NATIONAL CANCER INSTITUTE

# NCI Cancer Bulletin

*Celebrating Excellence in Cancer Research*

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## NIH Research Festival Features Chromosome Biology

Dr. Francis Collins kicked off the annual NIH Research Festival last month with a story about a man who loses his keys on the way into a bar. The man is searching under the only lit lamppost outside the bar when his friends find him and ask why he has limited his search to under the lamppost. The man replies, "Well, that's the only place I could see."

Dr. Collins, who directs the National Human Genome Research Institute, told the story to illustrate what life was like for gene hunters before the human genome sequence became available a few years ago. Researchers looked for gene variants involved in common diseases in only a fraction of the genome—because that's all they could see.

The human genome has now been "lit up" and researchers can search for

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*Director's Update*

## *Advancing Cancer Control Science to Improve Public Health*

This issue of the *NCI Cancer Bulletin* highlights and celebrates the research, actions, and partnerships of NCI's Division of Cancer Control and Population Sciences (DCCPS), which this month is celebrating the 10th anniversary of its founding.

Since its creation in 1997, DCCPS has spearheaded NCI's efforts to understand the causes and distribution of cancer in different populations, supported the development and delivery of effective behavioral interventions, and monitored and explained cancer trends in all segments of the population.

Created as a result of a recommendation by a special Cancer Control Program Review Group, DCCPS is truly unique. Thanks to the breadth of the research it conducts and supports, and the transdisciplinary nature of that work—which encompasses genetic, epidemiological, behavioral, social, applied, and surveillance cancer research—over the past decade it has generated important new insights and helped to ensure that the products of cancer control research are effectively applied in communities across the country.

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genetic factors in a long list of human diseases without having to have a good guess or hunch about where to look, noted Dr. Collins.

"There are consequences of this revolution for your own research," he told a capacity crowd during the festival's opening plenary session on September 25 in Masur Auditorium on the NIH campus. Many in the audience would present their research in dozens of lectures and hundreds of poster presentations over the next 4 days.

The agenda covered the range of biomedical research and diseases being studied at the 27 NIH institutes and centers. Many talks and posters discussed the mechanics of genomes and chromosomes in health and disease. RNA was a popular topic, and so was cancer.

The plenary session, "Chromosomes in Modern Biology and Medicine," featured two speakers from NCI's Center for Cancer Research (CCR). Dr. Shiv Grewal discussed heterochromatin, a chromosome structure that packages DNA, and its role in regulating a variety of activities in the genome. Dr. Thomas Ried talked about cancer as a disease of the chromosomes.

A videocast of "Chromosomes in Modern Biology and Medicine" is available.

One of the lighter moments of the meeting came when Dr. Ried described an embarrassing period in the history of chromosome research. In the 1950s, after researchers could finally see that humans have 46 chromosomes rather than 48, as was the accepted belief, it took another 4 years before the truth was accepted.

The reason, Dr. Ried told his audi-

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In its 10-year history, DCCPS has funded a large and expanding portfolio of grants and contracts. The current portfolio includes more than 900 grants valued at almost $400 million. This issue of the *NCI Cancer Bulletin* includes articles on just a handful of DCCPS programs, providing a glimpse of the diverse, integral research the division conducts and supports.

Among the most well-known of DCCPS' programs is the Surveillance, Epidemiology, and End Results (SEER) program, the most comprehensive, population-based cancer registry in the world, covering 26 percent of the U.S. population. SEER data provide the foundation for numerous important studies each year, studies that are helping to guide diagnosis and treatment of cancer. Last fall, for example, University of Michigan researchers, using SEER data, closely assessed renal cell carcinoma rates and treatment patterns and found a rise in mortality rates despite increased detection and treatment of smaller tumors, raising the question of effectiveness of the current treatment paradigm.

The DCCPS-supported Cancer Research Network (CRN), a consortium of managed care organizations, leverages its participants' strong data collection systems to identify important trends on the delivery of care in the community setting. Over the last several years, for example, CRN studies have produced important details about mammography, prophylactic mastectomy, and cervical cancer screening.

