push forward the frontiers of medical research."

NIH will issue between 150 and 200 awards for this program in its initial year, beginning in fall 2006. The agency expects to issue the same number of awards in each of the following 5 years. During this time, NIH will provide almost $400 million in support of the program. This award is a major piece of a larger, ongoing NIH effort to support new scientists as they transition to research independence. All NIH institutes and centers are participating in this award program.

NCI will receive $1.8 million in FY 2007 under the NIH initiative, NCI Deputy Director Dr. John Niederhuber explained at the February 7 meeting of the NCAB. The new NIH program is much like NCI's existing Howard Temin Awards, he noted. As a result, "We made sure that we could maintain support for the current 20 awards per year and that they will continue to be known for our new investigators as the Temin awards," he added.

The NIH awards will have an initial 1- to 2-year mentored phase that will allow investigators to complete their supervised research work, publish results, and search for an independent research position. The second, independent phase, years 3 through 5, will allow awardees who secure an assistant professorship, or equivalent position, to establish their own research program and successfully apply for an NIH investigator-initiated (R01) grant. The R01 is the major means by which NIH supports individual scientists in the field.

"This award program is a major step toward fostering the early independence of new investigators, a key to innovation and creativity," Dr. Zerhouni continued. "We must take action now to maintain the tremendous momentum that we've experienced in science. Talented people with new ideas are at the core of our success—we must support them all the way. Nothing is more important, especially in times of tight budgets."

The NIH program is also responsive to the major recommendations of a National Academy of Sciences report issued in 2005, "Bridges to Independence," which called for new ways to mentor and support early career scientific investigators, from conducting their postdoctoral studies to running their own research programs. ◆

NIH Pathway to Independence (PI) Award

Announcement Number: PA-06-133

Application Receipt Dates: New applications: April 7, June 1, and Oct. 1, 2006; Feb. 1, June 1, and Oct. 1, 2008; Feb. 1, 2009.

This funding opportunity will use the K99 and R00 award mechanisms. For more information, see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=3331. Inquiries: Dr. David J. Eckstein—eckstein@mail.nih.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.

NCI Cancer Bulletin staff can be reached at ncicancerbulletin@mail.nih.gov.