DCCPS is also home to the Tobacco Control Research Branch, a leader in our nation's battle to continue to reduce rates of tobacco use, and to NCI's Office of Cancer Survivorship, which is supporting the critical efforts to more fully detail the long-term impact of treatment on survivors and develop interventions to help survivors cope with the unique challenges they face. And DCCPS' programs focused on energy balance, molecular epidemiology, and dissemination have also been and will continue to be tremendously valuable.

Importantly, DCCPS has been at the forefront of NCI's efforts to leverage the expertise and resources of other NIH institutes, federal health agencies, and nongovernmental organizations.

DCCPS has come to stand as the nation's model for cancer control science. As NCI plans for the next decade, DCCPS will continue to play a critical role in addressing the Institute's strategic scientific priorities. ◆

*Dr. John E. Niederhuber*
*Director, National Cancer Institute*

### *A Reminder to Our Subscribers*

Have you completed our survey yet? If you subscribe to the *NCI Cancer Bulletin*, you should have received an e-mail asking you to complete the online survey by October 19. Don't miss this opportunity to provide feedback that will shape future issues. For more information, please contact Nina Goodman at goodmann@mail.nih.gov or at 301-435-7789. ◆

# Cancer Research Highlights

## New Guidelines on Cervical Cancer Screening Released

The October issue of the *American Journal of Obstetrics and Gynecology* features the results from the 2006 American Society for Colposcopy and Cervical Pathology (ASCCP)-sponsored consensus conference, which met to update guidance for physicians managing women with abnormal cervical cancer screening tests, cervical intraepithelial neoplasia (precancer), or adenocarcinoma *in situ*. The recommendations are also available to physicians and the public on the ASCCP Web site.

Experts convened the 2006 conference to incorporate new evidence on the natural history of cervical precancer and of HPV infection, the major cause of cervical cancer worldwide, into the previous guidelines issued in 2001. For example, explains Dr. Diane Solomon, medical officer in NCI's Division of Cancer Prevention and one of the authors of the new guidelines, "there is [now] recognition that young adolescent women are at high risk of being infected with HPV, but it's also very likely that HPV and any associated cellular changes will clear over time. In addition, these young women are at exceedingly low risk of cervical cancer. Therefore, one major change in these guidelines is to manage adolescent women who have an abnormality very conservatively, and follow them, unless they have evidence of severe precancer."

An accompanying clinical opinion article puts the new guidelines in the context of risk management, in which the results of any given test are not used alone to decide the next step for a woman diagnosed with a cervical abnormality, but integrated with additional information to gain a more accurate estimate of the likelihood that a cervical precancer or cancer is present. "I think these guidelines represent a significant step towards the concept of management according to risk strata," says Dr. Mark Schiffman, epidemiologist with NCI's Division of Cancer Epidemiology and Genetics (DCEG) and co-author of the clinical opinion article led by Dr. Philip Castle, also of DCEG.

## Stem Cells, miRNA Influence Breast Cancer Metastasis in Mice

Two studies led by investigators from the Massachusetts Institute of Technology have identified mechanisms by which breast cancer cells in mice gain the ability to metastasize.

One study, published in the October 4 issue of *Nature*, found that mesenchymal stem cells (MSCs), which normally reside mainly in the bone marrow, can migrate to breast tumors in mice, likely in response to signaling from the cancer cells that is similar to that from injured normal tissue. Once in the tumor microenvironment, the MSCs release a protein called CCL5, which appears to influence the later steps of metastasis, including the movement of cancer cells from the bloodstream to adjacent tissue.

The influence of the CCL5 protein required the MSCs to be in close proximity to the cancer cells before they metastasized. When the investigators injected mice with a mixture of MSCs and human breast cancer cells, the mice developed tumors that spread to the lungs and other tissue sites. However, the MSCs did not metastasize along with the cancer cells, and cancer cells taken from the lung nodules failed to form tumors with elevated metastatic potential compared with cells taken from the original primary tumors.

The second study, published online September 26 by *Nature*, suggests a role for microRNAs (miRNAs) in breast cancer metastasis. The investigators focused on a specific miRNA, called miR-10b, which was found by microarray analysis to be expressed only in metastatic cancer cells.

When the investigators forced the expression of this miRNA in otherwise nonmetastatic human breast cancer cells injected into mice, the cancer cells formed tumors that were both highly locally invasive and metastatic. In contrast, control cancer cells not forced to express miR-10b did not invade local tissue or enter the bloodstream.

"I started looking at how the stromal microenvironment of a tumor regulates cancer cell metastasis, and Dr. Ma [author of the miRNA paper] started looking at the genetic material within the cancer cell itself that drives metastasis," explains Dr. Antoine Karnoub, lead author of the stem cell study. "Metastasis doesn't have to be [driven by only] one or the other—it could very well be a combination of both."

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*(Highlights continued from page 3)*

## New Targeted Agent Shows Efficacy in Advanced Kidney Cancer

An experimental multitargeted anti-angiogenesis agent has demonstrated promising activity in patients with advanced kidney cancer for whom a similar targeted drug failed to work. Speaking late last month at a large European cancer research conference, ECCO 14, Dr. Brian Rini from the Cleveland Clinic Taussig Cancer Center reported that, in a phase II clinical trial, the experimental tyrosine kinase inhibitor axitinib shrunk tumors in more than half of the 62 trial participants.

"Preliminary analysis shows that progression-free survival was on average more than 7.7 months," Dr. Rini said in a news release. "We think these results are impressive because these patients were heavily pretreated with drugs thought to be similar to axitinib."

All of the patients in the trial had metastatic renal cell carcinoma (RCC) and had not responded to sorafenib (Nexavar), which received FDA approval in December 2005 for the treatment of metastatic RCC. Of the 14 patients in the trial who had also been treated with another tyrosine kinase inhibitor approved by the FDA for the treatment of advanced RCC, sunitinib (Sutent), only 1 had a partial response, Dr. Rini reported.

Axitinib—which inhibits vascular endothelial growth factors 1, 2, and 3 in an intracellular signaling pathway regulated by a gene known as VHL—has also shown encouraging activity in patients with advanced pancreatic, lung, and thyroid cancer. (Clinical trials for axitinib now enrolling patients.)

"These results of a novel agent targeting the VHL pathway in clear cell renal carcinoma are certainly interesting," says Dr. Marston Linehan, chief of the Urologic Oncology Branch in NCI's CCR, who, along with Dr. Berton Zbar, discovered the VHL gene. "Since there is currently no clear choice for second-line therapy in advanced clear cell renal carcinoma, this agent has the potential to fill that role."

## Experimental Agent Improves HRPC Survival in Early-Phase Trial

In a secondary analysis of a recently completed phase II trial, an experimental agent for the treatment of men with a difficult-to-treat type of prostate cancer improved overall survival compared with placebo, even though there was no improvement in progression-free survival, the trial's primary endpoint.

"It is usual to use [progression-free survival] as an endpoint in phase II studies; however it can be difficult to measure accurately in patients with metastatic hormone-resistant prostate cancer (HRPC)," said the trial's principal investigator, Dr. Nick James from the U.K.-based Institute for Cancer Studies. "Overall survival is an unambiguous endpoint and clearly an important outcome for patients."

Patients in the randomized, double-blind trial—the results of which were presented late last month at the ECCO 14 conference in Barcelona—had metastatic HRPC, a disease for which only one chemotherapy agent, docetaxel, is currently approved. The drug used in this trial, ZD4054, is an endothelin A receptor antagonist. Studies have suggested that the endothelin A receptor molecule plays important roles in the inhibition of apoptosis, promotion of angiogenesis, and cancer cell invasion and metastasis.

Patients in the trial who received the 10 mg dose of ZD4054 fared best, with a median overall survival of 24.5 months, while patients who received the 15 mg dose of ZD4054 or placebo had a median overall survival of 23.5 and 17.3 months, respectively.

"The results look promising," said Dr. Boris Freidlin, division of NCI's Division Cancer Treatment and Diagnosis, noting the consistent overall survival improvements.

Based on the results, AstraZeneca, the drug's manufacturer, is launching three phase III trials using ZD4054 in men with HRPC. NCI is sponsoring a phase III trial, being led by the Southwest Oncology Group, of a different endothelin A receptor antagonist in a similar patient population. ◆

*(Research Festival continued from page 2)*

ence of mostly young researchers, was that 48 chromosomes had been established as dogma by individuals who were now department chairs and university presidents. The young cytogeneticists were reluctant to challenge the dogma, even though they had counted the 46 chromosomes for themselves.

"There's a lesson to be learned here," Dr. Ried added. "You should believe what you see and challenge your mentor."

Later that day, in a symposium on genetic variation and common diseases, Dr. Stephen Chanock of NCI's Division of Cancer Epidemiology and Genetics (DCEG) related some lessons from the Cancer Genetic Markers of Susceptibility (CGEMS) program.

"Replication, replication, replication," Dr. Chanock said, referring to the need to validate initial results from genome-wide association studies and

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(Research Festival continued from page 4)

avoid false positives. He also stressed that very large studies will be needed to detect variants involved in diseases such as breast and prostate cancers.

In the world of doing genome-wide association studies, bigger is always preferred in order to maximize the power to detect variants, according to Dr. Chanock, who directs the NCI Core Genotyping Facility and heads the newly formed Laboratory of Translational Genomics in DCEG.

In conjunction with the research festival, the NIH Office of Intramural Training and Education and the Office of Research on Women's Health sponsored an annual job fair for NIH postdoctoral, research, and clinical fellows. A list of exhibitors and more information, including a virtual job fair, is available here.

On the first day, Dr. Michael Gottesman, deputy director for intramural research at NIH, reviewed the history of the NIH festival, which was celebrating its 20th anniversary (the festival began in 1986, but it was not held the following year).

The festival was in part the vision of Dr. Abner L. Notkins of the National Institute of Dental and Craniofacial Research. Dr. Notkins and others had recognized that scientists from across the NIH would benefit from coming together and sharing ideas. The organizers also wanted the festival to be a place where young investigators and mid-career scientists could present research.

NIH has changed considerably since 1986, but it remains "the best place to do long-term, high-risk biomedical research in the laboratory or the clinic," Dr. Gottesman said. "We still need to do more to enhance research across the institutes," he added. ◆

*By Edward R. Winstead*

# Legislative Update

October 1 marked the start of fiscal year (FY) 2008; however NCI and NIH must wait for Congress and the White House to negotiate spending priorities before the year's appropriations bills are finalized. The federal government is currently operating under a Continuing Resolution, which will maintain federal funding at FY07 levels through November 16, when either the FY08 appropriations bills will be enacted into law or a second Continuing Resolution will be needed. At issue is the fact that Congress has put together discretionary spending bills which total $22 billion more than the $933 billion budget request that the President sent to Congress in February. The White House has issued Statements of Administration Policy on 7 of the 12 appropriations bills, including Labor-HHS-Education, which state that the bills would appropriate funds in excess of the President's budget request and therefore would be vetoed.

The Labor-HHS-Education appropriations bill, HR 3043, that the House passed in July provides $151.7 billion, $10.8 billion more than the $140.9 billion requested by the President for the programs covered under this bill. Under the House-passed bill, NIH would receive $29.4 billion for FY08, of which NCI would receive $4.87 billion. The Senate has stated that it would take up its version of the Labor-HHS-Education appropriations bill (S 1710) during the week of October 15. The Senate bill contains $149.9 billion in spending and would provide NIH with $29.6 billion, including $4.91 billion for NCI. Under the President's budget request, NIH would receive $28.6 billion and NCI would receive $4.78 billion for FY08.

As of October 1, the House had passed each of the 12 appropriations bills, while the Senate had passed 4 of the 12 (Homeland Security, Military Construction-VA, State-Foreign Operations, and Transportation-HUD).

In addition to appropriations, there are other legislative activities of interest to NCI in Congress. NCI's Office of Government and Congressional Relations is closely tracking the Family Smoking Prevention and Tobacco Control Act (S 625/HR 1108) along with two bills that would affect the Small Business Innovation Research (SBIR) Program—The Small Business Act Amendment (S 1932) and The Small Business Investment Expansion Act of 2007 (HR 3567). HR 3567 was passed by the House on September 27. Each of the small business bills could potentially affect the pool of grant applicants being supported by NCI. The small business legislation would impact both the pool of available funds set aside for small businesses and the eligibility criteria for small business grant applicants. ◆

### *Funding Opportunities*

For a complete listing of current NCI funding opportunities, please go to the HTML version of today's *NCI Cancer Bulletin* at http://www.cancer.gov/ncicancerbulletin/NCI_Cancer_Bulletin_100907/page9.

# A Closer Look

## Survival & Mortality: Measuring the Burden of Cancer

Two new publications offer long-term perspectives on the burden of cancer in the United States. Cancer Survival Among Adults provides survival statistics for more than 1.6 million adult cancers diagnosed between 1988 and 2001. The forthcoming *Annual Report to the Nation on the Status of Cancer* will feature incidence and mortality data from 1975 to 2004.

Survival statistics and mortality statistics may seem like opposite sides of the same coin, but they provide distinct types of information. One is tied to death, and the other to a diagnosis of cancer. Mortality is a count of cancer deaths in the population during a given calendar period. Survival measures how long a person is alive after diagnosis.

Clinicians and patients tend to be interested in survival statistics because they contain information relevant to prognosis and treatment. NCI's Surveillance, Epidemiology, and End Results (SEER) program has collected data on survival by cancer type and extent of disease for decades. Today, the information can guide both clinicians and patients.

"Survival statistics are being used to help inform patients about their disease," says Dr. Brenda K. Edwards, associate director of the Surveillance Research Program in NCI's DCCPS.

"We know more today about identifying, diagnosing, and characterizing cancer, and this complicates our comparisons of survival statistics for some cancers over time," she continues. "But knowing more about the disease and how to treat it will lead to better outcomes for patients."

For instance, a diagnosis of early-stage breast cancer today may not be the same as one a decade ago because of advances such as the discovery of the *HER2* gene's role in some breast cancers and the development of trastuzumab to treat *HER2*-positive disease.

Clinical trials often use survival to measure the effects of an intervention on individuals randomly assigned to one group or the other.

"Survival is a metric we use in treatment studies because everyone is the same at the beginning of the study, and then you give them drug A or drug B," says Dr. Peter Bach of Memorial Sloan-Kettering Cancer Center. "This is reasonable because you assume no biases at the beginning."

While survival data have many applications, they have to be considered carefully. Survival is keyed to the year of diagnosis, and anything that advances the time of diagnosis, such as screening programs and improved access to care, may make survival look better than it really is.

Detecting cancers that would never have caused any harm, known as overdiagnosis, can inflate survival rates. For example, the widespread introduction of prostate-specific antigen testing for prostate cancer has likely led to overdiagnosis and artificially boosted prostate cancer survival rates.

"Survival statistics have limitations and should be used with caution," notes Dr. Edwards. "You need to know what survival tells us and what it doesn't."

Some experts caution against using survival as a measure of progress. Comparing survival across time or between geographic locations can be problematic because patterns of diagnosis are likely to differ.

These differences change the timing of diagnosis and may make the comparisons invalid, notes Dr. Steven Woloshin of the Dartmouth Medical School, who has written about survival and mortality rates.

"Five-year survival rates can provide useful information about prognosis," says Dr. Woloshin. "But 5-year survival is not a reliable metric for showing whether there has been progress against cancer."

As a panel of experts convened by NCI concluded in 1990, mortality rates are the most important measure of progress against cancer. But like survival rates, they can be problematic. The accuracy of mortality rates depends on how death is determined, and this may be complicated if a patient has other health conditions such as diabetes or dies from another cause.

Nonetheless, says Dr. Woloshin, "there's no question that of all the measures we have of measuring success in cancer, mortality is the one to hang your hat on." ◆

*By Edward R. Winstead*

# A Conversation With… Dr. Barbara Rimer and Dr. Robert Croyle

*Much has changed in DCCPS over the past decade. Here, Dr. Barbara Rimer, the division's first director, currently the dean of the University of North Carolina School of Public Health, and Dr. Bob Croyle, the current division director, talk about the past and future of DCCPS.*

## *Dr. Barbara Rimer*

**The formation of DCCPS brought together a broad array of research interests. What was the biggest challenge in pulling it all together?**

There were a few challenges. One was attracting really great people to join the division, as well as identifying people within the existing organization for leadership roles and then developing the start-up needed for a new organization. Another challenge was to meld people who had worked at NCI previously and newcomers so they would have a shared vision and commitment. Some disciplines were harder to recruit than others. I was really proud when [former NCI Director] Klausner said to me, "The people in your division are really smart, but they also are really nice people." That combination of smart and nice was something for which [former DCCPS Deputy Director] Bob Hiatt and I strove.

**Was there a specific focus of the division or certain areas that were higher priorities than others?**

The focus was on meeting the scientific needs of the time and anticipating the future, so we involved a lot of people inside and outside of NCI in setting priorities. We identified some areas, like dissemination, where we believed there were huge opportunities and needs. There was consensus that biobehavioral research was an understudied area that required nurturing. We examined the science in the tobacco area and concluded that Transdisciplinary Tobacco Use Research Centers (TTURCs) were needed to push science forward, and we were delighted to receive NCI's support for this effort. It also was clear that health communications and informatics provided opportunities to enhance cancer control, as well as a need for a DHHS-wide quality of cancer care initiative and to maximize our use of cohorts, which led to NCI's cohort consortiums.

**What things from the division's early years are you particularly proud of?**

The caliber of people we recruited into the government and identified from within was awesome. Our leadership team was one of the strongest anywhere in government and rivals the best university teams anywhere. I'm really proud of these people and so glad that many of them remain in DCCPS today. I'm also proud that we began the TTURCs at a time when people even doubted that the word "transdisciplinary" existed, and now the concept has spread far beyond NCI. We created new collaborations across NCI and NIH, with other government agencies and organizations like the American Cancer Society. And finally we built tools like PLANET, the Cancer Trends Progress Report, State Cancer Profiles, and the HINTS datasets, that put cancer control tools in the hands of people all over the world. Government worked for scientists and practitioners, and I always will be proud to have been part of NIH at a time in which it worked remarkably well.

## *Dr. Robert Croyle*

**We hear a lot about the rapid changes in cancer research. Is that true for the population sciences and is it influencing how DCCPS is preparing for the future?**

Yes, absolutely. There has been tremendous growth in team science, and this has been reflected in both grant applications and publications. DCCPS has played a role in this trend, both through targeted team science funding opportunities,

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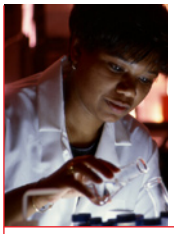
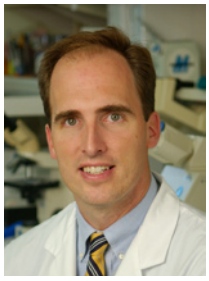


# Featured Clinical Trial

## Regional Chemotherapy for Inoperable Liver Metastases

**Name of the Trial**
Phase III Randomized Study of Percutaneous Isolated Hepatic Arterial Perfusion with Melphalan with Subsequent Venous Hemofiltration Versus Best Alternative Standard Treatment in Patients with Unresectable Liver Metastases Secondary to Ocular or Cutaneous Melanoma (NCI-06-C-0088). See the protocol summary at http://cancer.gov/clinicaltrials/NCI-06-C-0088.



*Dr. James Pingpank*

**Principal Investigator**
Dr. James Pingpank, NCI Center for Cancer Research

**Why This Trial Is Important**
Some types of cancer, such as melanoma, spread preferentially to the liver, where they may form new tumors called liver metastases. One technique used to treat liver metastases that cannot be surgically removed (unresectable) is called isolated hepatic perfusion (IHP).

In IHP, the flow of blood into and out of the liver is temporarily isolated from the body's circulatory system and high doses of anticancer drugs, such as melphalan, are infused directly into the liver through the hepatic artery. This technique allows the delivery of high doses of chemotherapy to liver metastases while sparing the rest of the body from drug exposure.

In this trial, doctors are testing a type of IHP called percutaneous isolated hepatic arterial perfusion (PHP) in patients with liver metastases from ocular (eye) or cutaneous (skin) melanoma. In PHP, catheters inserted through the skin are used to deliver drugs to the liver, block the flow of blood from the liver, and then remove the drugs. In contrast with IHP, this technique avoids the complications of major surgery and can be repeated if necessary.

"With this study, we're comparing treatment with systemic chemotherapy versus a minimally invasive method of delivering chemotherapy regionally to the affected organ," said Dr. Pingpank. "We hope to establish regional chemotherapy as a standard of care for patients with metastatic ocular melanoma, a disease for which no standard therapy currently exists."

**Who Can Join This Trial**
Researchers seek to enroll 92 patients with liver metastases secondary to ocular or cutaneous melanoma that cannot be surgically removed. See the list of eligibility criteria at http://cancer.gov/clinicaltrials/NCI-06-C-0088.

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

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

*(Conversation continued from page 7)*

and in facilitating the development of research networks and consortia. It's gratifying to see how the interdisciplinary conversations we've sponsored have lead to so many exciting and productive collaborations.

### Are there specific areas of research that DCCPS is funding that could have profound implications for treatment, early detection, etc.?

It's very difficult to select just a few, because there are large and visible activities, such as genome-wide association studies, that have truly revolutionized the field. Two areas that have attracted less publicity but I see as equally important are statistical modeling of cancer trends, such as the work conducted by the CISNET group, and the development of valid and reliable measures of patient-reported outcomes. Both areas of research can play a critical role in developing evidence-based health policies at the national level.

### Looking ahead, what do you believe are the trends that will drive DCCPS' future work and priorities?

What I'm seeing is a convergence of science, rather than divergence. In the population sciences, this is reflected in studies that utilize and integrate surveillance data, behavioral data, health care records, and biospecimens. The future of population science, and I would argue science in general, lies in the analysis of multiple kinds of data, rapidly acquired from many sources that converge around a specific research question. We're starting to see compelling examples of this, especially in breast cancer, but it's only the tip of the iceberg. ◆

# Notes

### Lowy and Schiller Receive Award

Researchers Drs. Douglas Lowy and John Schiller in NCI's CCR recently received the Federal Employee of the Year award from the Partnership for Public Service. At a Washington, DC, gala held in their honor, the Partnership for Public Service presented nine Service to America Medals to outstanding civil servants for their high-impact contributions critical to the safety, health, and well-being of Americans. The top medal went to the NCI scientists for their contributions to the development of the first human papillomavirus vaccine. In accepting the Service to America Medals, the researchers said they hope to continue to try to develop improved and less expensive second-generation versions of the vaccine.

*Dr. John Schiller (left) and Dr. Douglas Lowy (right) with HHS Secretary Michael Leavitt*

### Egorin Receives First Michaele Christian Lectureship

Dr. Merrill Egorin of the University of Pittsburgh Cancer Institute received the first Michaele C. Christian Lectureship. He delivered his lecture, "Pharmacoballistics: Dr. Ehrlich's Magic Bullet in the 21st Century," at the Cancer Therapy Evaluation Program (CTEP) Early Drug Discovery Meeting on September 24. NCI established the lectureship to honor Dr. Christian's 20-year NCI career and to recognize the contributions of individuals to the development of novel agents for cancer therapy. The lecture will be published in *Clinical Cancer Research*.

### New SEER Monograph Details Cancer Survival among Adults

NCI recently released *SEER Survival Monograph: Cancer Survival Among Adults: U.S. SEER Program, 1988–2001, Patient and Tumor Characteristics*, which examines cancer survival by patient and tumor characteristics for more than 1.6 million adult cancers diagnosed during 1988–2001. Survival data are from NCI's Surveillance, Epidemiology, and End Results (SEER) Program and represent cancer in approximately one-fourth of the U.S. population. The tumor characteristics may include subsite, size of tumor, extension of the tumor, positive lymph nodes, distant metastases, and histologic type. The patient characteristics are age, race, and sex.

The monograph is available online at http://www.seer.cancer.gov/publications/survival/, where instructions for ordering print copies can be found.

### OIA Director Recognized for Middle East Work

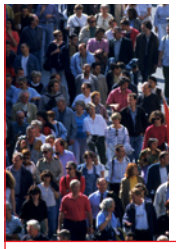
Dr. Joe Harford, director of NCI's Office of International Affairs, was recognized recently for his work in the Middle East by the Arab Medical Association Against Cancer (AMAAC). The award was given during the Middle East and North Africa Cancer Research Conference held in Amman, Jordan. Dr. Harford has worked for 10 years in the Middle East serving as NCI liaison to the Middle East Cancer Consortium (MECC), which includes Cyprus, Egypt, Israel, Jordan, Turkey, and the Palestinian Authority. His work with MECC has focused on establishing and strengthening cancer registries as well as individual and group training activities for health care workers and cancer researchers from the region. ◆

70 YEARS OF EXCELLENCE IN CANCER RESEARCH

### *If Memory Serves…*

Early on, some members of the National Advisory Cancer Council had reservations about placing NCI within the administrative structure of the Public Health Service (PHS); they thought that the Veterans Administration was a better fit. But U.S. Surgeon General Thomas Parran prevailed in his choice of the PHS partly because two cancer-focused research programs already existed within this governance: a group in Boston and another in Washington, DC. ◆

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



# Community Update

## Weights and Measures: How DCCPS is Improving Behavior Observation

On the outskirts of a rural Midwestern town, a man steps through the door of a trailer, which, along with three other connected trailers, forms a large, mobile medical facility. Earlier in his home, researchers had asked him about his medical history and lifestyle; now in the trailers, they analyze his blood, measure his height and weight, and assess his cardiovascular fitness on a treadmill, among other tests.

A few hours later, he walks out with a special device attached to a belt under his shirt that records how much he is moving, including the acceleration of his motion, so researchers can tell the difference between activities like walking and running. He wears it when he's awake for 1 week, then slips the device into a padded envelope and drops it in the mail. The trailers are gone, on their way to another city.

Welcome to just one person's experience participating in the National Health and Nutrition Examination Survey (NHANES), a Centers for Disease Control and Prevention program that is cosponsored by NCI's DCCPS. DCCPS supplied the measurement device, called an accelerometer, one of a host of new tools the division is using to improve the data collected from behavioral research studies.

"Technology such as this can be used in 1, 10, or thousands of people to understand more comprehensively the variety of factors that impact cancer incidence," explains DCCPS Director Dr. Robert Croyle. "It can also be used to monitor the quality of cancer care, and to improve communication between patients and their health care providers."

*The accelerometer, worn under the shirt in NHANES, accurately measures an individual's activity, improving data collection for behavioral research studies.*

The concept of remote devices to record health information is not new, notes Dr. Audie Atienza, a program director in the DCCPS Health Promotion Research Branch and co-editor of a new book on the subject, *The Science of Real-Time Data Capture*. "In the 1970s, cardiovascular medicine researchers assessed the ambulatory heart rates of patients in real-time using remote technology," he says, "but now it's extending into other domains, such as cancer, and the technology is becoming much more powerful and portable. As a result, multiple aspects of health and disease can now be measured in real time and in the real world."

The benefit of these tools is that they improve accuracy by reducing human error. And that's extremely important, says Dr. Richard Troiano, an epidemiologist in the DCCPS Applied Research Program who works on the project, because accurate measurement of peoples' behaviors and other risk factors is essential to understanding what really causes cancer and how it can be prevented.

In the physical activity component of the NHANES project, for example, "we found a striking difference between what people said that they were doing and what we were able to measure them doing with the accelerometers," Dr. Troiano explains. "Survey participants reported much more physical activity than we measured during the time they wore the accelerometer."

Meanwhile, as part of the recently launched NIH-wide Genes, Environment and Health Initiative, grantees are developing a cell phone equipped with camera, image processor, and voice recognition to assess diet; a cell phone integrated with a miniaturized accelerometer, heart rate monitor, and GPS device to assess physical activity; and a cell phone coupled with an e-watch that allows for real-time assessment of psychosocial stress, explains Dr. Jill Reedy, who oversees the division's participation in the initiative.

Clearly, Dr. Croyle says, technology is changing the whole field. ◆

*By Brittany Moya del Pino*